



Lake Qaraoun Pollution Prevention Project

REMAINING WORKS RELATED TO EXPANSION OF SEWAGE NETWORK TO CONNECT TO ZAHLE AND TO AITANIT WASTEWATER TREATMENT PLANTS (QC1W1A)

Construction Environment & Social Management Plan (CESMP)

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For

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Abbreviations

BOQs	Bill of Quantities
BTD	Bureau Technique pour le Développement
BWE	Bekaa Water Establishment
CAE	Child Abuse/ Exploitation
CBD	Convention on Biological Diversity
CDR	Council of Development and Reconstruction
CESMP	Construction Environnemental and Social Management Plan
CO	Carbon Monoxide
COM	Council of Ministers
EA	Environmental Assessment
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ELARD	Earth Link and Advanced Resources Development s.a.l.
ESHS	Environment, Social, Health and Safety
ESMP	Environmental and Social Management Plans
GBV	Gender Based Violence
GRM	Grievance Redress Mechanism
HKBros	Hanna Khoury and Brothers
IBA	Important Bird Area
IFC	International Finance Corporation
LARI	Lebanese Agriculture Research Institute
LRA	Litani River Authority
MoA	Ministry of Agriculture
MoC	Ministry of Culture
MoE	Ministry of Environment
MoEW	Ministry of Energy and Water
MoIM	Ministry of Interior and Municipalities
MoL	Ministry of Labor
MoPWT	Ministry of Public Works and Transportation
MoT	Ministry of Tourism
NAAQS	National Ambient Air Quality Standards
NGOs	Nongovernmental Organizations
NOx	Nitrogen Oxides
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
VAC	Violence Against Children
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization

1 INTRODUCTION

1.1 General Information

As part of the Lake Qaraoun Pollution Prevention Project (LQPPP), “Remaining Works Related to Expansion of Sewage Network to Connect to Zahle and to Aitanit Wastewater Treatment Plants” – QC1W1a, is funded by the World Bank (WB). The Council for Development and Reconstruction (CDR) acting as an executing agency on behalf of the Lebanese Council of Ministers (COM) awarded a contract to:

- (1) Rafik Khoury & Partners who prepared a detailed design of the network connecting to the Zahleh WWTP. Earth Link and Advanced Resources Development s.a.l. (ELARD) submitted an Initial Environmental Examination (IEE) and Environmental Management Plan (EMP) in January 2015, which was approved by the Ministry of Environment (MOE), CDR and the WB. The project then entailed the construction of 109 Km of sewer networks in Zahle (including Karak and Ksara), Ferzol, Saadnayel, Qaa El Rim, and Hezzerta, to connect these villages to the Zahleh WWTP (which was then under construction), the rehabilitation of part of the old network, and the establishment of 6,000 house connections. The project also included the construction of 10 km of the main collector that connects the village of Qabb Elias to the planned WWTP in El Marj.
- (2) Bureau Technique pour le Developpement (BTD) who prepared a detailed design of the extension of wastewater collection networks drained toward El Marj and Aitanit Wastewater Treatment Plants. ELARD submitted an Environmental and Social Management Plan (ESMP) in May 2018 for the Aitanit Wastewater System, which was approved by the CDR and WB. The Aitanit Wastewater System included the construction of 13.2 km of additional/extension sewer lines (gravity lines and force mains) and six (6) pumping stations in Baaloul and Qaraoun on state-owned lands, in addition to lateral sewer lines.

This report presents the construction ESMP (CESMP) for the remaining works related to expansion of sewage network to connect to Zahle and to Aitanit Wastewater Treatment Plants, which constitute (1) the installation of 88 Km of new sewage networks and 1775 house connections in the villages of Zahle, Ferzol, Saadnayel, Qaa El Rim, and Hezzerta, and (2) the rehabilitation of the existing main pumping station in El Qaraoun village, and the completion of 6 pumping stations’ electro-mechanical works in Baaloul and El Qaraoun villages, hereby referred to as the Project. This CESMP aims to support the Contractor, Hanna Khoury & Bothers (HKBros), in applying the mitigation measures and implementing the monitoring plan during the construction phase, as specified in Chapter 6 of the approved IEE/EMP related to the Zahleh Sewage Network, and Chapter 7 of the approved ESMP related to the Sewage Pumping Stations as part of the Aitanit Wastewater System. SU YAPI/ KREDO will act as supervising consultant to monitor the implementation of works in this Lot, as awarded by CDR.

1.2 CESMP Objectives

The objective of this CESMP is to provide an overview of potential Environmental, Social, Health and Safety (ESHS) impacts during the extension of the wastewater network and describe the management, mitigation and monitoring measures to protect the environment and other sensitive receptors, both on and off site. Specifically, the CESMP aims to provide/ develop:

- an overview of the construction activities
- a definition of roles and responsibilities of the Site construction team

- guidance on compliance with relevant environmental, social, and health and safety national, international, and WB policies and legislation
- a means of implementing appropriate mitigation measures for the key environmental, social, and health and safety issues (refer to the project IEE/ EMP)
- a commitment to identified monitoring and reporting requirements.
- an institutional setup along with capacity building requirements
- a Grievance Redress Mechanism (GRM).

1.3 Structure of the CESMP

To meet the above objectives, the CESMP is structured to cover the following:

- Project Description including project location, activities, equipment, staffing, site facilities, schedule, etc.
- Environmental, Social, Health and Safety (ESHS) Management including policy statement, environmental and social management systems, roles and responsibilities, communication and reporting, environmental training and awareness, emergency response and incident reporting, social aspects and procedures, environmental auditing and site monitoring, steps to address non-compliance, etc.
- Environmental and Social Management Plans during construction covering the regulatory framework, mitigation and monitoring measures per identified impact
- Forms, checklists and notes

2 PROJECT DESCRIPTION

2.1 Project Location and Activities

The project consists of the construction of approximately 88 km of new sewer networks (Diameters varying from 150mm to 900mm). The works are divided into compulsory and optional works due to the very tight schedule, taking into consideration the execution of all the main lines in the compulsory phase, along with all their relative branches, summing up to a total of 60.28 km of sewer lines and 2858 manholes (MH) and house connections (HC). The optional work to be executed sums up to 27.01 km of sewer lines and 1574 MH and HC. The works will be executed in the villages of Zahle, Ferzol, Saadnayel, Qaa El Rim, and Hezzerta, in the Zahleh Caza (Figure 2-1).

Unplasticized Polyvinyl Chloride (uPVC) sewers will be used for diameters less than or equal to 315 mm and concrete for diameters greater than or equal to 350 mm. summarizes the distribution of the sewer lines for the compulsory and optional works by area.

Table 2-1: Length of sewer lines

Area	Sewer lines (lm)		Total (lm)
	Compulsory	Optional	
Hezzerta	5,436	9,954	15,390
Qaa el Rim	2,042	7,398	9,440
Saadnayel	3,238	1,785	5,023
Zahleh – Ferzol	49,663	7,959	57,622
Total	60,379	27,096	87,475

Activities involved in the site preparation and construction works of the additional sewer lines are:

- Site clearance
- Excavation
- Backfilling
- Pipe works
- Concrete works
- Plastering
- Waterproofing
- Metal works
- Testing and commissioning
- Road reinstatement

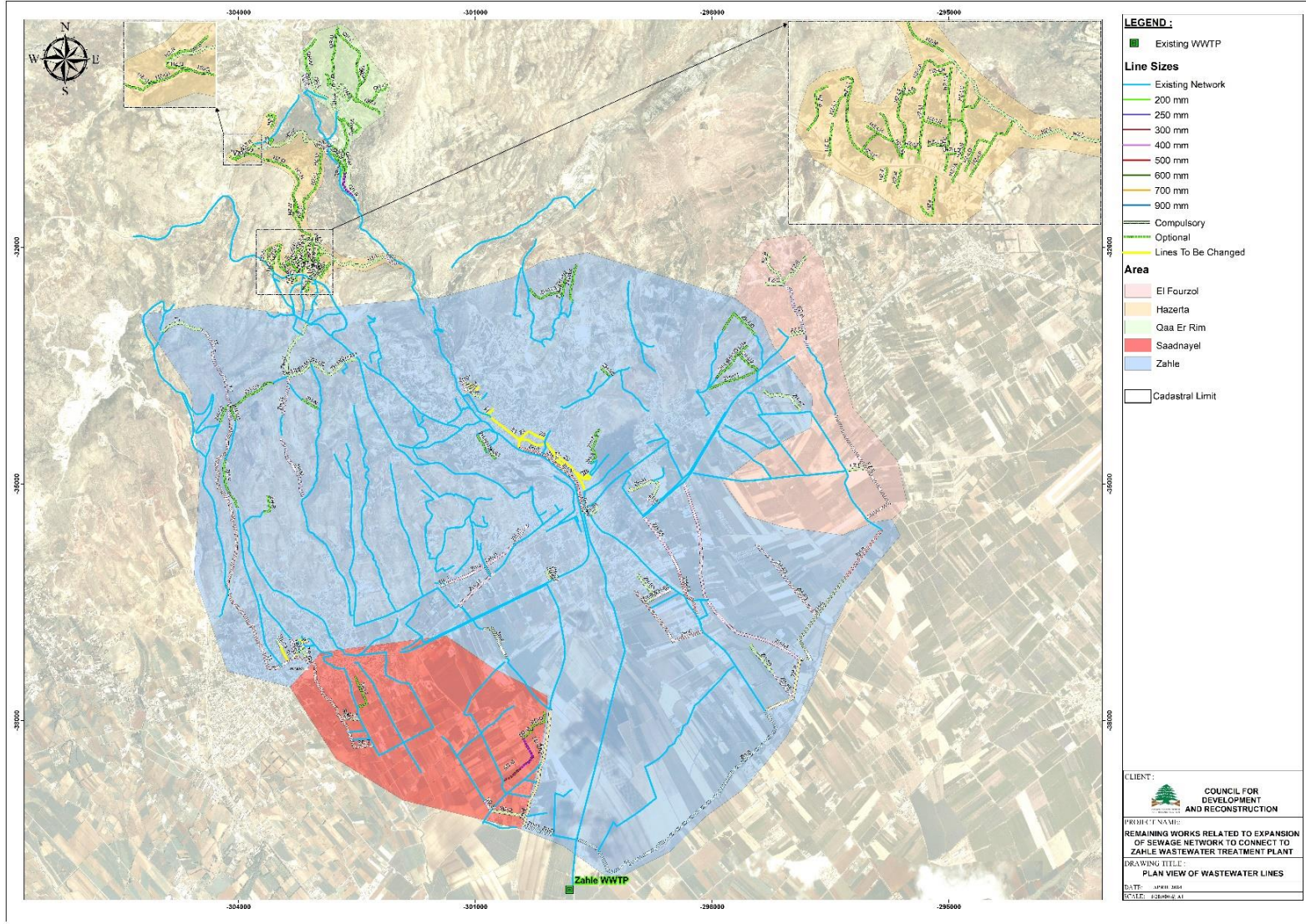


Figure 2-1: Overall layout of sewer network

The main construction-related materials associated with the construction of the new sewer lines are listed in Table 2-2. The quantities have been extracted from the Bill of Quantities (BOQ) prepared by HKBros.

Table 2-2: Main Construction-related materials associated with the sewer lines

Construction Material	Unit	Quantity
Reinstatement of existing paved surfaces	m ²	115,820
Reinstatement of existing unpaved surfaces	m ²	8,140
Selected fill materials for backfilling of trench excavation for gravity sewer pipes under paved or unpaved surfaces	Lin.m	74,565
Sand fill materials for backfilling of trench excavation for gravity sewer pipes under paved surfaces up to formation level below aggregate sub-base course	Lin.m	6,615
Borrow pit material for backfilling of trench excavation for gravity sewer pipes in water course	Lin.m	3,790
Selected fill materials for backfilling of trench excavation for pipes to replace existing gravity sewer network	Lin.m	2,505
Extra over for importing base course material to replace the selected backfill material for a depth up to 60cm	m ³	5,965
Pipes for new gravity sewer network	Lin.m	84,970
Pipes to replace existing gravity sewer network	Lin.m	2,505
Sand material for Pipe bedding and Surroundings	Lin.m	72,420
Reinforced concrete encasement for pipes under paved or unpaved surfaces	Lin.m	7,050
Concrete encasement for pipes in water course	Lin.m	5,500
Reinforced concrete manholes and chambers	N	4,432
Backdrop connections to manholes	N	21

Sourcing of raw materials will be provided by private suppliers (Abou Hamdan-CDC and New Bekaa Co-NBC) in addition to HKBros from duly permitted sites that will be specified at a later stage.

In addition to the sewer lines in Zahle area, the remaining works in Aitanit area include civil works for the rehabilitation of the existing main pumping station in El Qaraoun village (PS7), and the completion of six pumping stations' electro-mechanical works in Baaloul and El Qaraoun villages, whose characteristics are presented in Table 2-3. The pumping stations are located on state-owned lands, over which the Government of Lebanon (GoL) and Litani River Authority (LRA) have propriety rights (Figure 2-2).

Table 2-3: Characteristics of the pumping stations

Village	Pumping station	Flow (m ³ /day)	Plot number
Baaloul	PS1	302.40	/2587/
	PS2	302.40	/2283/
Qaraoun	PS3	395.71	/7365/
	PS4	1,069.63	/2966/
	PS5	542.59	/3627/
	PS6	302.40	/4243/

The works will include the installation of the following mechanical, electrical, and control equipment at the pumping stations:

- Motopumpsets
- Piping and accessories
- Portable fire extinguishers
- EDL Electrical Power Transformer
- Generator set
- Odor control system
- Monitoring and control system to Zahle SCADA system
- Drinking water network and reservoir
- Electrical system
- Solar System
- Instrumentation and Control
- Training, testing and commissioning

Due to the considerable number of local and foreign nationals living in the Bekaa region who already work in the construction sector, it is likely that workers will be already living near the project areas, and thus no labor camp will be needed, and no labour influx is expected.

Annex A presents the BOQ of the project.



Figure 2-2. Map showing the pumping stations in Baaloul and Qaraoun

2.2 Project Equipment and Machinery

The main equipment and machinery that will be used for the construction of additional/extension sewer lines and the rehabilitation of existing sewers include:

- Compressor (working pressure 3.5 kg/cm²)
- Tilting drum concrete mixer (up to 200-liter wet capacity)
- Lorry mounted concrete pump with boom, piping & pipe cleaning equipment (up to 50m³/hr capacity)
- Concrete vibrator poker, petrol driven
- Mobile rubber-tyred full circle slew crane, including all crane equipment (up to 25 tonne capacity)
- Dumper pickups (up to 2000 kg capacity)
- Asphalt/ coated macadam spreader (up to 56 kW capacity)
- Asphalt cutter
- Trucks (up to 28 tonne capacity)
- Roller, steel, 3-wheeled (up to 10.5 tonne capacity)
- Roller, rubber tyred (up to 3.0 tonne/wheel capacity)
- Tractor (crawler) with bull or angle dozer, marker's rated flywheel (up to 100 kW capacity)
- Motor grader, variable blade/flywheel (up to 110 kW capacity)
- Mobile water tanker (up to 4450 and 20000 liters capacity)
- Wheel loader (90 hp max. power, toothless shovel)
- Backhoe loader (90 hp max. power, toothless bucket)
- Skid steel loader, similar to "Bobcat" (70 hp maximum power)
- Surveyor Equipment
- Bobcats
- Welding & Saw Cutting Machines
- Pick-ups
- Plate Compactor
- Dewatering & Pressure Pumps
- Ladder& Tools
- Safety & Warning Signs

2.3 Labour Force

The labour force will consist of both skilled (35%) and non-skilled labour (65%). Most of the labour force will be local, from the Bekaa, in and around the project area, hence no worker camps will be needed. Foreign workers are expected to constitute around 35% of the labour force, with the majority (more than 95%) being of the Syrian nationality and residing in and around the project area. More than 250 labours will be available on site for the different activities and distributed along the work areas.

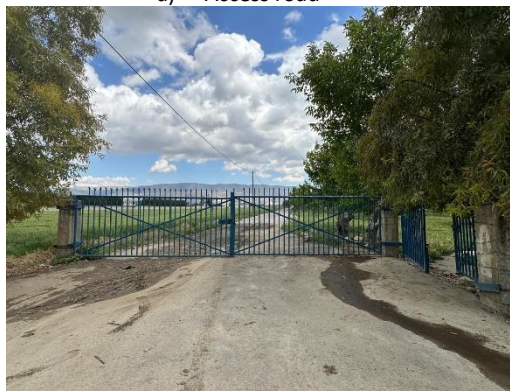
2.4 Site Facilities

The Contractor rented an 8000 m² land plot (Lot #325) in Haouch El Oumara, Zahleh to serve as (1) project site offices with car parking spaces (1,110 m²), (2) material storage area and potential parking for construction vehicles and equipment (4,838 m²), and (3) area for backfill material (2,000 m²). The plot is located in an industrial zone (Annex J). The site is accessible by a 4-m wide paved road through an iron gate that bifurcates from the 8-m wide main road (Figure 2-3). The plot is currently empty with some piles of construction waste dumped within (Figure 2-4).

It is fenced from three sides with a mix of wire and concrete fences. Walnut trees are planted along the fence.



a) Access road



b) Access gate

Figure 2-3. Access to the plot



Figure 2-4. Current status of the rented plot

Land use surrounding the Zahleh site offices and yard is presented in Figure 2-5. The plot is bordered by agricultural lands (wheat plantations (B, C, E) and walnut trees (D) (Figure 2-6). Construction industries (batch plants) (F, G), furniture industries and food industries (A) are also present in the site vicinity (Figure 2-7). Note that the site is located towards the Southern end of the project activities, close to the main sewage collector that will be installed.

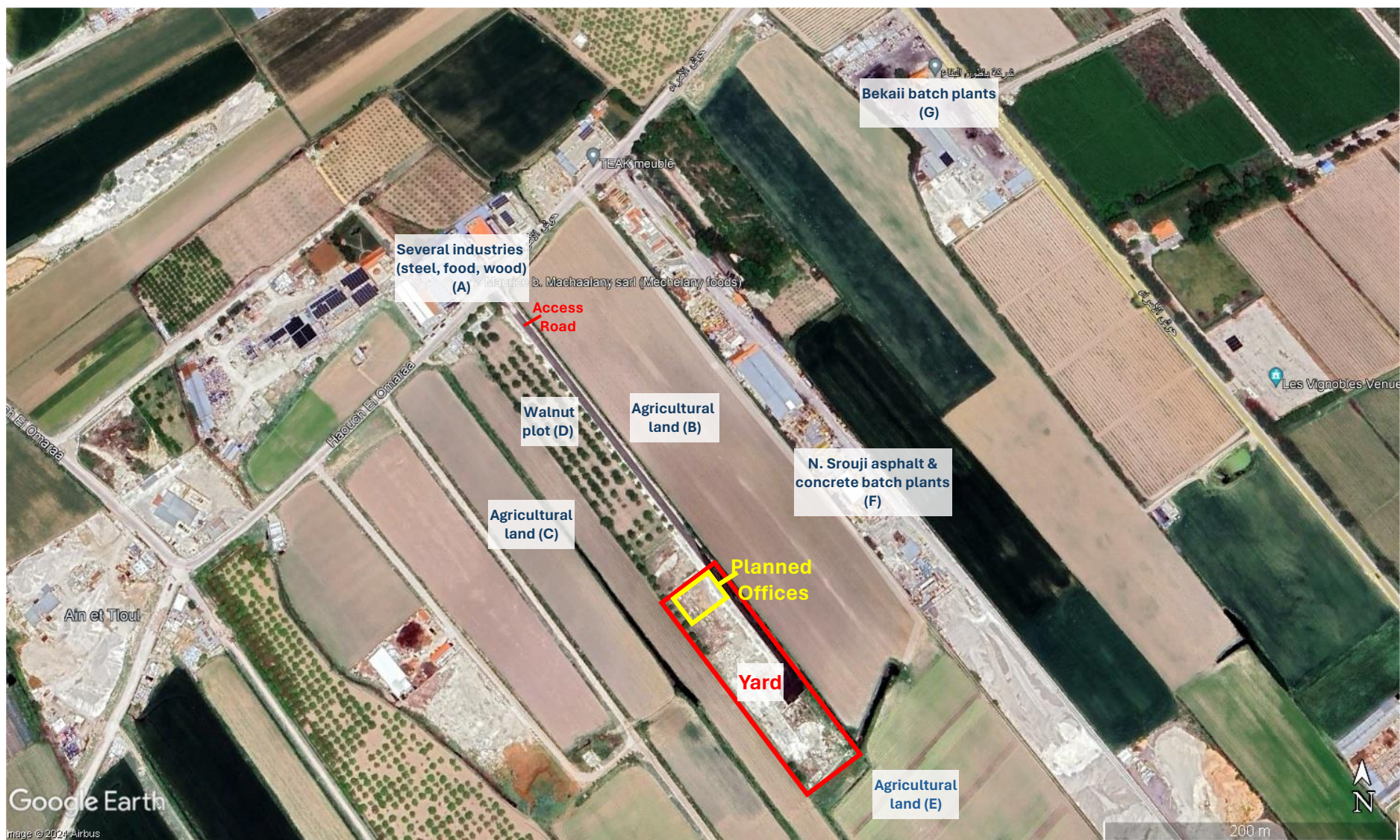


Figure 2-5. Rented plot for project offices and yard and surrounding land use (Adapted from Google Earth)



Agricultural land bordering the plot to the West (C)



Agricultural land and open earth channel bordering the plot to the East (B)



Walnut trees bordering the plot to the North (D)
Figure 2-6. Lands bordering the rented plot



Food production industries facing the entrance gate to the plot- (A)



Steel industry on the main road to the west of the entrance to the plot- (A)



Wood industry on the main road to the east of the entrance to the plot- (A)



Asphalt and concrete batch plant to the East of the plot- (F)



View of asphalt and concrete batch plant from the plot- (F)

Figure 2-7. Land use surrounding the plot

Prefabricated offices will be installed and used by the Contractor engineers, technical skilled workers and Supervising Consultants. The offices will be equipped with toilets and a kitchenette (including drinking water and appliances), lockers and other supplies needed for the daily administrative activities. Parking spaces will also be available for Contractor and Consultant staff and visitors. The layout of the offices is presented in Figure 2-8. The toilets will be connected to an existing septic tank. A submersible pump will be installed to pump the sewage from the septic tank to the existing sewer network along the main road. Domestic water will be provided through water trucks from providers in the area. A 10 KVA power generator will be provided on-site with a 200-L fuel tank. No additional fuel will be stored on site. An emergency evacuation plan is developed for the offices and the yard including the exit paths, and location of assembly points (Figure 2-9).

Construction appurtenances, including manhole covers and pipes will be stored in the yard. Construction chemicals (water proofing chemicals/ oils/ lubricants (Annex G-1) will also be stored in the yard within a shipping container equipped with a door and a window. The sealed chemical drums will be placed on wooden pallets. The quantities stored will be sufficient for a maximum of two weeks of works (a maximum of 800 L in total on site). No chemicals for equipment maintenance will be stored at the yard. Some aggregate material (sand, gravel, base course) will be stockpiled at the yard and some will be brought directly to the worksite when needed. The quantities stored at the yard will be limited to a maximum of one week of work.

With regards to the construction vehicles and equipment, they will be parked at the rented yard. This land is fenced and used for parking purposes only. Unless absolutely necessary, the Contractor will not perform any repair at the yard and will execute vehicle and equipment maintenance at repair and maintenance garages in the project area. Furthermore, the Contractor will not perform any vehicle or equipment refuelling at the yard.

The workers will mainly rest at the yard which will be equipped with a prefabricated room and a toilet connected to a septic tank. Where needed, the Contractor will rent rest-areas equipped with toilets for the workers.

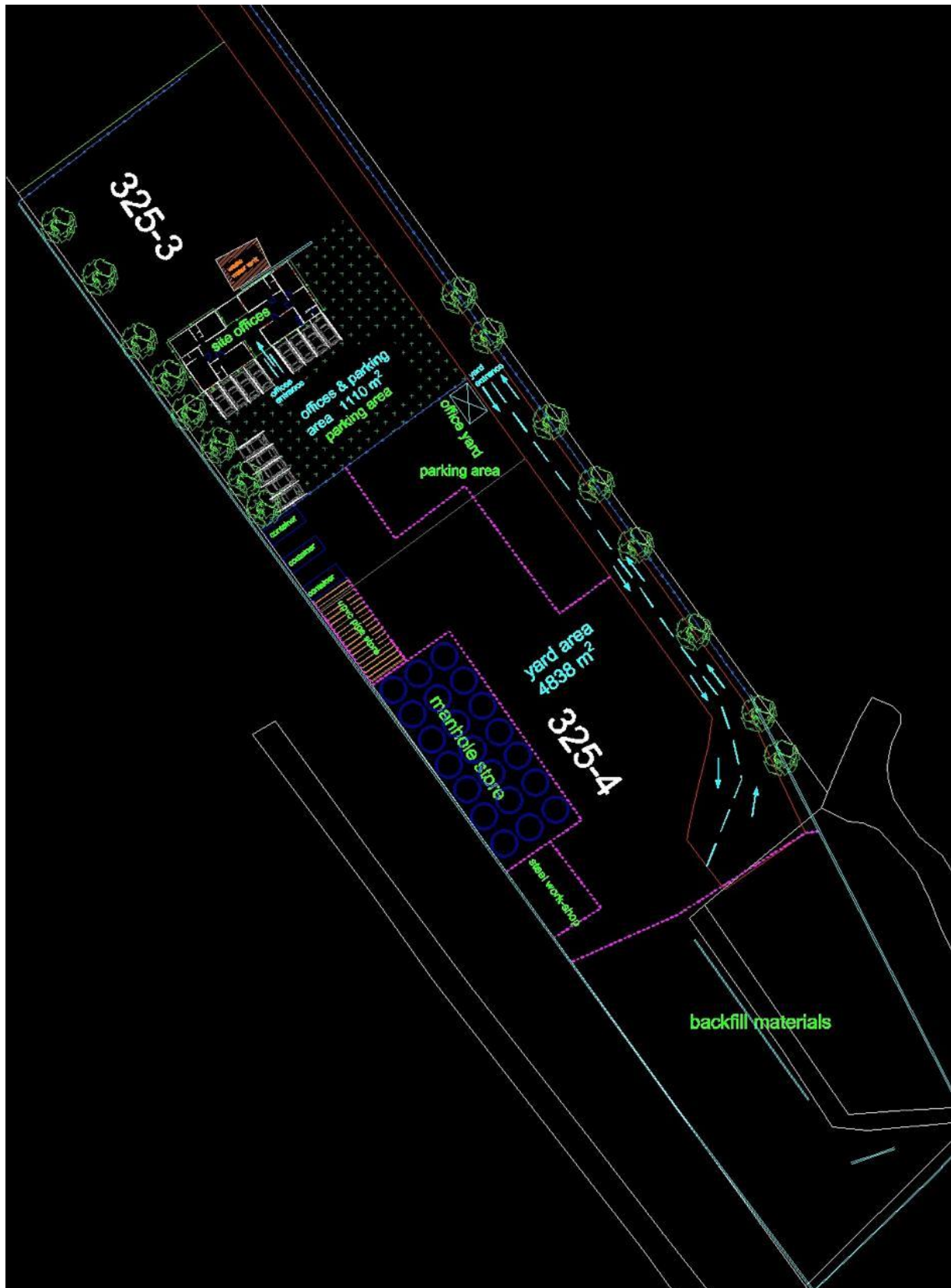
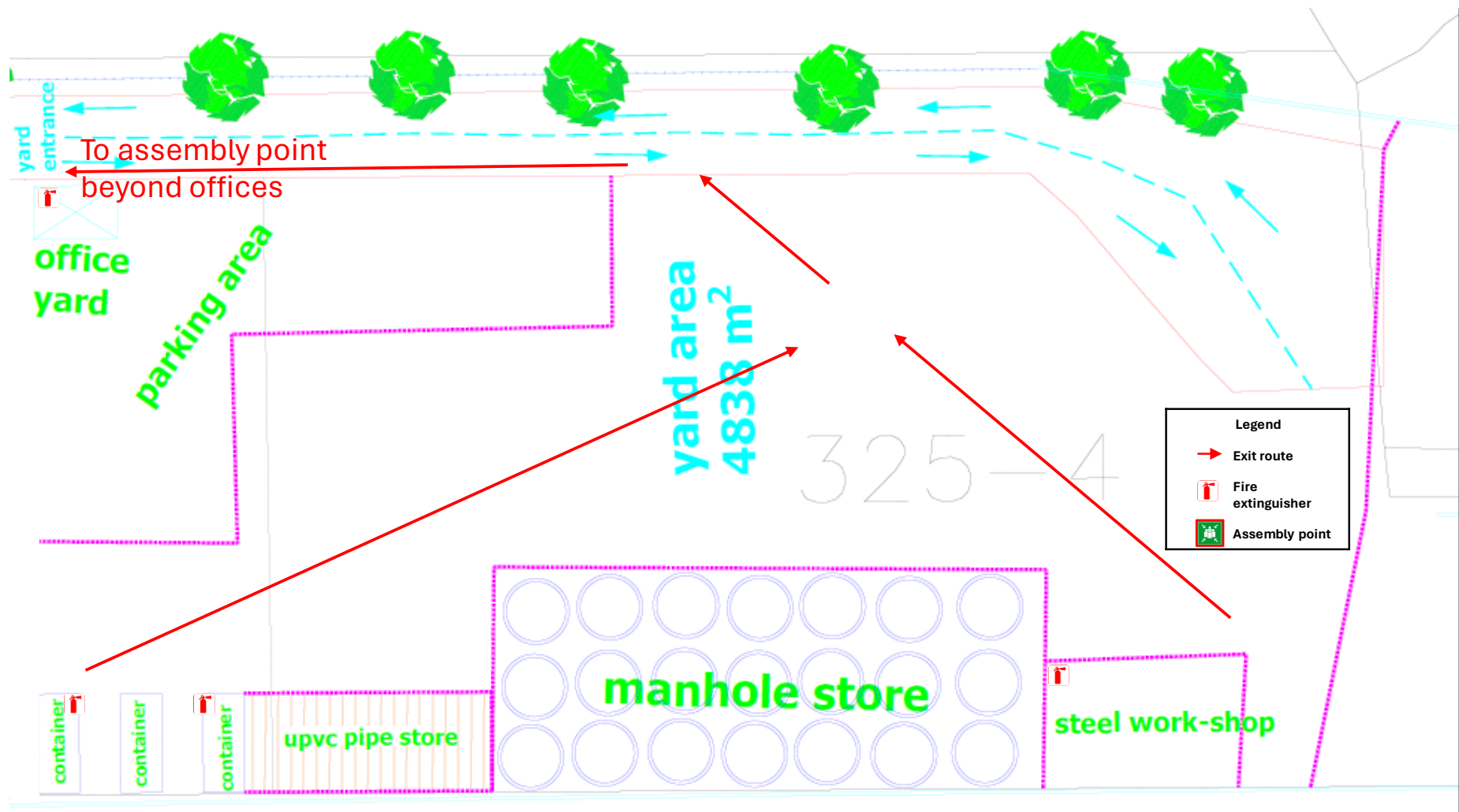


Figure 2-8: Site Offices Layout



b) Evacuation Plan from Yard

Figure 2-9: Emergency Evacuation Plan

2.5 Project Schedule

The overall duration of construction activities for the Project is till 31/12/2024. The tight timeline to finish the works in due course have impacted both the resource allocation and the selection of compulsory works. The selection of compulsory works has been done to ensure successful implementation and optimal functionality, ensuring the full operation of the network and its connection to Zahle's WWTP. Therefore, the collector mainlines (concrete pipes) connected directly to the WWTP were set as priority along with the networks directly connected to the mainlines and planned to be completed before end of December 2024. The compulsory works cover critical developed zones in all 5 geographical areas of intervention as shown in Figure 2-1.

The civil and electromechanical works related to the pumping stations of Baaloul (2 PS) and Qaraaoun (5 PS) will be in progress simultaneously to ensure their functionality and full operation by the end of December 2024.

The selection of optional works has been done to ensure the full execution of the project in case an extension of time is given upon agreeing with the Employer, depending on the progress in the execution of the Compulsory Works, the availability of funds and time, and on the approval of the works by the supervision consultant. The contractor should be notified of this time extension no later than September 2024.

Accordingly, it is planned that once the crews working on the compulsory networks are done, they will be allocated to start the works on the optional networks.

A project schedule is presented in Figure 2-10. The project schedule has been prepared taking into consideration and prioritizing the execution of all the sewer lines in the compulsory phase with all their relative branches (60.28 km of sewer lines and 2858 of MHs and HCs), followed by the optional works (27.01 km of sewer lines and 1574 MHs and HCs).

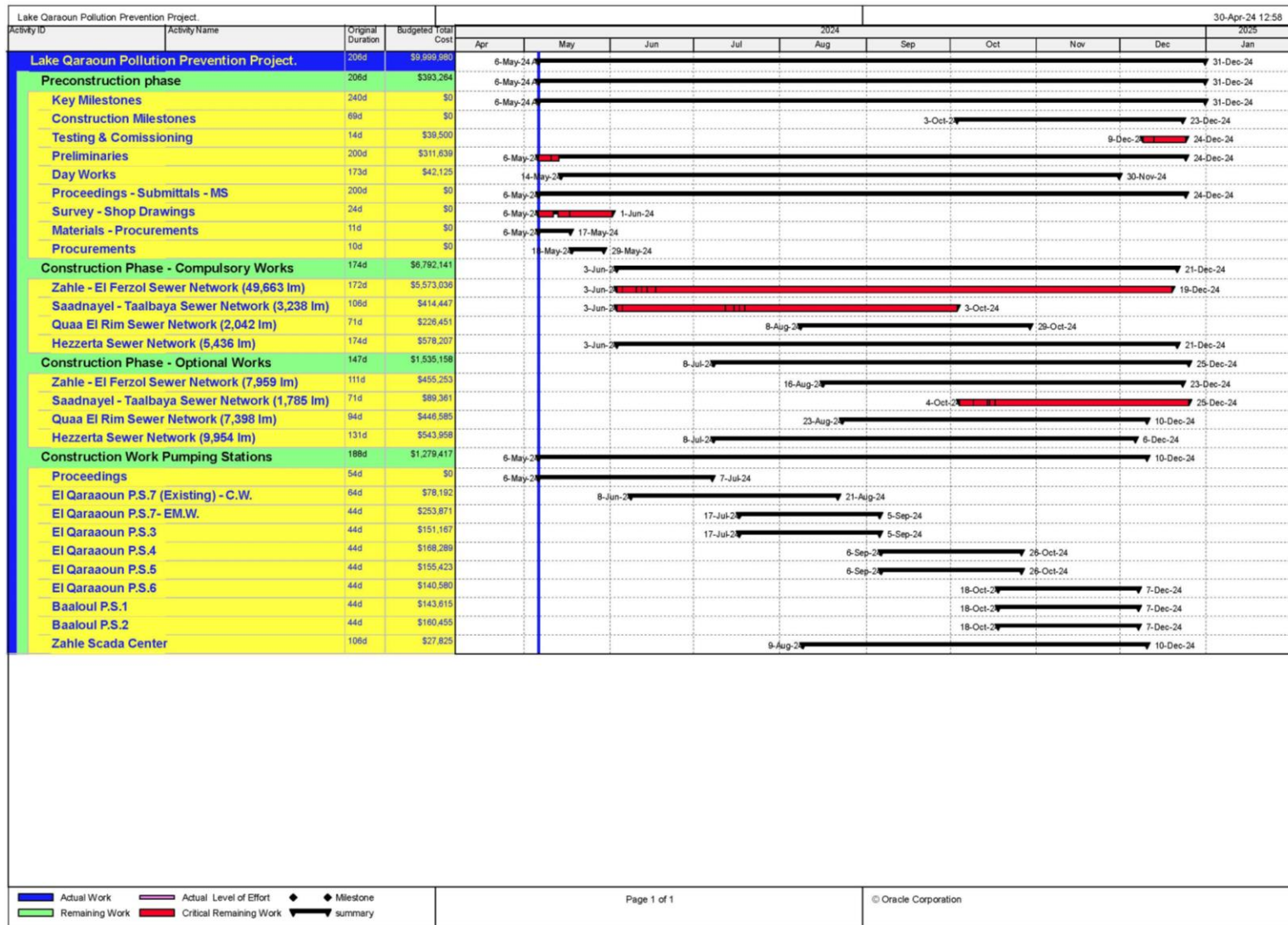


Figure 2-10: Project Schedule Summary

3 ENVIRONMENTAL, SOCIAL, HEALTH AND SAFETY (ESHS) MANAGEMENT

This CESMP provides a framework for ensuring that specific ESHS conditions are met during the construction activities. It describes actions that will be carried out and who will be responsible for them. These actions can be categorized into three groups:

- Construction techniques that mitigate ESHS impacts to acceptable levels;
- Monitoring programs that check the accuracy of impact predictions made in the project ESMP; and
- Response procedures that ensure corrective actions are taken if impact mitigation is not being implemented or results of environmental monitoring indicate environmental objectives are not being met.

The CESMP is to be considered a mandatory reference document by HKBros and the subcontractors. Its content will define subcontractors' obligations and will provide general guidance to conform to the ESHS requirements such as stated in this document. Each subcontractor involved in the construction activities shall be provided a copy of the document for compliance.

The preparation of this CESMP is only a starting point. The most crucial steps will be taken throughout the construction activities as the CESMP is actively used as a tool for achieving environmental and social commitments. The following describes how this CESMP is to be implemented.

3.1 Policy Statement

HKBros is committed to the safe operation of the Project in accordance with all contractual and statutory requirements. Their belief is that leadership lays the foundation upon which a solid program is built and reflects management commitment in its implementation. Effective leadership and program administration are vital to the success of the Environment, Social, Health & Safety (ESHS) protection measures.

HKBros' ESHS Policy is attached in Annex B. The ESHS regulatory framework that HKBros abides by in the CESMP is presented in Annex C.

3.2 Environmental, Social, Health and Safety Management Systems

This CESMP must be viewed as a tool reflecting HKBros' overall Environmental and Social Management Systems. To be effective, this must start at the most senior levels in the organization. HKBros's management will provide strong and visible leadership to promote a culture in which all employees and workers share a commitment to ESHS.

This will be achieved by managers:

- putting ESHS matters high on the agenda of meetings, from Board downwards;
- highlighting the importance of ESHS considerations in business decisions and communication with stakeholders;
- establishing an organizational capacity and maintaining competency that is conducive of ESHS;
- evaluating all ESHS aspects before final decisions are reached;
- being fully aware of the main ESHS hazards associated with the project activities and the systems, procedures and field practices in place to manage these hazards;
- ensuring adequate monitoring of project activities and mitigation measures in place, and continuous review of procedures and outcomes;

- immediately and visibly responding and being involved in investigating incidents or other abnormal events related to ESHS;
- maintaining ongoing reporting of activities and mitigation measures to affected communities;
- seeking internal and external views on ESHS issues; and
- recognising ESHS achievement.

3.3 Roles and Responsibilities

HKBros will be fully responsible for implementing this CESMP and obtain the necessary permits, consents, and authorisation from relevant authorities prior to the construction works. Also, HKBros will ensure that all involved sub-contractors comply with the provisions of the CESMP - by reviewing their environmental and social performance and carrying out regular environmental awareness sessions, audits and inspections.

3.3.1 Team Structure

Figure 3-1 presents HKBros's organization chart during the project.

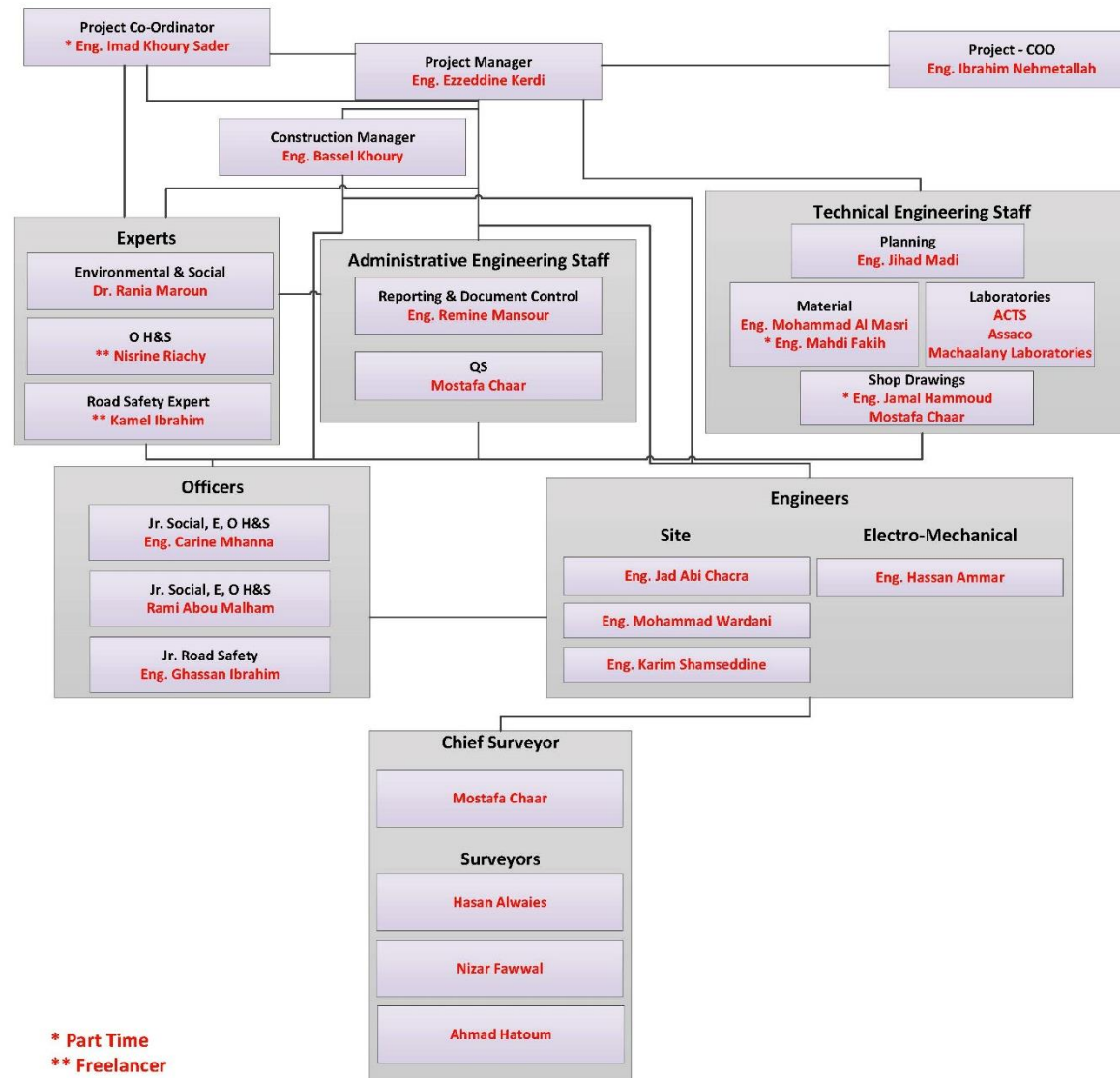


Figure 3-1: HKBros' organizational chart for project implementation

3.3.2 CESMP Implementation Responsibilities

Specific project ESHS roles within the HKBros team are described below.

3.3.2.1 Project Coordinator

- Coordinates and connects with different bodies and stakeholders involved in the project (WB, CDR, and SU YAPI/ KREDO).
- Acts as the primary contact person and liaison.
- Provides strategic leadership and technical, operational, and financial leadership.
- Provides oversight on the project progress and quality.
- Conducts monthly reviews to ensure accurate and timely reporting of financial deliverables and obligations, and to ensure accountability on all major project activities.
- Deals with the project strategic decisions.
- Ensures that all legal and financial papers, permits, and bonds are secured on time.
- Manages project managers on macro level.
- Meets and coordinates with project Environmental & Social expert to ensure the development and implementation of an approved CESMP.

3.3.2.2 Project Manager

- Ensures that the project works are carried out in accordance with Company policies and in accordance with the requirements of the quality plan, specifications and contract.
- Coordinates with the Project Coordinator on multiple issues.
- Ensures the full compliance of subcontractors, suppliers, and with the Company Quality policies and with applicable national legislation.
- Ultimately responsible for the implementation of the CESMP.
- Follows-up on the site officers' daily work
- Ensures all required resources including manpower, equipment, and material are in place to maintain full compliance with ESHS requirements of the project
- Ensures compliance with requirements.
- Ensures that all levels of staff receive adequate and appropriate training.
- Ensures that all the equipment required to execute the works according to the construction programme are available, in good condition, and provide any additional equipment that might be required.
- Coordinates with the Site Engineers, Planner, Foremen and Surveyors for a safe and proper execution of the works.
- Provides specific attention to all safety measures in full coordination with the health and safety officer.
- Ensures that the project activities are implemented on time and within the budget.
- Drafts contracts with subcontractors.
- Manages the weekly and monthly project site meetings.
- Oversees and approves the monthly report.
- Oversees and approves all documents and drawings prepared.

3.3.2.3 Construction Manager

- Carries out duties coordinated by the Project Manager on a daily basis, and ensures proper distribution of the workforce and equipment at required locations
- Controls, supervises, and manages all the teams on-site
- Supervises test frequencies related to the formation level
- Controls the disposal of waste excavated material as per the instructions received from the Project Manager
- Coordinates with the HSE and Road Safety Officers to maintain a safe working environment and good housekeeping on-site
- Complies with the safety measures and ensures that all the Safety Officers teams are aware if the same to prevent accidents and loss

3.3.2.4 Electro-mechanical Engineer

- Carries out duties coordinated by the Construction Manager on a daily basis and ensures proper execution of the works including dealing with the control and flow of fluids, especially sewers, and uses the fluid mechanics theory and principles to deal with the problems related to storage, collection, transportation, control, and regulations
- Coordinates with the Safety Officers to maintain a safe working zone
- Complies with the safety measures and ensures that all the Safety Officers teams are aware of the same to prevent accidents and loss related to hydraulic works
- Oversees all the installation and testing of the networks system and pumping stations.

3.3.2.5 Site Engineer

- Organizes the site so that work is carried out to the required standard with minimum risk to people, equipment and material
- Ensures construction methods minimize risk to public & workers e.g. through adequate Traffic Management.
- Is aware of the requirements of the CESMP and regulations and other relevant legislation and how they apply to the project.
- Ensures that all personnel on site are only employed for that which they have been thoroughly trained.
- Checks that all repair and maintenance work carried out on site is done in a proper manner and that emergency repairs are dealt with properly as soon as possible. Calls the attention of site management to the need for dangerous equipment to be put out of service.
- Maintains proper housing-keeping on site.
- Implements arrangements with subcontractors and other contractors on site to avoid any confusion about areas of responsibility.
- Ensures that suitable PPE is available and used.
- Ensures that a qualified first-aider and all items of first-aid equipment, as required by the CESMP, are available and their location known to employees.
- Cooperates with the Environmental & Social expert; acts on recommendations provided.

3.3.2.6 Environmental and Social Expert

- Supervises all environmental and social aspects and protection measures during construction activities and ensures the implementation of the CESMP
- Provides necessary environmental and social induction for all employees and workers involved in the construction activities, including training on gender-based aspects, internal and external GRM and Code of Conduct
- Promotes regular environmental training and awareness raising amongst construction workers
- Provides special training for the HSE officer
- Provides initial awareness presentation to the municipalities/ community at the onset of the project
- Provides advice on environmental and social aspects during the construction phase and provides for any necessary update of the CESMP or any corrective actions, if required
- Coordinates environmental and social mitigation and monitoring activities in collaboration with the Site HSE Officer during the construction works and ensures appropriate documentation of monitoring results
- Coordinates with community representatives (concerned municipalities, etc.)
- Conducts meetings, field visits, additional requested training, and provides guidance and supervision
- Participates in site meetings between HKBroS and CDR regarding environmental and social issues
- Ensures that the required environmental and social reporting is completed.

3.3.2.7 Occupational Health and Safety (OH&S) Expert

- Develops the OH&S system to include, a set of guidelines and documentation such as policies, procedures, workflows, forms, and templates to be used on site
- Provides training:
 - Induction and in-depth training for the HSE Officer
 - Induction training for all the site personnel involved in the project
- Provides guidance to the HSE Officer on the implementation of the OH&S system
- Provides support to the project team on OHS issues on a per need basis

3.3.2.8 Road Safety Expert

- Prepares road safety management plans.
- Prepares work zone safety plans and traffic diversion plans.
- Provides training:
 - Induction and in-depth training for the Road Safety Officer
 - Induction training for all the site personnel involved in the project
- Conducts accident data analyses.
- Provides guidance for the Road Safety Officer on the implementation of the road safety management plans
- Provides support to the project team on road safety issues on a per need basis

3.3.2.9 HSE officers

- Ensures implementation of all environmental, social, health and safety measures related to the nature of works being carried out, and in accordance with the CESMP.
- Ensures that all the persons involved in the works are aware of their responsibilities, and that they have enough understanding of the Environmental, Social, Health and Safety (ESHS) procedures.
- In coordination with the Project Manager, ensures that all the implemented safety measures are effective enough to maintain safe working on site.
- Ensures that all workers receive the required PPEs and enforce their use.
- Assigns and trains personnel on each site to act as safety supervisors and coordinates with them on a daily basis to ensure the implementation of the CESMP.
- Maintains continuous inspections of the site activities, advises and trains persons on a daily basis to prevent accidents and personnel injury.
- Gives special attention to housekeeping and ensures that the site is maintained clean and tidy.
- Ensures that all the relevant safety sign boards for different works are in place.

3.3.2.10 Road Safety Officer

- Ensures that all measures defined in the safety road plans are implemented.
- Coordinates with the site engineers and foremen on the safety conditions of the project site.
- Coordinates with the local authorities on the various components of the safety plans.
- Coordinates with the municipalities police on the traffic diversion plans.
- Monitors and supervises the application of the safety plans by all the components of the project.

3.3.2.11 Subcontractor

The 'Subcontractor' is any company hired directly or indirectly by HKBros to carry out project related tasks including the construction works.

All Subcontractors that have at least one interface activity with identified key environmental and social aspects are responsible to comply with the requirements of this plan. The Subcontractors are called to demonstrate a proactive behaviour towards ESHS concerns. It is their responsibility to provide information requested by HKBros regarding their scope of activities and to demonstrate compliance with the applicable ESHS requirements and particularities.

3.4 Communication and Reporting

3.4.1 Internal Communication and Reporting

HKBros will keep all relevant parties informed on pertinent ESHS matters during construction activities. Communication will typically be through informal means, formal progress meetings and documentation (Form F-001 in Section 5.1). ESHS issues will form part of the progress meeting agenda, where such meetings are instituted.

HKBros will ensure that suitable and relevant information relating to ESHS at the workplace is disseminated to all staff in the form of induction and refresher training, access to safety legislation and information, and safety meetings.

During the construction phase, regular monitoring results will be documented in order to track and analyse the frequency of potential impacts and accidents that might occur.

HKBros will submit the Contractor's Environmental and Social Compliance Reports with the Environmental and Social requirements as listed in the ESMP to the Supervision Consultant (SU YAPI/ KREDO) on monthly basis. It will cover the following:

- Implementation of Environmental & Social Mitigation Measures On-Site
- Environmental, Social & Occupational Problems/ Incidents/ Accidents encountered and measures taken
- Field Measurements Conducted Onsite
- Environmental, Social & Workers' Health and Safety Training/ Awareness
- Community Grievance Redress Mechanism
- Pictures related to Environmental & Social Management Compliance
 - Including geo-tagged and dated photos to demonstrate compliance/ non-compliance, corrective actions, good practice

After documenting, the supervision consultant will submit the reports to the Project Management Unit (PMU) at the CDR on monthly basis. In addition, there will be immediate reporting of severe incidents (such as fatal accidents) (Refer to Section 3.6.3).

3.4.2 Coordination with External Public Entities

The Project Coordinator will coordinate all administrative and technical issues with external public entities, mainly to get the required permits and coordinate construction activities together with the project manager. The trained HSE and road safety officers on site will communicate directly with the concerned municipalities throughout project implementation, with direct guidance from the environmental and social specialist.

3.5 Training and Awareness

HKBros acknowledges that training of personnel is a contractual requirement. HKBros will ensure that all employees and workers will receive the necessary training to perform their tasks in the safest manner. The purpose of training is to show and create an understanding of the ESHS management system.

3.5.1 Induction

Prior to the commencement of construction activities, the Environmental and Social Specialist will hold a full training session for the staff listed with specific responsibilities, all other senior staff with authority to implement impact mitigation commitments, as well as the workers on-site (construction, drivers, logistics, etc.). Two separate sessions will be held, one for the senior staff and one for the workers, to ensure the training is adequately tailored to all target groups.

The training session will cover:

- environmental and social protection approach;
- responsibilities for CESMP implementation;
- committed environmental and social impact mitigation;
- environmental and social monitoring programs; and
- all environmental procedures including impact mitigation auditing, environmental monitoring, incident reporting and corrective actions;
- Grievance Redress Mechanism (GRM);

- Codes of Conduct;
- OH&S topics including:
 - General hazards present at the work sites and measures adopted to respond to them
 - Personal Protective Equipment (PPE)
 - Emergency procedures
 - Fire protection and prevention provided by certified trainers
 - First aid provided by certified trainers
 - Electrical safety
 - Equipment's operation and safety precautions
 - Handling and storage of hazardous material/ chemicals
 - Lifting heavy objects
 - Trenching and excavation safety
 - Safe use of ladders
 - Working in confined spaces
 - Slips, trips, and falls protection/prevention, etc.
 - Incidents Management Procedure

Subsequent training sessions (Refresher Trainings) for the general level environmental, social, and health and safety commitments will be held regularly to maintain awareness and also train any new staff. Environmental, social, and health and safety commitments will be included as part of the Induction Training programme for all new staff.

All trainings will be documented for the duration of each and will include the date, topic, attendees, recommendations, and additional comments (Form F-002 in Section 5.2). Records of trainings will be maintained by the HSE Officer and reviewed periodically.

The HSE Officer will ensure that all visitors to the site are made aware of the HSE Standards HKBro is implementing for the protection of the public and HKBro personnel on site. Visitors to the site will be provided with PPE before entering the site.

3.5.2 Toolbox Talks

Daily toolbox talks shall be held for work groups by the HSE Officer, / and or the relevant supervisors. The meetings should:

- Review any safety or process safety issues occurring since the last meeting;
- Review new relevant hazards and incidents;
- Cover specific OHS issues of interest; and
- Plan, communicate, and delegate the day's work.

Weekly toolbox talks will be conducted by the environmental and social expert and/or the HSE officer targeting specific environmental and social topics such as dust emission control, solid waste management, oil spill response, GRM, GBV, code of conduct, etc.

Ad-hoc on-the-spot Toolbox Talks will also be conducted by the environmental and social expert and/or the HSE officer as the need arises, following incidences or issues of non-compliance observed during regular site inspections and audits.

3.6 Emergency Response and Incident Reporting

3.6.1 Emergency Response Procedures

3.6.1.1 Purpose

To detail the basic steps needed to prepare for emergencies in the workplace. Emergencies can be identified as Medical, Fire, Chemical Spills, etc. The highest priority of this procedure is the safety and health of all personnel at or near the site.

3.6.1.2 Evacuation Procedures

- Any individual discovering a situation which presents a real or potential threat to the safety and health of personnel within the site shall immediately notify the Health, Safety and Environmental (HSE) Officer or any high authority individual (Project Manager, Site engineer, Experts...).
- In the event of an EMERGENCY and required EVACUATION, a warning [Horn/Verbal Alert] will sound.
- When the warning sign is heard, all personnel will immediately discontinue activities and proceed to the nearest exit. All personnel shall not linger, or attempt to collect personal items before vacating the site. Once outside of the site, all personnel shall go directly to designated assembly points and report to the Health, Safety and Environmental (HSE) Officer. The assembly points depend on the area being evacuated:
 - For the site offices: The assembly point will be designated outside the offices in a fixed place outside the boundary of the office building, where a visible assembly sign will be placed.
 - For the open sites: The assembly point will be changed upon the progress of the works and it will be assessed each 2 weeks or as needed by the HSE Officer and the Site Engineer to ensure the proper designation of this point. A visible assembly sign will be placed and its location will be continuously informed to all personnel on a weekly basis.
- The HSE Officer will determine that all personnel are accounted for and have evacuated the site. He will also be prepared to brief arriving fire and rescue services on the problem; accountability of personnel; or if personnel are not accounted for, their possible location.
- All personnel will remain at the assembly point until they receive further instructions from upper management and Fire/Emergency Rescue Personnel.

An emergency evacuation plan for the site offices and yard is illustrated in Figure 2-9.

3.6.1.3 Project Emergency Contact Numbers

The following is the emergency contact list. This contact list along with the associated numbers will be posted in Arabic at all project work sites and offices.

Figure 3-2. Emergency Contact List

Service	Name/ Details/ Address
Project Manager	ENG. EZZEDINE KERDI
Construction Manager	ENG. BASSEL KHOURY
Site Engineers	ENG. KARIM SHAMSEDDINE ENG. JAD ABI CHAKRA
HSE Officers	RAMI ABOU MALHAM ENG. CARINE MHANNA
Road Safety Officer	GHASSAN IBRAHIM
Site First Aid Givers	RAMI ABOU MALHAM MUSTAFA SHAAER NIZAR FAWAL HASSAN LOUAISS MOHAMAD HATOUM AHMAD GHANNAM ISMAIL HABBOUD JOMAA JOMAA
Hospitals	Lebanese French Hospital Elias Hrawi Medical Hospital Tel Chiha Hospital
Ambulance Service	LEBANESE RED CROSS EMERGENCY NUMBER
Nearest Fire Service	CIVIL DEFENSE EMERGENCY NUMBER CIVIL DEFENSE FIRE EMERGENCY NUMBER
Nearest Military Service	LEBANESE ARMY HOTLINE MILITARY OPERATIONS ROOM
Nearest Police Service	INTERNAL SECURITY SERVICES EMERGENCY NUMBER
Environmental and Social Expert	DR. RANIA MAROUN

3.6.1.4 Types of Emergencies

Response procedures for the types of emergencies listed below will be posted on all project sites in Arabic.

Medical Emergency

- Call medical emergency phone number (check applicable):
 - ☐ Paramedics
 - ☐ Ambulance
 - ☐ Fire Department
 - ☐ Other
- Provide the following information:
 - Nature of medical emergency,
 - Location of the emergency,
 - Your name and phone number from which you are calling.

- Do not move victim unless absolutely necessary.
- Call the personnel trained in CPR and First Aid to provide the required assistance prior to the arrival of the professional medical help.
- If personnel trained in First Aid are not available, as a minimum, attempt to provide the following assistance:
 1. Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).
 2. Clear the air passages using the Heimlich Maneuver in case of choking.
- In case of rendering assistance to personnel exposed to hazardous materials, consult the Material Safety Data Sheet (MSDS) and wear the appropriate personal protective equipment. Attempt first aid ONLY if trained and qualified.

Fire Emergency

When fire is discovered:

- Activate the nearest fire alarm (if installed)
- Notify the nearest Fire Service.
- If the fire alarm is not available, notify the site personnel about the fire emergency by voice, phone or any other mean.

Fight the fire ONLY if:

- The Fire Department has been notified.
- The fire is small and is not spreading to other areas.
- Escaping the area is possible by backing up to the nearest exit.
- The fire extinguisher is in working condition and personnel are trained to use it.

Upon being notified about the fire emergency, occupants must:

- Leave the site using the designated escape routes.
- Assemble in the designated assembly area.
- Remain in the area until the competent authority announces that it is safe to reenter.

Designated Health, Safety and Environmental (HSE) Officer must:

- Disconnect utilities and equipment unless doing so jeopardizes his/her safety.
- Coordinate an orderly evacuation of personnel.
- Perform an accurate head count of personnel reported to the designated area.
- Determine a rescue method to locate missing personnel.
- Provide the Fire Service personnel with the necessary information about the site.
- Ensure that all employees have evacuated the site.

How to extinguish small fires

- **Class-A** Extinguish ordinary combustibles by cooling the material below its ignition temperature and soaking the fibers to prevent re-ignition. Use pressurized water, foam or multipurpose dry chemical extinguishers.

- **Class-B** Extinguish flammable liquids, greases or gases by removing the oxygen, preventing the vapors from reaching the ignition source or inhibiting the chemical chain reaction. Foam, carbon dioxide, ordinary dry chemical, multi-purpose dry chemical and halon extinguishers may be used to fight Class B fires.
- **Class-C** Extinguish energized electrical equipment by using an extinguishing agent that is not capable of conducting electrical currents. Carbon dioxide, ordinary dry chemical, multi-purpose dry chemical and halon fire extinguishers may be used to fight Class C fires. DO NOT USE water extinguishers on equipment.
- **Class-D** Extinguish combustible metals such as magnesium, titanium, potassium and sodium with dry power extinguishing agents specially designated for the material involved. In most cases, they absorb the heat from the material, cooling it below its ignition temperature.
- Multi-purpose chemical extinguishers leave a residue that can harm sensitive equipment, such as computers and other electronic equipment. Carbon dioxide or halon extinguishers are preferred in these instances because they leave very little residue.

How to identify the proper Fire Extinguisher

- All ratings are shown on the extinguisher faceplate. Some extinguishers are marked with multiple ratings such as AB, BC and ABC. These Extinguishers are capable of putting out more than one class of fire

How to use a portable Fire Extinguisher

P	Pull the pin.
A	Aim Extinguisher nozzle at the base of the flames.
S	Squeeze trigger while holding the extinguisher upright.
S	Sweep the extinguisher from side to side, covering the area of the fire with extinguishing agent.

What to do if someone catches on fire

If you should catch on fire:

STOP - where you are

DROP - to the floor

ROLL - around on the floor.

This will smother the flames, possibly saving your life. Just remember to

STOP DROP and ROLL.

If a co-worker catches on fire, smother the flames by grabbing a blanket or rug and wrapping them up in it. That could save them from serious burns or even death.

Hazardous Material Spill or Release

When a Large Chemical Spill has occurred:

- Immediately notify the designated Health, Safety and Environmental (HSE) Officer.
- Contain the spill with available spill kit material (e.g., pads, booms, absorbent powder, etc.).
- Secure the area and alert other site personnel.
- Do not attempt to clean the spill unless trained to do so.
- Attend to injured personnel and call the medical emergency number, if required.
- The materials used for cleaning the spill should be rejected as Hazardous Waste.
- Evacuate the site as necessary

When a Small Chemical Spill has occurred:

- Notify the Health, Safety and Environmental (HSE) Officer and/or supervisor
- If toxic fumes are present, secure the area (with caution tapes or cones) to prevent other personnel from entering.
- Deal with the spill in accordance with the instructions described in the MSDS.
- Small spills must be handled in a safe manner, while wearing the proper PPE.

3.6.2 Contamination and Remediation

To minimize the risk associated with leakage and spills of fuel/ oil and other hazardous materials on to the surrounding environment, HKBroS will implement the following measures:

- A fuel/oil spill clean-up kit will be kept at all main fuel storage facilities within the rented yard and protected area to facilitate any clean up in the event of a spill. This kit must include the following list of fuel/oil spill clean-up equipment:
 - Hand operated fuel pumps;
 - Recovery containers such as empty drums;
 - Long-handled shovels;
 - Impervious soil (silt or clay bearing gravel);
 - Low-density rope;
 - Absorbent pads;
- If a fuel spill occurs the flow must be stopped immediately if possible. This may entail repairing a leak, pumping out a tank or shutting off a valve. If necessary, culverts may be blocked off by earth or wooden barriers to contain fuel, provided the threat of flooding is addressed.
- Any fuel spill at any storage site and in excess of 70 litres must be reported immediately to the supervision consultant who will report to CDR.

For chemical spills:

- A hazmat spill clean-up kit will be kept at all chemical storage facilities within the rented yard and the protected area, along with the MSDS's of the stored chemicals, to facilitate any clean up in the event of a spill. This kit must include the following list of spill clean-up equipment:
 - Recovery containers such as empty drums;

- PPE (Nitrile Gloves/ Vinyl Apron/ Vinyl Sleeves/ Safety Goggles/ Socks)
- Emergency Response Guidebook
- Poly Bag
- Absorbent Pads
- Plastic Pail
- If a chemical spill occurs the flow must be stopped immediately if possible. The MSDS of the spilt material will be consulted by the HSE officer who will manage the clean-up of the chemical accordingly.
- Any chemical spill at any storage site and in excess of 20 litres must be reported immediately to the supervision consultant who will report to CDR.

3.6.3 Incident Reporting

All serious incidents including near misses will be reported, investigated, and documented immediately. The report (F-003 in Section 5.3) will include all pertinent information including copies of gathered documents. The report shall be completed and reviewed by the E&S and HSE Officer no later than 24 hours after the occurrence of the incident and will be submitted to the Consultant E&S expert, who in turn submits to CDR, within 48 hours from incident occurrence. The report contains the following sections:

- Description of the incident (type, details....)
- Information collection (photos, witnesses' reports...)
- Details of the harmed person if existing
- Root cause analysis
- Investigation Outcomes (immediate cause, secondary cause, corrective and preventive actions...)

A log of all incidents will also be compiled (Form F-004 in Section 5.4).

A log of near misses will be compiled (Form F-017 in Section 5.14).

3.7 Social Aspects and Procedures

3.7.1 Grievance Redress Mechanism (GRM) for Local Communities

The project GRM for local communities will be accessible to all communities, business and institutions which may be affected by the construction works, and all complaints, comments, suggestions, and objections will be recorded, registered, communicated, and followed up on.

The GRM will be properly publicized. HKBroS will display clear notices at affected municipalities, at contractors' and consultants' offices, and at the construction site on project-installed fixed and movable sign boards, which display the GRM channels and procedure, keeping in mind accessibility to all potentially affected parties. The public note will include the CDR GRM email address and the CDR GRM telephone number. It also includes the mobile phone number of the contractor Project Manager and the consultant Supervision Engineer (Annex E).

If any person has any complaint, concern or suggestion regarding the project implementation (e.g., noise, dust, hindrance of access, etc.), they can follow the procedures below:

1. The affected person should file their grievance orally or in writing, to the Contractor's Site Supervisor/ Site Engineer/ Manager.

2. The grievance note should be signed and dated by the aggrieved person, or by the receiving person in case the aggrieved person is illiterate or cannot write.
3. The above issue shall be resolved within the **maximum of one week**.
4. If the aggrieved person does not receive a response within the specified period or is dissatisfied with the outcome, they lodge their grievance to the Project Management Unit (PMU) at the CDR (CDR's phone number: 01-980096; extension number to be provided once the project execution starts), and a response should be given within a **period of two weeks**.

- HKBros will govern the GRM by an internal committee, consisting of the Project Manager, the Site Manager, the Social and Environmental Expert.
- Any grievance received shall be immediately documented in the grievance register (Form F-005) and logged in the grievance log (Form F-006) by the HSE Officer.
- The HSE officer shall ensure the communication of the grievance to the project manager and the social/ and or environmental expert depending on the nature of the grievance. Every grievance will be considered and investigated in a timely manner (**maximum of one week**).
- Resolution options will be developed taking into consideration stakeholders' preferences, project policy, experience, current issues, and potential outcomes.
- The HSE officer shall clearly communicate the response to the grievance with the complainant and the action taken.
- The GRM committee will meet periodically to ensure all grievances are closed and actions are tracked.
- An audit of the GRM will be done as part of the ESHS audit by HKBros, to ensure the proper implementation and documentation of the GRM.
- HKBros will report the summary of complaints received and resolved to the Supervision Engineer on a monthly basis except for urgent cases. The report will inform also the Supervision Engineer of complaints that could not be resolved by HKBros and are being elevated to level 2 according to the project GRM.

3.7.2 Gender-based Violence (GBV) and Child Abuse/Exploitation (CAE)

HKBros has a zero-tolerance policy to Gender-based Violence (GBV) and Child Abuse/Exploitation (CAE). All workers, contractors, sub-contractors and service providers will sign the Code of Conduct (Annex D), which will be explained to them as part of the environmental and social management training before commencing to work. The project manager will respond to the reported incidents of sexual abuse exploitation as a matter of priority. Together with the social expert, the project manager will maintain confidentiality, ensure safety of the survivor, and apply survivor-centred principles which are safety, confidentiality, respect, and non-discrimination.

3.7.3 Grievance Redress Mechanism (GRM) for Workers

A worker GRM is put in place to ensure all employees are afforded both the rights and the means whereby grievances can be formally raised, logged and resolved. The GRM allows employees to formally discuss and resolve any complaint that they may have and to provide a channel for the equitable settlement of complaints and grievances. Grievances refer to individual or group work-

related problems, concerns or complaints that may arise in the nature of the work relationship with a co-employee or manager. A grievance can be about any act, behaviour or decision that has or is likely to have an unreasonable negative impact on the ability of a staff member to undertake their duties. A grievance can relate to almost any aspect of employment, for example:

- Workplace discrimination;
- Safety in the workplace;
- Staff development or training;
- Leave allocation;
- Performance appraisal;
- Discrimination;
- Abusive language; and
- Sexual harassment.

The GRM will:

- Ensure that grievances are expressed openly and transparently, and could be discussed anonymously;
- Ensure that there will be no retaliation or discrimination against those who express grievances and that any grievances will be treated and resolved confidentially;
- Result in grievances being settled as close to the point of origin and as quickly as possible;
- Ensure that vulnerable employees (such as ethnic or religious minorities, migrant workers, or employees with disabilities) should not be deterred from logging a grievance;
- Ensure fairness and equity; and
- Promote a harmonious working environment.

If the affected employee feels prejudiced or considers that his/ her rights were not preserved, they can follow the procedures below:

Stage 1

The worker must raise the grievance verbally with the direct supervisor. The direct supervisor will, to the best of his / her ability:

- Listen to the worker in private; without any other parties present including HR;
 - Encourage the worker to express the grievance freely and openly; and
 - Obtain all relevant facts about the grievance, distinguishing fact from opinion.
1. The direct supervisor will endeavour to resolve the grievance as quickly as possible and within **three (3) working days** (unless a longer time frame is justified) and keep record of the resolution, with the acknowledgement of receipt of resolution by the employee;
 2. If the direct supervisor's decision is not satisfactory to the employee, Level Two becomes effective and the immediate supervisor must advise the employee of the subsequent stages of the procedure and of the employee's right to seek the assistance of a representative; and
 3. Any employee making use of the grievance procedure may nominate a fellow worker to act as a representative during the meeting with Management in Stage Two.

Stage 2

1. With the assistance of a representative, if so required, the worker can formally raise the grievance with the next level of management above the immediate supervisor (Site Engineer), by completing a grievance register (F-005 in Section 5.5);
2. Acting as a chairperson, the designated Site Engineer concerned, in consultation with the worker relations representative, will endeavour to resolve the grievance within **three (3) working days** (unless a longer time frame is justified) by convening a meeting of all parties concerned;
3. The chairperson must communicate his / her decision to the worker by completing the grievance form and forward a copy to the worker; and
4. If the outcome of the grievance meeting is still not satisfactory to the worker, then he may appeal and refer the matter for final review to the next level of management, senior to the chairperson of the grievance meeting.

Stage 3

1. The worker must complete the previous grievance form and forward it to the designated Project Manager, senior to the one in Stage Two;
2. The designated Project Manager shall review and evaluate all facts and conclusions reached in all previous Levels (stages);
3. The designated Project Manager shall have the right to call for any additional facts or information he / she may require; and
4. The designated Project Manager shall make his decision **within three (3) working days** (unless a longer time frame is justified), from the date of receipt of the grievance.

Stage 4

1. The worker must complete the previous grievance form and forward it to the HR Manager.
2. The HR Manager shall review and evaluate all facts and conclusions reached in all previous Levels (stages).
3. The HR Manager shall have the right to call for any additional facts or information he / she may require.
4. The HR Manager shall make his / her decision within three (3) working days (unless a longer time frame is justified), from the date of receipt of the grievance.
5. His / her decision will be final in terms of this grievance procedure. They must be recorded on the grievance form and circulated to all concerned parties.

Where the grievance to be raised affects a group of workers, then the workers concerned may either:

- Nominate a delegation of not more than three (3) workers from amongst themselves to raise the matter with their respective immediate superior;
- Nominate a delegation of not more than three (3) workers from amongst themselves to consult their respective shop steward; and
- Once the workers concerned have nominated their delegation and/or consulted with their respective shop steward, the three (3) stages of the grievance procedure as detailed above shall be followed.

The maximum time allocated to resolve a complaint is twelve (12) days, unless a longer timeframe is justified. Additionally, a grievance complaint register (F-005) and a grievance complaint log (F-006) are provided in Section 5.5.

Note that the above is the GRM procedure that HKBros uses on-site for projects. For permanent staff in the main company offices, a similar GRM is used, but the complaints at Stage 2 go through the Human Resources Department and at Stage 3, they go to the General Manager.

3.8 ESHS Auditing and Site Monitoring

Continuous monitoring during construction and rehabilitation will be performed to ensure the effectiveness of the proposed mitigation measures. Through sound environmental management and implementation of a monitoring plan, the construction and rehabilitation of the sewage networks in the project area and the pumping stations will avoid incurring the major adverse impacts. The aims of the monitoring plan are:

- Verify the environmental, social, and health and safety impacts predicted in the ESMP study
- Determine project compliance with national and international requirements and standards
- Monitor the performance of the project and the effectiveness of mitigation measures
- Take remedial action if unexpected problems and unanticipated impacts arise.

3.8.1 Site Inspections and Monitoring

Visual observation and photographic documentation of the conducted works, impacts and mitigation measures will be conducted on a daily basis by the HSE officer, focusing on good housekeeping at the work areas, traffic congestion, accidents and injuries to workers, accidents and injuries to the public, activities generating air and noise pollution. Monitoring measures are detailed in Section 5. A non-compliance register will be filled (Form -009 in Section 5.6) upon the identification of non-compliances and immediate corrective action will be ensured.

A comprehensive database will be established for all monitoring activities (including type of activity monitored, date, number of samples, results, etc.). ESHS training sessions will also be monitored and tracked (dates, topics, attendees, etc.). All monitoring data will be submitted to the supervising consultant as part of monthly progress report as detailed in Section 3.4.

3.8.2 Weekly Audits

Weekly audits will be conducted by the HSE Officer / Environmental and social specialist. These include visual observations and photographic documentation of the conducted works, impacts and mitigation measures. Weekly checklists (Form F-008 in Section 5.7) will be completed, and incidence and grievance registers and environmental measurements will be reviewed. Weekly audits will focus on good housekeeping, availability of MSDS's, spills, pipe connections, wastewater discharges, ecological disturbances in surrounding areas, safety measures for all the hazards present at work sites, documentation completion, etc.

3.8.3 Ad Hoc Audits and Inspections

Ad Hoc audits and inspections will be conducted by the Environmental and Social specialist on a monthly basis (Forms F-009 and F-010 in Section 5.7) and in the case of incidences and lack of commitments. These audits will include a general visual observation of the site and will inspect the implementation of ESHS management system, the effectiveness of the workers' training, and will review all registers.

3.9 Steps to Address Non-Compliance

The below steps ensure that all non-compliances are identified and recorded, and that the appropriate corrective action is immediately taken to rectify all identified non-compliances, preventing their reoccurrence in the future.

3.9.1 Responsibility

All members of staff are responsible for notifying the HSE officer on site and / or the Environmental Consultant of any identified non-conformances.

The HSE officer on site is responsible for the completion of Non-compliance log form F-007 (Section 5.6) and for determining and implementing corrective action.

Once the corrective action has been completed the Environmental Consultant is to undertake a verification check to ensure that corrective action has been effective.

3.9.2 Procedure

1. All identified non-compliances are to be reported by the HSE officer on site to the E&S Specialist/ Consultant.
2. HSE officer is to record all identified non-compliances on a Non-compliance Register (Section 5.6).
3. The source or cause of the non-compliance is to be identified, allowing for the development of appropriate and effective corrective action.
4. Corrective action is to be documented, together with an agreed timeframe for implementation.
5. A review of the effectiveness of the corrective action will be undertaken by the E&S Specialist/ Consultant.
6. If the non-compliance persists after the implementation of corrective action alternative solutions are to be examined until the closure of the non-compliance can be successfully achieved.
7. On the successful closure of the non-conformance, the Non-compliance Report will be signed off by the E&S Specialist.
8. Reoccurring non-compliances, significant deviations from legislation, procedures or environmental policy or non-compliances that pose an environmental, social or OHS risk will be reported to senior management for further investigation and action, including warnings, probation, penalties, and potential termination as a final resort.

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS DURING CONSTRUCTION PHASE

The ESMP concluded that most of the negative impacts will occur during the construction phase. These impacts are mainly related to the disturbance of nearby residents by the construction activities along with some impacts on the surrounding environment such as deterioration of soil and water quality if the used chemicals and generated wastewater and solid waste were not managed properly. In addition to the negative impact on air quality that might arise as a result of construction activities. Most impacts were assessed to be of minor to moderate significance and high likelihood, but acceptable with a proper environmental and social management system in place. The impact of soil clearance, excavation, backfilling, and construction activities on soil and water resources was assessed to affect the most receptors. On the other hand, job opportunities will be created for the local community during the construction phase. It is worth mentioning that these impacts are short term in nature, may be adequately mitigated, and will diminish as soon as the project is completed. Table 4-1 summarizes the impacts during the construction phase.

Table 4-1: Summary of Impacts during Construction Phase

Activity / source of the impact	Receptors							
	Ambient air quality	Sound Quality	Ecology	Soil and Groundwater	Surface Water	Socio-Economy	Traffic	Occupational and Public H&S
General Construction Activities	2C							
Exhaust and dust emissions	2C							
Site Levelling, Excavation and Soil Compaction Activities	2C	3C	2A	2C		4B	3B	
Preparation of access roads in the valleys					3C			
Accidental Spills of Fuel and Oil and Chemicals			2A	3C	3C			
Inadequate storage of wastewater and solid wastes			2A	3C	3C			
Movement of vehicles to transport people and materials pipeline crossing through the different villages of the project							3B	
Job creation						6C		
Increased pressure on existing infrastructure						2A		
Injuries to the public and workers								3B
LEGEND <div> Consequences 1-Negligible 2-Minor 3-Moderate 4-Major 5-Catastrophic 6-Beneficial </div> <div> Likelihood A-Low B-Medium C-High </div> <div> Acceptability <div>Beneficial</div> <div>Negligible with minor mitigation</div> <div>Acceptable with EMS in place</div> <div>Unacceptable</div> </div>								

Sensitive receptors for the Zahle sewer network component include the housing units along the network route, commercial buildings, agricultural plots, Berdawni River, and Litani River. No significant or endangered floral species (i.e. herbal, wood or vegetative cover) were identified along the planned network route, which will be placed along the paved roads and in parallel to the Berdaouni and Litani River. A section of the network (about 8 km) will be installed in seasonal streams.

As for the pumping stations, no world heritage sites, biosphere reserves, protected areas or areas of high ecological value are located in the vicinity or in proximity of the sites. Most of the sites have no or low ecological value with respect to floral biodiversity except for two sites (PS-2 and PS-6) which have medium ecological value due to presence of native trees or a large number of trees. An area of special concern, the Qaraoun Lake classified as an Important Bird Area (IBA), is close to the sites, particularly PS-4, PS-5, and PS-6 (Figure 2-2). Yet, the Qaraoun Lake suffers from severe water pollution. Note that, with the exception of one pumping station, all others have already been constructed and require only electro-mechanical setup, which will have no to negligible impact on these receptors.

The following sections elaborate on the Environmental Mitigation and Monitoring Plans as approved in the ESMP. All requirements will be implemented by HKBros under direct guidance from the Environmental and Social Specialist and under the direct supervision of the Supervision Engineer. To ensure implementation of the plan during rehabilitation an HSE officer is appointed on site by HKBros at all times. The monitoring plan will be implemented in collaboration with the supervising consultant, CDR and local authorities. Annex K presents the Environmental Mitigation and Monitoring Plans in table format.

4.1 Air Quality Management Plan

4.1.1 Mitigation Measures

Air emissions such as gaseous pollutants, dust or Particulate Matter (PM) and Odor are commonly encountered during construction works and can be emitted to the environment as follows:

- Dust generated during construction activities, vehicle movement and machinery.
- Combustion emissions from vehicles and machinery used during construction activities.

The most effective means of reducing dust emissions from vehicles is by compaction of site roads and regular watering. Moreover, the speed limit for project vehicles and machinery within working areas shall not exceed 20 Km/h. when practical vehicles will be wheel-washed before departure from construction site.

All trucks transporting construction material to and from the site will be covered with canopies. Material from trucks will be unloaded at low heights.

Raw material stockpiles will be maintained at minimum heights and adequate slopes and shall be covered or sprayed with water on a regular basis if covering is not feasible.

Mixing of construction material will be done during low to no wind conditions and in enclosed or semi-enclosed areas where possible.

The exhaust emissions from heavy equipment's, vehicles and diesel generators will be minimized throughout reducing intensive operation of construction machineries and equipment and carrying out weekly inspection and maintenance. A Maintenance Plan and Schedule will be put in place for employed site machinery, vehicles, and power generators, along with maintenance records. Unnecessary idling of vehicles and equipment engines will be avoided. Monthly fuel consumption records will be maintained to keep track of consumption levels and identify overuse.

Finally, sensitive receptors will be informed of the scheduled construction works, ahead of time in conjunction with the concerned municipalities, especially for dust-generating activities.

4.1.2 Monitoring Measures

Dust and exhaust emissions from project site will be monitored by the HSE Officer on a daily basis and during activities that generate significant amounts of air emissions.

Monitoring will be conducted via visual observation and photographic documentation of the colour of fumes from equipment and generators at the stack level before they are put into operation, and on a daily basis at the stack level and at nearby sensitive receptors.

Records that will be monitored on a monthly basis include:

- Maintenance record of all machinery, vehicles, and generators on site
- Monthly fuel consumption records
- Reported workers' respiratory problems

4.2 Noise Management Plan

4.2.1 Mitigation Measures

Almost all of the activities during the construction phase will increase noise levels. These include equipment operation activities, vehicle engines, emission of exhaust, aerodynamic sources.

HKBros will ensure that no workers in the workplace will be exposed to noise levels higher than levels specified in the Table C-7. Whenever the workers are exposed to more than 90 dB as 8-hour time weighted average (TWA), hearing protectors shall be provided (ear plugs) and their use shall be enforced.

HKBros will also ensure that no noise is emitted outside the normal allowed working hours (7:00 am-6:00 pm) and that all machinery, vehicles and generators will be maintained on a weekly basis and on a per-need basis. In the case where it is absolutely necessary to conduct some activities outside the normal working hours, prior approval of the concerned municipality and CDR will be obtained.

HKBros will also ensure that unnecessary idling of machinery is avoided and that engines are switched off when not in use. Where possible, noisy equipment will be placed away from sensitive receptors, behind stockpiles to provide acoustic barriers. Speed limits of vehicles will be controlled (less than 20 Km/hr) on site and in the surrounding area.

HKBros will notify the residents of the plans and expected duration prior to initiating the works, in conjunction with concerned municipalities; and will remind of the grievance mechanism in place.

At the yard, HKBros will place the generator the farthest possible from residential buildings and will equip the generator with a noise muffler.

4.2.2 Monitoring Measures

Noise measurements will be conducted by the HSE Officer throughout the project area near sensitive receptors (schools, hospitals, etc.), daily during grading and excavation and weekly during concrete pouring and pipes laying, or upon receiving a complaint. Leq, Lmin and Lmax will be measured per location (average 10 min reading- 30 sec intervals and values will be compared to national and WHO standards (Table).

Records that will be monitored on a monthly basis include:

- Maintenance record of all machinery, vehicles, and generators on site
- Noise levels that are being monitored

4.3 Water and Soil Management Plan

Surface, ground water and soil quality may be at risk from several activities during network extension and rehabilitation, namely:

- (1) Site clearance, trenching, excavation, backfilling, grading, and compaction activities
- (2) Accidental spill of oils and chemicals from vehicles, machinery and generators (also addressed under Sections 3.6.1 Emergency Response Procedure and Contamination and Remediation)
- (3) Improper disposal of solid waste generated from workers and the used materials, construction waste from excavation and drilling activities (Refer to Solid Waste Management Plan in Section 4.4)
- (4) Improper disposal of wastewater from construction activities, hydro-testing, and from workers (Refer to Wastewater Management Plan in Section 4.5)

4.3.1 Mitigation Measures

To minimize the risk associated with surface, ground water, and soil pollution, HKBros shall:

- Ensure international standards (i.e. ASTM Soil Compaction Standards) are met during any excavation works, compaction and grading activities, in order to minimize expected disturbance
- Manage fixed routes for equipment movement and avoid multiple routes
- Re-use excavated/ cut materials as general fill where considered suitable
- Install temporary structures to prevent runoff from reaching nearby water bodies
- Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any water body
- Prevent run-off from cleared or disturbed areas into rivers, streams or surface water bodies by using sediment control methods, such as, silt fences, sandbags, hay bales, drop down structures, detention basins, diversion banks, gabions, etc. All erosion and sediment control structures will be regularly inspected and maintained, whereby the sieving shall be removed and disposed at a designated site;
- Place all spoil from water body crossings in the construction right- of-way at least three (3) meters from the water's edge, or in additional extra work areas.
- Carry out the pipelines and manholes installation of seasonal streams preferably in the dry season;
- Avoid working in rainy weather
- Prohibit littering
- Prohibit the discharge of wastewater into nearby water bodies under any condition.

Spill Prevention and Control

To minimize the risk associated with leakage and spills of hazardous materials on to the surrounding environment, HKBros will implement the following measures:

- Carry out regular maintenance of vehicles and machinery offsite. Prohibit maintenance of machinery onsite unless absolutely necessary, and under the supervision of the HSE Officer.
- Carry out all re-fuelling in designated areas with impervious surfaces and guarantee no fuel spills.
- Install a spill collection tray under generators and specific equipment requiring refuelling.
- Store all chemicals in dedicated areas on a paved or sealed floor and in tightly closed containers protected from adverse weather conditions

- Store used oil or chemical in an appropriate area until it is collected and disposed in licensed sites (refer to section 4.4.1)
- Minimize the use of chemicals
- Minimize soil exposure time
- Use secondary containment basins for long term storage of lubricants and fuels (refer to section 4.4.1)
- Abide by a Spill Response Plan (Refer to Section 3.6.1.4)
- A fuel/ oil spill clean-up kit will be kept at all main fuel storage facilities within the protected area to facilitate any clean up in the event of a spill. This kit must include absorbent pads.
- If a fuel spill occurs the flow must be stopped immediately if possible. This may entail repairing a leak, pumping out a tank or shutting off a valve. If necessary, culverts may be blocked off by earth or wooden barriers to contain fuel, provided the threat of flooding is addressed.
- Any fuel spill at any storage site and in excess of 70 litres must be reported immediately to CDR.
- Ensure that the oil spill response plan is present at the construction site and that oil spill response kits are available
- Train all workers to implement this plan in case of accidental spillage

4.3.2 Monitoring Measures

HKBros will visually check the following on a weekly basis:

- Effluent from construction activities (Concrete mixing, dust minimizing, washing of equipment...) is not discharged into nearby water bodies or open areas
- Storage conditions of chemicals, oils and fuel
- Preparedness for chemicals, oils and fuel spill incidents
- Chemicals, oils and fuel spill incident logs
- Implementation of spill response plan in the case of an incidence
- Collection and disposal of oil and chemical containers and other related solid wastes

4.4 Solid Waste Management Plan

4.4.1 Mitigation Measures

4.4.1.1 Waste Definition and Classification

For the purposes of this CESMP, waste is defined as any substance or object that is discarded, intended to be discarded, or required to be discarded and as such is subject to a number of regulatory requirements. Even if material is sent for recycling or undergoes treatment in-house, it can still be waste.

Wastes generated during construction activities are classified into three main categories as follows:

- A. **Inert Waste** – wastes that are not biologically or chemically active in the natural environment, such as glass, concrete, brick materials, broken clay and manufactured rubber products.
- B. **Domestic or Municipal Waste** – refuse, food waste, office waste, waste vegetation and other decomposable material resulting from the labour camp and offices.
- C. **Hazardous Waste** – any solid, semi-solid, liquid, or contained gaseous waste, or combination of such wastes, which may, because of its quantity, concentration, physical or chemical characteristics pose a hazard or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of.

4.4.1.2 Prohibited Waste Disposal Practices

During construction activities, it is prohibited to discharge the following substances to any water body, channel or drain.

- Pesticides and herbicides;
- Oil and / or solvent waste;
- Radioactive waste;
- Any waste material subject to the conditions of the Hazardous Materials Management according to the Lebanese legislations.

It is also prohibited to casually dispose of any solid or liquid waste by burying or dumping on land or into water courses.

4.4.1.3 Safe segregation and storage of waste

- All the waste materials generated at work sites and offices will be segregated into domestic (organic/ paper and cardboard/ metals, glass and plastics) and hazardous waste and disposed into the color-coded containers, provided in dedicated locations.
- Inert waste (construction) will be segregated into bulky aggregates and fine aggregates and stored separately at designated areas.
- HKBroS will provide 2 separate heavy-duty plastic 'Refuse Containers' with tight fitting lids at construction site for disposal of all domestic waste (garbage or trash), one for the disposal of organic waste and one for recyclables (paper, cardboard, aluminium, glass and plastics). Containers will be color-coded and clearly labelled. Containers shall not have openings that allow access of rodents.
- The domestic waste containers will be kept upright with their lids shut tightly. The organic waste containers will be emptied 2 to 3 times per week by the municipality to maintain construction site sanitation.
- The recyclable waste containers will be emptied by HKBroS on a per need basis.
- To keep the area free of litter and garbage and prevent random disposal of waste, specific locations will be designated for consuming food and snacks. Suitable notices will be deployed prominently to be in strict compliance with these requirements.
- Workers will be trained on waste reduction and waste segregation procedures
- Domestic waste containers will be cleaned on a bi-monthly basis.
- Storage areas will be kept clean and materials neatly stacked.
- Waste disposal records and receipts from waste collector (where applicable) shall be collected and maintained for inspection and audit purpose.
- The work zone will be cleaned on a daily basis. Construction leftovers that are external to the working zone will be removed regularly. Site housekeeping will be maintained.
- Construction waste remaining overnight will be stored on site. The waste will be protected in a manner to avoid any spillovers.
- Construction waste will be collected by HKBroS from the site to the designated disposal sites approved by the concerned municipalities as detailed below. Construction waste will be collected on a daily basis.
- Part of the excavation waste will be reused in backfilling; and the rest (if any) will be disposed of in an adopted/authorized construction and demolition waste dump, as detailed below.
- Material stockpile side slopes will not exceed 2:1 and will be well covered and contained.

4.4.1.4 Waste Disposal

- Domestic / Municipal Waste generated during works on the sewer networks will be disposed of at the Zahle Solid Waste Facility as indicated by the concerned municipalities of Zahle, Ferzol, Saadnayel, Qaa El Rim, and Hazzerta.
- Domestic / Municipal Waste generated during works on the pumping stations will be disposed of at sites designated by the municipalities of Qaraoun and Baaloul.
- Segregated recyclables will be sent separately by HKBros to the Zahleh Solid Waste Facility.
- Similarly, construction waste will be disposed of at the concerned municipalities' construction waste disposal sites, depending on the locations of the works. Letters were sent to all municipalities, informing them about the upcoming initiation of the works and asking them to designate sites for disposal of construction waste, as presented in Annex F.
- Approval letters obtained from the concerned municipalities for domestic and construction waste disposal will be presented in Annex F.

4.4.1.5 Hazardous Materials Management

To ensure the risks associated with the use of hazardous substances are minimized, no hazardous substance will be brought on site without prior approval from the Supervision Engineer, SU YAPI/KREDO. Its subsequent use will be subject to appropriate controls to ensure personnel knowhow to use the substance safely and only use the substance with the correct PPE.

It is mandatory that before any substance likely to affect the health or safety of persons is brought to the site, a Material Safety Data Sheet (MSDS) shall be provided prior to the product arrival and a copy maintained at the following locations:

- HSE department;
- At the place of storage of the hazardous substance

4.4.1.6 List of Chemicals Used

Several types of chemicals will be used for the maintenance of construction vehicles, including antifreeze, batteries, grease, hydraulic oil, other oils, etc. In addition, construction chemicals will be used, including bitumen, bitumen coating, cement, and curing compounds. Annex G presents a list of chemicals used.

4.4.1.7 Control Measures of Using Hazardous Materials

- Maintenance of machinery is prohibited on-site unless necessary.
- Workers dealing with hazardous substances/chemicals will be instructed on the risks associated with their use and the importance of suitable personal protective equipment.
- MSDS will be kept on site for each hazardous substance. MSDS will be easily accessible to all workers at construction site. Directions for use of hazardous substances/chemicals will be available from the manufacturer (MSDS) in the local language.
- If a chemical/hazardous substance is poured from the original container into a new one, the new container will be labelled properly.
- Smoking, drinking or eating is not allowed in the area where work with hazardous materials is carried out.

- Any waste oil and/or hazardous substances must be collected and contained in a secured area prior to offsite disposal or recycling. The collection area will be sized to store sufficient containers such that off-site transport and disposal is efficient.
- Any hazardous substances will be stored and handled in accordance with the manufacturer's instructions (MSDS) and local legislation.
- Any spill of hazardous substances will be contained and removed immediately.
- If a significant spill occurs, the authorities will be notified. Any required clean-up will be started promptly as required by the relevant manufacturer instructions (MSDS) and the emergency response plan.
- Personnel working with hazardous substances will always use suitable protective equipment.
- All spent chemical and oil containers shall be returned to the supplier when possible.
- Spill kits will be available in all areas that chemicals will be stored. Suitable spill absorbing materials will be readily available on the project site

4.4.2 Monitoring Measures

- Daily visual inspection of good housekeeping practices will be conducted by the HSE Officer.
- Weekly visual inspection of the frequency of removal of all types of waste including recyclables
- Weekly visual inspection by the Environmental and Social Specialist will ensure that good housekeeping practice is established and maintained at the construction sites.
- Weekly inspection of waste management log form which includes all types of waste: generation rates, disposal sites, waste reused (Refer to SWM log form F-011 in Section 5.8)

4.5 Wastewater Management Plan

4.5.1 Mitigation Measures

To minimize the risk associated with domestic wastewater generation by workers on site HKBros shall:

- Prohibit the discharge of wastewater into nearby water bodies under any condition
- Restrict vehicle washing to contained maintenance areas offsite, with impermeable concrete pavement and proper drainage.
- Ensure that the quality of the hydro-test water is compliant with decision 8/1 for the discharge of wastewater into sewage network or surface water bodies
- Wash tail pipe of concrete mixer on-site on impervious surface before leaving
- Wash the concrete mixer off-site at the concrete batching plant.

4.5.2 Monitoring Measures

HKBros will visually check the following on a weekly basis:

- Check for leakages in the connections between the porta cabin toilets and the polyethylene tank.
- Check the discharge endpoint of the pumped wastewater from the polyethylene tank.
- Weekly inspection of wastewater management log form which includes wastewater generation rates and disposal sites (Refer to WWM log form F-012 in Section 5.9)

4.6 Biodiversity Management Plan

4.6.1 Mitigation Measures

Given that sewer network-related activities will be implemented in their entirety within the existing roads right of way in residential areas and that the pumping stations have already been constructed, no site clearance will be required. Hence, the main construction activities having negative results on biodiversity are generation and inadequate disposal of domestic and construction waste material and wastewater effluent discharges.

HKBros will implement the following measures to protect the ecology and wildlife in the construction work areas:

- Avoid construction works at the Qaraoun pumping stations during the peak Spring bird migration season (March to mid-May) and the Fall bird migration one (September and October), as the Qaraoun Lake is designated as an IBA.
- Waste will be stored within appropriate containers, lidded where necessary, to prevent attracting vermin and dangerous wildlife which may pose a threat to the workforce and local communities. Waste disposal into nearby areas will be prohibited.
- Proper disposal of domestic and construction waste at designated sites.
- Suppress dust by sprinkling water during construction.
- Enclose all fine earth materials during transportation to and from the site to prevent spillage and dust emissions.
- Prompt transportation of construction material to prevent them from being washed away during rainfall or carried by wind.
- If no nearby rest area with toilet is available, install mobile porta-cabins and connect to the nearest existing manhole connected to the sewage network or discharge the generated wastewater from workers to a storage 1000 L polyethylene tank. The tank will be emptied in a nearby operating WWTP by municipality-owned or contracted wastewater tankers, as per approval letters to be obtained from the concerned municipalities or the Bekaa Water Establishment in due course.
- Provide signage to indicate prohibited activities (i.e., hunting, collecting, and trapping of animals and bird).
- As part of their staff induction and environmental awareness programme, HKBros will highlight to workers the requirement to protect wildlife and habitats from unnecessary construction damage, hunting and general disturbance.

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 Consumption Management Plan

4.7.1 Mitigation Measures

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

- Regular site inspection to detect water leakages
- Whenever possible, use dry-cleaning instead of wet cleaning

- Use equipment with higher fuel efficiency when possible
- Adopt a periodic inspection and maintenance schedule for power generators and equipment engines, as per manufacturer specifications, and maintain maintenance logs
- Light in the site offices turned off during the night
- Machinery and equipment must be turned off when not in use or kept on idle mode when necessary.
- Maintain a log of fuel and energy consumption records to keep track of consumption levels and identify overuse

4.7.2 Monitoring Measures

Monthly inspection of:

- Log of the quantities and types of the used fuel and oils (fuel and oils purchase bills)
- Electricity bills
- Water purchase bills

4.8 Archaeology and Cultural Resources Management Plan

4.8.1 Mitigation Measures

According to the ESMP, archaeological remains are identified in the Qaraoun village where five (5) of the pumping stations are located. Hence, where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in an area not previously known for its archaeological interest, a “Chance-Find Procedure” will be applied in accordance with the Lebanese regulations (Decree 3057/ 2016) and the World Bank Guidance – OP 4.11. HKBroS will take the following actions:

- Stop construction activities.
- Delineate the discovered site area.
- Notify the responsible foreman/archaeologist who in turn should notify the Directorate General of Antiquities (DGA) (within less than 24 hours).
- Secure the site to prevent any damage or loss of removable objects.
- In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over
- Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out.
- An evaluation of the finding will be performed by the DGA.
- Decision on how to handle the finding will be reached based on the above assessment and could include changes in the project layout (in case of finding an irrevocable remain of cultural or archaeological importance), salvage excavations, in situ conservation, preservation or restoration.
- Implementation of the authority’s decision concerning the management of the finding.
- Construction works can resume only when permission is given from the DGA after the decision concerning the safeguard of the heritage is fully executed

In case of archaeological finds, HKBroS will refer to the Conditions of Contract (General Conditions of Contract (FIDIC); and CDR Safety, Health, and Environmental Regulations). These include the following:

- In case of delay incurred in direct relation to archaeological findings not stipulated in the contract (and affecting the overall schedule of works), the contractor may apply for an extension of time. However, the contractor will not be entitled for any kind of compensation or claim other than what is directly related to the execution of the archaeological findings works and protections.

- The duration of any actions needed in case of Chance Finding cannot be determined ahead of time. As for the estimated price, it varies according to the needed manpower / time frame for the needed procedures, and can only be determined in accordance with the needed works.

4.8.2 Monitoring Measures

Continuous supervision during excavation drilling with photographic documentation of the presence of any artefacts of archaeological significance.

Supervision of the implementation of chance find procedures.

4.9 Social Management Plan

4.9.1 Mitigation Measures

4.9.1.1 Job creation, social tensions and discrimination against foreign (non-Lebanese) workers

During the construction phase, no labour influx into the area is expected. However, social tensions may arise toward the project contractors, and discrimination and maltreatment from the local community and local workers against foreign workers are possible as a result of perception that foreign workers are being offered a major proportion of the jobs created by the project. To mitigate such nuisance, HKBros and sub-contractors will:

- Provide equal employment opportunities to all qualified candidates regardless of color, citizenship status (when applicable), race, religion, gender, and marital status through clear selection criteria
- Communicate clearly related commitments and the code of conduct to the local community
- Raise awareness of workers about the internal GRM for reporting problems and complaints
- Raise awareness of Lebanese citizens about the external GRM in case they face problems with workers, or if they have any complaints

4.9.1.2 Child labor

HKBros prohibits any engagement of children who are under the legal age of 18 years as workers on the site in construction works and recognizes the site as a hazardous environment to children. To safeguard against the hiring of children, HKBros and all sub-contractors shall commit to:

- Ensure daily registrations of workers and verification of their age to prevent child labour, and
- Strictly abide by the National Labour Law through the CDR tender documents which explicitly prohibit child labour.

4.9.1.3 Gender-based violence (GBV), child abuse, sexual abuse, harassment and exploitation

- Ensure that all workers understand and sign the code of conduct written in their native language.
- Mandatory training on sexual abuse and exploitation/ harassment, and Gender-Based Violence, and internal and external GRM that includes an anonymous channel for protection of complainants' identity and confidentiality.
- Availability of a GRM with multiple channels to initiate a GBV complaint, which ensures confidential reporting with safe and ethical documenting of GBV cases, including Sexual Violence Against Children (VAC), Exploitation and Abuse (SEA), and Sexual Harassment (SH)
- Respond to the reported incidents of sexual exploitation and abuse as a matter of priority.

- e. Ensure that all allegations are investigated, and if these allegations are proven, strict disciplinary measures are promptly taken.

4.9.1.4 Traffic disruptions

Works are likely to cause a temporary disruption to the local community's access to services as a result of temporary road closures or diversions. To mitigate this, HKBros will:

- a. Secure alternative routes to relevant destinations for all temporary road closures
- b. Inform the local community about the location of detours, road blockages or diversions through public announcements and proper diversion signage
- c. Coordinate with the municipal and local police, and
- d. Ensure access to external GRM through clear signage around the sites.

HKBros will make all efforts to minimize potential for road congestions and increased traffic accidents due to the transportation of construction materials or materials falling on the road, by committing to:

- a. Inform residents and place signs near the working areas.
- b. Place a flagman near the working area to warn the passing cars and ensure the traffic is not blocked.
- c. Ensure traffic is not blocked during transportation of materials.
- d. Operate well maintained vehicles.
- e. Label construction vehicles so the community knows the contractor in case they have any complaint.
- f. Cover transported material.
- g. Abide by traffic regulations.
- h. Ensure communities have access to external GRM on sign boards and at municipalities.

4.9.1.5 Impact on existing infrastructure

The network pipelines will be installed along the roads and connected to existing wastewater networks. Potential damage might take place to underlying water supply pipelines, electricity power cables, and telecommunication lines during excavation and trenching works. HKBros will mitigate such impacts by:

- a. Regular coordination with relevant municipalities by the E&S expert, Site Engineer, and the project management
- b. Checking the infrastructure locations and that excavation works do not interfere with infrastructure (Refer to letters sent to Ogero and BWE in this respect in Annex H)
- c. Executing trial pits along the network route to locate the existing infrastructure components
- d. Installing sewer lines 3 meters horizontally from and 0.3 meters lower than existing water main lines. Where the separation requirements cannot be met due to topography, inadequate right-of-way easements, or conflicts with other provisions of these regulations, lesser separation is permissible if:
 - The water main and the sewer are located as far apart as feasible within the conditions listed above
 - The water main and the sewer are not installed within the same trench
 - The sewer line is appropriately constructed to prevent contamination of the water in the main by sewer leakage

- No water main lines should pass through or come into contact with a sewer manhole
- e. Ensure the community GRM is properly disseminated and implemented.

4.9.1.6 Impact on livelihoods

Works may temporarily disrupt access to economic activities, impacting the livelihoods of local business owners. HKBros will mitigate such impacts by:

- a. Timely completion of the rehabilitation phase,
- b. Maintaining a passing corridor within the alignment to grant access to nearby properties,
- c. Informing the shops' owners ahead of time about rehabilitation dates,
- d. Ensuring access is not blocked by installing overpass structures from the road to the shops, small snack and coffee stations impacted by the road works, where necessary,
- e. Ensuring business owners are aware of and have access to the external GRM
- f. Encouraging contractors to purchase goods and services from the local communities when possible,
- g. Proper installation of safety sign boards in Arabic and English.

4.9.1.7 Public health and safety

Accident and injuries to the public because of rehabilitation activities are always possible in projects of this nature. HKBros will minimize those risks by committing to:

- a. Apply best applicable practices on road safety
- b. No children are allowed to be present on the work site, reminding workers and community members of this in all related communications
- c. Secure the site and restrict access to it
- d. Provide site boundaries by installing suitable physical barriers (roadblocks, tape, fence, etc.)
- e. Provide sufficient lighting
- f. Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping
- g. Mark excavation holes and openings with physical boundaries (barriers, tape or fence), or cover them
- h. Store and stack work materials (such as pipes, manhole rings, and cement bags) in a safe manner so that they cannot topple or roll over
- i. Tidily stack, protect and cover materials and equipment where necessary. Additionally, ensure an adequate space for new materials to be stored in secured covered areas to avoid damage, theft, and to protect these items from weather conditions
- j. Keep machinery and vehicles passages clear
- k. Properly manage trucks and heavy machinery entering and exiting the construction site
- l. Train heavy machinery drivers about road safety
- m. Implement a speed limit of 20 km/h for vehicles arriving to and leaving the construction sites
- n. Inform the local community about the rehabilitation schedule and abide by assigned timing
- o. Inform residents and place proper safety and diversion signs at sensitive areas within the project area (i.e. near schools, shops hospitals and agriculture areas) as well as physical obstacles such as bumps and rumble strips
- p. Install pedestrian and vehicular passages near residential areas
- q. Control accidental oil spillage

- r. Ensure a first aid kit is present on the construction site
- s. Ensure access to hospitals is not impeded at any time
- t. Post an Emergency Contact List indicating the nearest police station and hospital with accident and emergency facilities
- u. Encourage workers and communities to use the project GRM to report any health and safety issues.

4.9.2 Monitoring Measures

Monitoring of local workers employment from the same surrounding area within the limitation of the contractor capabilities.

Monitoring of daily registrations of the labour force:

- Proportion of Lebanese vs Syrian workers
- Worker's age

Weekly review of records including:

- Internal and External GRM log
- Attendance sheets to Social Induction Trainings (GBV, SEA, etc.)
- Number of workers who signed Code of Conduct
- Number of reported Sexual abuse and exploitation (SEA) incidents

Continuous visual inspection of traffic:

- Check traffic conditions during transportation of materials
- Ensure traffic is not blocked
- Ensure traffic is relocated properly
- Ensure all traffic safety precautions are abided by

Accidents/ injuries to community

- Visual observation of the installation of pedestrian and vehicular passages near residential areas
- Visual observation of road diversion and construction attention signs in place before works begin
- Weekly review of records of injuries and accidents within passers- by
- Visual observation of best practices is applied
- Community complaints

4.10 Traffic Management Plan

Managing traffic at a construction workplace is an important part of ensuring the workplace is without risks to health and safety. Traffic includes cars, trucks and powered mobile plant like forklifts, and pedestrians include workers and visitors. Vehicles including powered mobile plant moving in and around a workplace, reversing, loading and unloading are often linked with death and injuries to workers and members of the public.

The most effective way to protect pedestrians is to remove traffic hazards and the occurrence of such incidents during construction. This will be done by designing the layout of the work zone to eliminate interactions between pedestrians and vehicles where possible. Examples include prohibiting vehicles from being used in pedestrian spaces or providing separate traffic routes so pedestrians cannot enter areas where vehicles are used. Where this is not possible, the risks will be minimised so far as is reasonably practicable. This will be done by careful planning and controlling vehicle operations and pedestrian movements at the workplace.

4.10.1 Mitigation measures

The key objective of the mitigation measures is to ensure that traffic and transportation impacts due to construction of the project are minimised. To achieve this objective, HKBros will implement appropriate controls and procedures during construction activities to address potential traffic impacts along the Project corridor including:

- Minimising the overall impacts on road users;
- Keeping pedestrians and vehicles apart including on site and when vehicles enter and exit the workplace;
- Minimising vehicle movements as practically possible;
- Limiting speed on the route to 20 km/h unless otherwise advised, and adopting careful logistical and route planning to combine trips;
- Ensuring construction vehicles are maintained on a regular basis (Form F-016 in Section 5.13)
- Eliminating reversing vehicles or minimising their related risks;
- Ensuring vehicles and pedestrians are visible to each other;
- Determining the impact of traffic diversion on traffic flow and road capacity by carrying out traffic count at critical locations and ensuring that the traffic diversion plan can be accommodated without major delays or queuing to traffic;
- Isolating the active work areas from live traffic by providing sufficient clearance between the work areas and adjacent travel lanes, or through the provision of temporary safety barriers;
- Immediately upon completion of any part of the works, filling up all holes and trenches, and levelling all mounds and heaps of earth which have been excavated or made in connection with the works;
- Maintaining access for the local community, transport operators and businesses;
- Regularly informing road users and local communities in relation to changed traffic conditions or access;
- Using appropriate traffic signs (Refer to Annex I for various temporary Traffic Control Layouts:);
- Positioning any necessary traffic diversion signs and devices correctly. Signs and devices shall be positioned laterally and clearly displayed in the Arabic and English language;
 - o Deploying temporary traffic signals and signs to warn of hazards and provide directions to motorists;
- Coordinating with the relevant municipalities the organization and scheduling of the construction works including the material delivery schedule during construction, trucks movement and other machinery operations in order to limit the disruption to the neighbourhood and traffic flow and to minimize noise and dust. Timetables and eventual traffic diversion schedules at the Project site will be agreed on; and
- Following a specific schedule for transport of to avoid interference with peak traffic hours and minimise disturbance/ delay to commuters at rush hours on the roads leading to the Project.

4.10.2 Monitoring Measures

- Visual observation that traffic signs and road safety measures are in place before works begin
- Continuous visual inspections to ensure that all road safety measures are in place
- Weekly review of worker training records including toolbox talks
- Weekly review of incident log recording injuries and accidents within workers and community
- Weekly review of vehicle maintenance inspection checklists (Form F-016 in Section 5.12)

4.11 Occupational Health and Safety Management Plan

4.11.1 Mitigation Measures

4.11.1.1 Management of Hazardous Materials

Occupational diseases may occur as a result of exposure to hazardous substances in the form of inhaled particulates, ingested materials or skin contact with substances. Appropriate controls include:

1. Hazardous materials/chemicals used at the site shall have Material Safety Data Sheets (MSDS). The MSDS are obtained from the manufacturer/supplier of the materials and should be requested with each purchase of products.
2. Material Safety Data Sheets will be made available to any employee or sub-contractor or visitor who may interact with the materials/chemical substances onsite.
3. The management of hazardous substances and dangerous goods is detailed in Section 4.4.1.5.

4.11.1.2 First Aid

1. First aid kits will be installed and available at all times at convenient locations on the work site.
2. Trained first-aiders will be present on-site. They will:
 - Carry out any first aid treatment required
 - Record details of all first aid treatments
 - Ensure the transfer of cases of trauma or serious illness to nearby medical facilities

First aid kits contents are recorded and inspected monthly using (Form F-013 in Section 5.10)

4.11.1.3 Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provide additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. PPE is a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection. All workers will wear and use the PPEs appropriate to the task while delivering the services.

1. Mandatory PPEs:
 - Safety plastic helmet with top and side impact protection
 - Safety footwear with non-slip soles and steel toes for protection against moving & falling objects, liquids and chemicals
 - High visibility fluorescent clothing, or fluorescent safety vest.
2. Mandatory - must be worn if instructed to do so:
 - Eye protection (safety glasses with side shields)
 - Ear protection (ear plugs or earmuffs)
 - Hand protection (gloves made of rubber or synthetic materials (Neoprene), leather, etc)
 - Respiratory protection (facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases))
 - Sunscreen
 - Safety harness (full body whenever a worker is exposed to the hazard of falling from more than two meters)
 - Confined spaces equipment.

The HSE Officer will ensure proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE will be part of the recurrent training programs for employees.

4.11.1.4 Fire Precautions

Fire extinguishers will be available in each vehicle, on-site, at the offices, and in the rest areas. These will be inspected on a monthly basis using Form F-014 (Section 5.11) and will be maintained in good working order and be readily accessible.

Refer to Section 3.6.1.4 for Fire Emergency Procedures.

4.11.1.5 General site rules

- a. Proper signage in and around the site in local languages and access to an internal GRM;
- b. Fire-fighting measures;
- c. Guard rails and toe boards on all openings and edges;
- d. Proper storage and signage of materials including Material Safety Data Sheets;
- e. Safety measures according to type of equipment;
- f. Provide workers with the appropriate PPE (goggles, masks, helmets, hearing protection equipment, safety boots, etc.) and enforce their use;
- g. Maintain the PPE (cleaning when dirty and replacement when damaged or worn out);
- h. Fencing around the construction site at all times;
- i. Sanitary facilities to be covered, easily accessible, ventilated, well lit, maintained, and sanitized;
- j. Safe drinking water in accordance with regulations.
- k. Ensure the availability of adequate loading and unloading space;
- l. Inspect ladders on a weekly basis where available (Refer to Ladder Inspection Form- F015 in Section 5.12)
- m. Segregate passageways for pedestrians and vehicles and ensure easy, safe and appropriate access
- n. Keep walkways free of tripping hazards such as work materials, and debris;
- o. If work involving the use of flammable materials is being carried out, prohibit smoking and do not allow other work activities involving potential ignition sources to take place nearby;
- p. Prohibit littering;
- q. Avoid burning of materials on-site;
- r. Provide easily accessible first aid kits at the active work site with the appropriate number of materials given the number of workers on-site. The locations of the first aid kits must be indicated to all workers;
- s. Post adequate signs at visible locations throughout the construction area indicating type of operation, potential risks, and appropriate medical/emergency action response;
- t. Perform staff training about the fundamentals of occupational health and safety procedures, and about handling hazardous material containers and related wastes;
- u. Implement the required air emissions and noise mitigation measures listed in sections above
- v. Prohibit working under the effect of alcohol or drugs
- w. Ensure normal working hours (from 8:00 till 16:30 with 30 minutes lunch break). Additional working hours can reach a maximum of 4 hours and will be paid as overtime.

No contractor, subcontractor, visitor or any other individual will commence works without notifying the Supervisor that they are on site and ready to start work and without undergoing an induction training.

4.11.2 Monitoring Measures

- Visual observation that signs are in place before works begin
- Continuous visual inspections to ensure that all site safety measures are in place
- Continuous visual inspections to ensure that all workers are wearing their PPEs
- Weekly review of OHS supervisor notes and daily inspection sheets
- Weekly review of worker training records including toolbox talks
- Weekly review of near miss and accident logs recording injuries and accidents with the workers
- Monthly review of Muster Roll to check working hours

4.12 Demobilization and Cleaning Management Plan

4.12.1 Mitigation Measures

As the sewage network extension and rehabilitation activities will be done in phases and as segments, HKBros will ensure the complete demobilization and cleaning of each segment as soon as the works are completed in the particular segment.

HKBros will ensure the removal of all construction vehicles, equipment, and material following the same mitigation measures outlined above, to minimize water and soil pollution.

HKBros will ensure that all types of solid waste are completely removed from the site as follows:

- All remaining domestic solid waste is collected by the concerned municipality and the solid waste bins are removed from the site.
- All remaining construction waste is collected by HKBros and disposed of at the approved sites, and the bins are removed from the site.
- All hazardous waste is collected by a certified contractor as advised by the Ministry of Environment.

HKBros will ensure that the constructed and rehabilitated networks, appurtenances (manholes, etc.), and pumping stations are cleaned and ready for use.

HKBros will ensure that the septic tank at the yard is emptied with no release of wastewater into the environment and are transported out of the site.

HKBros will ensure that no construction or waste material is left in the rented yard upon completion of the works.

4.12.2 Monitoring Measures

Daily visual observation and photographic documentation of the site cleaning activities.

Final visual inspection of the decommissioned site.

5 FORMS, CHECKLISTS & NOTES

5.1 Minutes of Meetings Form (F-001)



MINUTES OF MEETING F-001

Meeting No: ____

Meeting Date		Meeting Location	
Minutes Issued By			
ATTENDEES			
Name	Position	Signature	

BRIEF DESCRIPTION/AGENDA
•

ACTIONS/DISCUSSIONS				
No.	Description	Responsible	Due Date	Status or Comment

5.2 Training Attendance Sheet (F-002)



TRAINING ATTENDANCE SHEET F-002

Project Title	AMQ- LOT 1	Site	
Topic		Date	
Conducted by		Signature	

Employee /Visitor Name	Title/ Position	Signature

5.3 Incident Report (F-003)



INCIDENT REPORT F-003

Project	AMQ- LOT 1		
Report date			
Reported by		Title/role	

I. DETAILS OF THE INCIDENT

Incident date	
Incident time	
Incident place	
Incident Serial Number	

II. IDENTIFICATION OF TYPE OF INCIDENT

Select the type of the incident from the list below. An incident can be classified at the same time as H&S/environmental/social.

Type of Incident - H&S		Type of Incident – Social
Moving Machinery/vehicles	Dust, Fumes, Vapors	Theft
Fall from height	Noise	Misuse of property
Powered Hand tools	Temperature or heat	Willful Damage
Hand Tools	Overexertion	Damage to Cultural Heritage
Animals or insects	Structural Failure	Occurrence of infringement of labor rights
Fire or Explosion	Chemical/biological	Occurrence of infringement of human rights
Trips & smaller falls	Stress	Stakeholder/community complaint
Drowning	Violence, aggressions	Strike, demonstration
Borrow-pit Management	Other (please specify)	Other (please specify)

Type of Incident –Environmental	
Chemical/Oil Spill	Damage to ecosystems (e.g. damage to flora/fauna)
Improper Disposal of Waste	Odor/ Air/ Noise Emissions
Disasters (Earthquake, Flood, etc)	Dust, Fumes, Vapors, Air pollution
Water Pollution/ Sedimentation	Other (please specify)

III. DESCRIPTION OF THE INCIDENT

Record all facts prior to and including the incident that can help clarifying its dynamics and its causes:

IV. INFORMATION COLLECTION

List all the information available about the incident. Use additional pages if required and attach photographs where possible

Factual/Documented Information	Testimony of witnesses	Scene/Environment inspections

IV. ROOT CAUSE ANALYSIS

Select the root cause(s) of the incident from the list below. If "Other" please specify.

Root causes	Yes	No
Improper Planning		
Poor Maintenance		
Poor Supervision		
Poor Quality of Equipment		
No rules, standards, or procedures		

Lack of knowledge or skills		
Improper motivation or attitude		
Failure to comply with rules		
Other		

V. DETAILS OF HARMED PERSON(s) (Only for Health & Safety Incidents)

Name		Age	
Address/Contact details			
Occupation			
Insurance paid/covered (Please attach evidence in case of insurance paid/covered)			
Date injury reported		To Whom Reported	
Did person return to work the same day?	<div>Yes</div> <div>No</div>		
Treatment of injury	None	On Site First Aid only	<div>Doctor</div> <div>Hospitalized</div>
Details of treatment			
Were any emergency services in attendance?	Yes	No	
Details of emergency services if in attendance			
Injury Details Injury type: (e.g. cuts/abrasions, bruising, sprain/strain, fracture, dislocation, unconsciousness, other) Body part:			
Date of return to work			

VI. OUTCOME OF INVESTIGATION

<p>Causes</p> <p>What unsafe/inappropriate acts or conditions caused the event? Note contributing factors that have made the incident worse (e.g. incorrect use of ladder, lack of PPE, absence of drip trays/containment)</p> <p>What human, organizational or job factors contributed/caused the event (e.g. poor housekeeping, poor planning, incorrect work method, lack of supervision/training, improper attitude, lack of hazard control etc.)?</p>		
<p>Lessons learned</p>		
<p>Recommended preventative action(s)</p>	<p><input type="checkbox"/> Training of personnel</p> <p><input type="checkbox"/> Improve risk/impact Identification</p> <p><input type="checkbox"/> Improve hazard/risk control</p> <p><input type="checkbox"/> Increase supervision</p> <p><input type="checkbox"/> Discuss during HSSE meeting</p> <p><input type="checkbox"/> Other (please specify)</p>	
<p>Preventative action(s) to be carried out by:</p> <p>(Name of responsible person and target completion date)</p>		
<p>Close out</p> <p>(Agreed actions have been completed and situation now is satisfactory)</p>	<p><i>[Before closing out, ensure that the preventative action has been implemented for a reasonable period of time and it is showing to be effective.]</i></p>	
<p>Signature of lead reviewer</p>		<p>Date</p>

5.4 Incident Log (F-004)

Refer to form F-004 in Excel Sheet

5.5 GRM & Complaints Register (F-005) and Log Forms (F-006)

Refer to forms F-005 & F-006 in Excel Sheet

5.6 Non-Compliance Log (F-007)

Refer to form F-007 in Excel File

5.7 Site Inspection Checklists (F-008, F-009 & F-010)

Three site inspection checklists have been developed namely, form F-008 for weekly ES & OHS inspection, form F-009 for E&S monthly inspection and form F-010 for OHS monthly inspection, as presented below.

F-008- WEEKLY Checklist for ESHS Inspection

Date (DD/MM/YYYY):	Site (Line/ Station):
Completed by:	Signature:
Approved by:	Signature:

ESHS Safeguard	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Notes
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	
1. Are all workers on-site trained?													
2. Are all workers wearing PPEs?													
3. Are all workers wearing name tags?													
4. Are all employees above 18 years of age?													
5. Are all workers aware of the code of conduct?													
6. Are the Grievance Redress Mechanism signs for the community available on-site?													
7. Is the white signboard with information & procedures for workers available on-site?													
8. Are first aider and safety supervisor available on site?													
9. Are security and site boundaries clearly marked/defined?													
10. Are the activities limited only to the site boundaries (i.e., is it encroaching outside the activity area)?													
11. Is the site kept clean and tidy?													
12. Are the materials storage areas protected and tidy?													
13. Is there waste litter from workers on-site?													
14. Is there construction waste and concrete spills left on-site (check bordering plots)													
15. Are excavated solid waste transported and disposed in approved dumpsites?													

ESHS Safeguard	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Notes
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	
16. Are the trees being protected during the works?													
17. Are chemicals/ oils stored on impervious asphalt and adequately labelled?													
18. Is there evidence of any oil/ fuel spills at the construction site?													
19. Is dust control applied? (stockpiles covered, water spraying, traffic around the site controlled, trucks transporting material covered, etc.)													
20. Are vehicles and equipment left idling on-site?													
21. Are there burnings on site?													
22. Are surfaces safe and suitable and free from slip/trip hazards (presence of safe footpath)?													
23. Are floor openings (trenches, holes...) and excavations well protected and secured?													
24. Are there sufficient clear areas and safe access around excavation?													
25. Are ladders in good condition and correctly installed?													
26. Are exposed rebars protected by suitable caps?													
27. Are safety measures in place to address any fall hazard including working at height?													
28. Are fire extinguishers and first aid kits in place, tagged and inspected?													
29. Are equipment daily inspection checklists available?													
30. Are all power tools in good condition?													
31. Is there no work near exposed live electrical equipment?													

F-009- MONTHLY Checklist for E&S Inspection

Date (DD/MM/YYYY):	Site (Village/ Station):
Completed by:	Signature:

Topic/ Potential Impact	Observation		Means of Verification	Findings/ Observations ¹	Recommended Corrective Action
Management Measures	Yes	No			
General Requirements for ESHS Management					
Are the activities limited only to the site boundaries (i.e., is it encroaching outside the activity area)?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Are all workers familiar and comply with the ESHS requirements and specifications of this CESMP?	<input type="checkbox"/>	<input type="checkbox"/>	- Review record of induction training		
Is there an assigned ESHS responsible staff who is responsible for contract ESHS requirements and for relations with local community?	<input type="checkbox"/>	<input type="checkbox"/>	- Review the job description for the assigned staff - Review record of induction training		
Are incidents, accidents, observations, and near misses being recorded?	<input type="checkbox"/>	<input type="checkbox"/>	- Review record of incidents reporting		
Have the workers been informed of the code of conduct?	<input type="checkbox"/>	<input type="checkbox"/>	- Review record of induction training and signed CoC		
Have the workers been informed of the Grievance Redress Mechanism?	<input type="checkbox"/>	<input type="checkbox"/>	- Review record of induction training		

¹ **Color Code for Findings/ Observations:**

Red Flag. Major Non-compliance with ESMP requirements. Urgent Action needed to protect ecological and human environment and avoid risks to the Project schedule.
Minor Non-compliance. Action needed but no immediate threat for ecological and human environment or Project schedule.
In compliance with ESMP commitment.

Topic/ Potential Impact	Observation		Means of Verification	Findings/ Observations ¹	Recommended Corrective Action
Management Measures	Yes	No			
Protection of the Environment					
Is the site kept clean and tidy?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Are all chemicals/ fuels/ oils stored adequately?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Have loose materials that have potential to fall been secured?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Is there evidence of any oil/ fuel spills at the construction site?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Is there evidence of any spills / leaks from the waste containers?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Are workers aware of the spill response measures and the spill response tools available?	<input type="checkbox"/>	<input type="checkbox"/>	- Review record of induction training - Visual inspection		
Are there any indication of sharp, dangerous objects and organic wastes at and around the activity area?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Are all types of solid waste transported and disposed based on the legal requirements in consultation with local authorities?	<input type="checkbox"/>	<input type="checkbox"/>	- Proof of municipality approval certificates. - Visual Observation		
Are all types of liquid waste transported and disposed based on the legal requirements in consultation with local authorities?	<input type="checkbox"/>	<input type="checkbox"/>	- Proof of municipality approval certificates. - Visual Observation		
Is there any ground clearance or re-grading beyond the defined project areas?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual Inspection		
Are all employees aware of the requirement to protect wildlife and habitats from unnecessary construction damage, hunting and general disturbance	<input type="checkbox"/>	<input type="checkbox"/>	- Review of induction training record		

Topic/ Potential Impact	Observation		Means of Verification	Findings/ Observations ¹	Recommended Corrective Action
Management Measures	Yes	No			
Labour and Community Relations					
Are the legal labour standards as per ILO regulations (child/forced labour, sexual assault, no discrimination, equal opportunities, working hours, minimum wages) met?	<input type="checkbox"/>	<input type="checkbox"/>	- Review grievance & complaints records - Review of induction training record		
Are all available employees above 18 years of age?	<input type="checkbox"/>	<input type="checkbox"/>	- Do an ID check of available employees onsite		
Are all workers aware of their rights and treated equally?	<input type="checkbox"/>	<input type="checkbox"/>	- Review record of induction training - Review grievance & complaints records - Spot interviews		
Where appropriate, are goods and services supplied by local community?	<input type="checkbox"/>	<input type="checkbox"/>	- Review procurement and employment records - Review grievance & complaints records		
Ensure consultations with the local authorities and communities regarding the construction.	<input type="checkbox"/>	<input type="checkbox"/>	- Review grievance & complaints records - Minutes of consultation meetings		
Are all workers aware about the code of conduct?	<input type="checkbox"/>	<input type="checkbox"/>	- Worker interviews - Review record of induction training		
Have there been any grievances regarding procurement process?	<input type="checkbox"/>	<input type="checkbox"/>	- Review grievance & complaints records		
Is there any child or forced labour?	<input type="checkbox"/>	<input type="checkbox"/>	- Visual inspection of suspected child labor		
Are the Grievance Redress Mechanism & the Complaints Mechanism in place for both community and the employees begin utilised?	<input type="checkbox"/>	<input type="checkbox"/>	- Review grievance & complaints records		

Topic/ Potential Impact	Observation		Means of Verification	Findings/ Observations ¹	Recommended Corrective Action
Management Measures	Yes	No			
Are grievances recorded?	<input type="checkbox"/>	<input type="checkbox"/>	- Review grievance & complaints records		
Are the complaints responded to in an acceptable time period?	<input type="checkbox"/>	<input type="checkbox"/>	- Review grievance & complaints records		

F-010- MONTHLY Checklist for OHS Inspection

Date (DD/MM/YYYY):	Site (Village/Station):
Completed by:	Signature:

Topic/ Potential Impact		Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
Management Measures		Yes	No			
Health and Safety Systems						
1.	ESHS policy displayed					
2.	Incidents Register available					
3.	Induction records available					
4.	Workplace inspection records available					
5.	Training records available					
6.	Documented safe work method statements (SWMS) available					
7.	Proper PPEs are used					
8.	MSDS available					
9.	Work permits available					

² **Color Code for Findings/ Observations:**

Red Flag. Major Non-compliance with ESMP requirements. Urgent Action needed to protect ecological and human environment and avoid risks to the Project schedule.
Minor Non-compliance. Action needed but no immediate threat for ecological and human environment or Project schedule.
In compliance with ESMP commitment.

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
General site layout & Welfare (incl. housekeeping)					
10. Is the general appearance of the worksite including portable toilets and rest rooms clean, tidy and free from oil and grease?					
11. Are the materials storage areas protected and tidy?					
12. Are security and site boundaries clearly marked/defined?					
13. Are safety signage displayed?					
14. Are work areas free from rubbish & obstructions?					
15. Rubbish bins available – covered					
16. Is there a clear access and egress in the workplace?					
17. Are surfaces safe and suitable and free from slip/trip hazards:					
18. Are AISLES unobstructed and clearly defined?					
19. Is there adequate lighting?					
Personal Protection					
20. Workers provided with PPE					
21. Workers trained in the use of PPE					
22. PPE being worn by workers					
23. Regular maintenance checks performed on PPE					

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
24. Correct signage at access points					
25. Hard hats available to visitors on work site					
26. Suitable PPE for specific tasks (i.e., dust masks, hearing protection, safety glasses...)					
First Aid and Emergency Response					
27. First Aid (first aiders, first aid kit – location availability), spill kits (availability, location)					
28. Stocks meet requirements					
29. First aiders names displayed					
30. Emergency procedures in place					
31. Information display (evacuation plan, assembly area marked, contacts, site rules, emergency procedures...)					
32. Has a primary healthcare center been identified for health care emergencies among workers?					
Fire Control					
33. Extinguishers in place					
34. Firefighting equipment serviced/tagged					
35. Appropriate signing of extinguishers					

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
36. Smoking/naked flame restrictions observed					
37. Trial evacuations conducted					
38. Personnel trained in use of firefighting equipment					
Mobile Plant and Equipment					
39. Plant and equipment in good condition					
40. Daily safety inspection procedures/checklists available					
41. Fault reporting/rectification system used					
42. Operators trained and licensed					
43. Warning and instructions displayed					
44. Warning lights operational					
45. Reversing alarm operational					
46. Satisfactory operating practices					
47. Tyres satisfactory					
48. Emergency stops appropriately placed and clearly identifiable					
49. 'Noisy' equipment, maintenance, noise mitigation measures i.e., is the equipment fitted with mufflers, screens, noise monitoring					
Hazardous Substances					

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
50. Clear and appropriate identification, labelling and storage					
51. Chemical register developed					
52. Adequate ventilation/exhaust systems					
53. Protective clothing/equipment available/used					
54. Material safety data sheets available					
55. Chemical handling procedures followed					
Excavation					
56. Shoring in place and in sound condition for all trenches more than 1.5m					
57. Excavation well secured					
58. Signage displayed					
59. Banks battered correctly and spoil away from edge					
60. Sufficient clear areas and safe access around excavation					
61. Separate access and egress points from excavation					
62. Safe work procedure in place					
63. Excavation, trench protection available (shoring, sheet piles,					

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
placement of excavated material, fencing, railing)					
64. Special precautions available for confined space (gas monitor, evacuation procedure – tripod, topman etc)					
65. Dewatering arrangements					
Prevention of Falls					
66. All work platforms have secure handrails, guarding or fence panels					
67. Fall arrest systems maintained and used as required					
68. Harness and lanyard or belts provided as required					
69. All floor penetrations covered or barricaded					
70. Unsafe areas signposted and fenced					
71. Safe work procedure in place					
Stairs, steps and landings					
72. No worn or broken steps, rungs or styles					
73. Handrails in good repair					
74. Clear of obstructions					
75. Adequate lighting					
76. Emergency lighting					

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
77. Non-slip treatments/treads in good condition					
78. Kick plates where required					
79. Clear of debris and spills					
80. Used correctly					
Electrical					
81. There are no broken plugs, sockets, switches					
82. There are no frayed or defective leads					
83. All power tools are in good condition					
84. There is no work near exposed live electrical equipment					
85. Tools and leads are inspected and tagged					
86. There are no strained leads					
87. Switches/circuits are identified					
88. An Earth leakage system is used					
89. Start/stop switches are clearly identified					
90. Switchboards are secured					
Ladders					
91. Ladders in good condition					

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
92. Ladders not used to support planks for working platforms					
93. Correct angle to structure 1:4					
94. Extended 1.0 meter above top landing					
95. Straight or extension ladders securely fixed at top					
96. Metal ladders not used near live exposed electrical equipment					
Scaffolding					
97. Scaffold design complies with requirements					
98. Safe and suitable access and egress to scaffold					
99. Repair and maintenance details held on work site					
Confined Spaces					
100. Communication and rescue plan in place					
101. Safety equipment in good working condition					
102. Suitable training provided to workers					
103. All confined spaces identified and appropriately signposted					
Equipment/Portable Tools/Electrical Appliances					

Topic/ Potential Impact Management Measures	Observation		Means of Verification	Findings/ Observations s ²	Recommended Corrective Action
	Yes	No			
104. Lifting equipment and management of lifting operations (cranes, hoists, davits, slings, chains, permit)					
105. Tools and equipment (condition, regular checking, maintenance, storage, guards in place)					
106. Transformers & Power Supply (security, connection, labelling, inspections)					

5.8 Solid Waste Log Form (F-011)

Refer to form F-011 in Excel Sheet

5.9 Wastewater Management Log Form (F-012)

Refer to form F-012 in Excel Sheet

5.10 First Aid Kit Inspection Form (F-013)



FIRST AID KIT INSPECTION F-013

Code	Location	Checked by	Date

Items	Required Quantity	Quantity Checked	Expiry date	Compliance Status (Yes/No)	Remarks

5.11 Fire Extinguisher Inspection Form (F-014)

Refer to form F-014 in Excel Sheet

5.12 Ladder Inspection Form (F-015)



WEEKLY INSPECTION OF LADDERS/ TRESTLES F-015

Project Title	Site	Date
---------------	------	------

Ladder ID Number	Description – ladder: length or number of rungs, scaffold - location

Date of inspection	Results of inspection										Signature person who made inspection
	Ladder/scaffold number										

Guidance

- Weekly inspections shall be carried out and report completed.
- The report should be kept on site until the project is complete.
- All ladders/trestles should be individually tagged.
- Ladders/Trestle's must be in good condition and correctly stored - check for splits or cracks in the stiles and rungs. Ensure that none of the rungs are missing or loose.
- Ladders shall not be painted - paint can hide damaged parts.
- Any defected ladders / trestles should be removed from site immediately

5.13 Vehicle Inspection Form (F-016)

	Vehicle Checklist استمارة فحص مركبة	From من Date التاريخ / / 202...
		To إلى Date التاريخ / / 202...

Project: AMQ1		
Inspection by: إسم الفاحص:	Vehicle Type: نوع المركبة / الآلية:	Vehicle #/ Plate #: رقم المركبة / رقم التسجيل:

Answers: Ok صالحة	NR: Need repairs, بحاجة للمعالجة	NA: Not Applicable غير مطابقة	الإجابات:					Comments ملاحظات	
Mo الاثنين	Tu الثلاثاء	We الأربعاء	Thu الخميس	Fr الجمعة	Sa السبت				
Inspection items عناصر الفحص									
Pre-start up قبل تشغيل المركبة / الآلية									
Fluids (oil, coolant, washer, trans, brake) السوائل (زيت المحرك, سائل التبريد, سائل غسيل الزجاج, سائل الفرملة, سائل علبة السرعات).									
Interior داخل المركبة / الآلية									
Registration/ Insurance /driving permit رخصة التسجيل / رخصة القيادة / بطاقة التأمين									
Fuel level مستوى الوقود									
Horn البوق (الزهور)									
Seat belt حزام الأمان									
Foot brake/ parking brake/ gaz pedal دواسة الفرملة / فرملة اليد / دواسة الوقود									
Emergency (hazard triangle, chains,...) الطوارئ (مثلث تحذير / سلاسل ثلوج...)									
Exterior المركبة / الآلية من الخارج									
Mirrors المرايا									
Vehicle and glass clean نظافة المركبة / نظافة زجاج المركبة									
Head lights (high/ low) الأضواء الامامية (عالي- واطي)									
Turn signal (front/ rear) اشارات الالتفاف (أمام- خلف)									
Emergency flasher أضواء التنبيه (فلاشر)									
Tires (wear/ check pressure) الاطارات (الشكل الخارجي / فحص الضغط)									
Tail light/ back- up light/ back- up alarm أضواء التوقف الخلفية / ضوء الرجوع / زهور الرجوع الى الخلف									
Exhaust (sound/ emission) العادم (الاشبهان: صوت/ دخان)									

	Vehicle Checklist استمارة فحص مركبة	من From Date التاريخ / / 202...
		إلى To Date التاريخ / / 202...

Operating controls عناصر تشغيل الآلية							
Dump truck and box صندوق فلاب الشاحنة							
Bulldozer/ excavator (blade/ cutting edge/ blade cylinder) الجرافة والحفارة (الرفش/ أسنان الرفش/ اسطوانة التحريك/ كيلة الحفارة)							
Roller (vibratory drum) المحذلة (دولاب الاهتزاز والحدل)							
Air hoses/ hydraulic pipes تمديدات الهواء/ مواسير زيت الهيدروليك							
Lifting Devices as per type used أدوات الرفع بحسب النوع المستعمل							
1. Chain Slings السلاسل المعدنية Check for defects: التحقق من العيوب التالية:							
- twisted or bent links - حلقات ملتوية أو مثنية							
- gouged, nicked or cracked links - تشقق أو تصدع بالحلقات							
- stretched links - حلقات ممتدة							
- severe corrosion in chain - تآكل شديد للسلسلة من جراء الصدأ							
- any changing in diameter and length of chain from the initial dimensions - طول وقطر السلسلة ومقارنتها بالقياسات الأساسية							
2. Wire rope sling أسلاك الرفع Check for defects: التحقق من العيوب التالية:							
- broken wires - أسلاك مقطوعة							
- kinked wires - أسلاك ملتوية							
- bird caging in wires - تحول بشكل الأسلاك ليشبه قفص العصافير							
- severe corrosion in wires - تآكل شديد بالأسلاك من جراء الصدأ							
- Any change in diameter and length of wires from the initial dimensions - طول وقطر الأسلاك ومقارنتها بالقياسات الأساسية							

	Vehicle Checklist استمارة فحص مركبة	من From / / 202...
		إلى To / / 202...

3. Hooks المرباط Check for defects: التحقق من العيوب التالية:							
- cracks and twisting - تشققات والتواءات							
- wear and deformation - تآكل وتصدع							
- an increase in throat or slot opening - زيادة في الفتحة							
- severe corrosion - تآكل شديد من جراء الصدأ							
- any changing in dimensions - أي تغيير في القياسات الأساسية							
4. Synthetic web slings وسائل الرفع المصنوعة من القماش Check for defects: التحقق من العيوب التالية:							
- chemical or heat damage (color changing) - وجود تلف كيميائي أو حراري (تغيير في اللون)							
- broken/worn stitches - قطب مقطوعة							
- holes and cuts/ abrasions - وجود ثقوب وتآكل							
- knots - وجود أي عقدة							

Signature:

Date: / / 202...

5.14 Near Miss Log Form (F-017)

Refer to form F-017 in Excel Sheet

6 ANNEXES

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Annex A: BOQ for the Project

1. Network installation

Item	Description	Unit	QTY
1	<i>Preliminaries</i>		
1.1	Mobilization and Demobilization	LS	1.00
1.2	Insurance	LS	1.00
1.3	Temporary Facilities and Services for the Engineer	LS	1.00
1.4	Setting Out and Accuracy	LS	1.00
1.5	Temporary Services	LS	1.00
1.6	As-Built Drawings and Manuals	LS	1.00
2539	<i>Sanitary Sewer Systems</i>		
2539.1	<i>Cutting, Breaking Out and Reinstatement of Existing Paved Surfaces</i>		
02539.1.1	Cutting, Breaking out and reinstatement of existing paved surfaces for all pipes and where directed and approved by the Engineer.	m ²	115,820.00
2539.2	<i>Breaking Out and Reinstatement of Existing Unpaved Surfaces</i>		
02539.2.1	Breaking out and reinstatement of existing unpaved surfaces for all pipes and where directed and approved by the Engineer.	m ²	8,140.00
2539.3	<i>Trench Excavation for Gravity Sewer System</i>		
02539.3.1	<i>Trench Excavation for Gravity Sewer Pipes under Paved or Unpaved Surfaces (to Be Backfilled with Selected Fill Materials)</i>		
02539.3.1.1	Pipe diameter 150 mm, trench depth up to 2 m.	lm	10,285.00
02539.3.1.2	Pipe diameter 200 mm, trench depth up to 2 m.	lm	28,375.00
02539.3.1.3	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	1,880.00
02539.3.1.4	Ditto, but trench depth exceeding 3 m and up to 4 m.	lm	420.00
02539.3.1.5	Ditto, but trench depth exceeding 4 m and up to 5 m.	lm	155.00
02539.3.1.6	Ditto, but trench depth exceeding 5 m and up to 6 m.	lm	140.00
02539.3.1.7	Pipe diameter 250 mm, trench depth up to 2 m.	lm	7,860.00
02539.3.1.8	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	465.00
02539.3.1.9	Ditto, but trench depth exceeding 3 m and up to 4 m.	lm	275.00
02539.3.1.10	Ditto, but trench depth exceeding 4 m and up to 5 m.	lm	85.00
02539.3.1.11	Pipe diameter 315 mm, trench depth up to 2 m.	lm	8,320.00
02539.3.1.12	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	305.00
02539.3.1.13	Ditto, but trench depth exceeding 3 m and up to 4 m.	lm	205.00
02539.3.1.14	Pipe diameter 400 mm, trench depth up to 2 m.	lm	4,700.00
02539.3.1.15	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	200.00
02539.3.1.16	Ditto, but trench depth exceeding 3 m and up to 4 m.	lm	80.00
02539.3.1.17	Ditto, but trench depth exceeding 4 m and up to 5 m.	lm	20.00
02539.3.1.18	Pipe diameter 500 mm, trench depth up to 2 m.	lm	1,765.00
02539.3.1.19	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	120.00
02539.3.1.20	Pipe diameter 600 mm, trench depth up to 2 m.	lm	1,600.00
02539.3.1.21	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	450.00
02539.3.1.22	Pipe diameter 700 mm, trench depth up to 2 m.	lm	1,530.00
02539.3.1.23	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	730.00
02539.3.1.24	Ditto, but trench depth exceeding 3 m and up to 4 m.	lm	240.00
02539.3.1.25	Pipe diameter 900 mm, trench depth up to 2 m.	lm	600.00
02539.3.1.26	Pipe diameter 900 mm, trench depth exceeding 2 m and up to 3 m.	lm	1,380.00
02539.3.1.27	Pipe diameter 900 mm, trench depth exceeding 3 m and up to 4 m.	lm	1,580.00
02539.3.1.28	Ditto, but trench depth exceeding 4 m and up to 5 m.	lm	800.00
02539.3.2	<i>Trench Excavation for Gravity Sewer Pipes under Paved Surfaces (to Be Backfilled with Sand Fill Materials up to Formation Level below Aggregate Sub-Base Course as per the Regulations of the Ministry of Public Works)</i>		
02539.3.2.00	Pipe diameter 200 mm, trench depth up to 2 m.	lm	2,230.00
02539.3.2.01	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	20.00
02539.3.2.1	Pipe diameter 250 mm, trench depth up to 2 m.	lm	1,285.00
02539.3.2.2	Pipe diameter 315 mm, trench depth up to 2 m.	lm	1,430.00
02539.3.2.21	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	20.00
02539.3.2.3	Pipe diameter 400 mm, trench depth up to 2 m.	lm	600.00
02539.3.2.4	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	120.00
02539.3.2.5	Ditto, but trench depth exceeding 3 m and up to 4 m.	lm	50.00
02539.3.2.6	Pipe diameter 500 mm, trench depth up to 2 m.	lm	1,610.00
02539.3.2.7	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	270.00

02539.3.3	<u>Trench Excavation for Gravity Sewer Pipes in Water Course (to be backfilled with borrow pit material as indicated on the drawings)</u>		
02539.3.3.1	Pipe diameter 200 mm, trench depth up to 2 m.	lm	800.00
02539.3.3.2	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	90.00
02539.3.3.3	Pipe diameter 250 mm, trench depth up to 2 m.	lm	1,310.00
02539.3.3.4	Ditto, but trench depth exceeding 2 m and up to 3 m.	lm	70.00
02539.3.3.5	Pipe diameter 315 mm, trench depth up to 2 m.	lm	500.00
02539.3.4	<u>Trench Excavation for Pipes to Replace Existing Gravity Sewer Network (to Be Backfilled with Selected Fill Materials)</u>		
02539.3.4.1	Pipe diameter 200 mm, to replace existing gravity sewer pipe of any diameter and at any depth.	lm	725.00
02539.3.4.2	Pipe diameter 315 mm, to replace existing gravity sewer pipe of any diameter and at any depth.	lm	1,220.00
02539.3.4.3	Pipe diameter 500 mm, to replace existing gravity sewer pipe of any diameter and at any depth.	lm	560.00
02539.3.5	Extra over for importing base course material to replace the selected backfill material for a depth up to 60cm, including removal of excavated material to approved dumping area. The locations of use of base course material shall be subject to the prior approval of the Engineer.	m ³	5,965.00
2539.4	<u>Pipes for Gravity Sewer Systems</u>		
02539.4.1	<u>Pipes for New Gravity Sewer Network</u>		
02539.4.1.1	uPVC pipes, 150 mm diameter for house connection.	lm	10,285.00
02539.4.1.2	uPVC pipes, 200 mm diameter.	lm	34,110.00
02539.4.1.3	uPVC pipes, 250 mm diameter.	lm	11,350.00
02539.4.1.4	uPVC pipes, 315 mm diameter.	lm	10,780.00
02539.4.1.5	Concrete pipes, bituminous or coal tar epoxy coated internally, 400 mm diameter.	lm	5,770.00
02539.4.1.6	Concrete pipes, bituminous or coal tar epoxy coated internally, 500 mm diameter.	lm	3,765.00
02539.4.1.7	Ditto, but 600 mm diameter.	lm	2,050.00
02539.4.1.8	Ditto, but 700 mm diameter.	lm	2,500.00
02539.4.1.9	Concrete pipes, bituminous or coal tar epoxy coated internally, 900 mm diameter.	lm	4,360.00
02539.4.2	<u>Pipes to Replace Existing Gravity Sewer Network</u>		
02539.4.2.1	uPVC pipes, 200 mm diameter, to replace existing gravity sewer pipe of any diameter.	lm	725.00
02539.4.2.2	Ditto, but 315 mm diameter.	lm	1,220.00
02539.4.2.3	Concrete pipes, bituminous or coal tar epoxy coated internally, 500 mm pipe diameter, to replace existing gravity sewer pipe of any diameter.	lm	560.00
2539.5	<u>Sand Material for Pipe Bedding and Surroundings</u>		
02539.5.1	Pipe diameter 150 mm for house connection.	lm	9,085.00
02539.5.2	Pipe diameter 200 mm	lm	31,625.00
02539.5.3	Pipe diameter 250 mm	lm	8,790.00
02539.5.4	Pipe diameter 315 mm	lm	7,350.00
02539.5.5	Pipe diameter 400 mm	lm	5,200.00
02539.5.6	Pipe diameter 500 mm	lm	2,340.00
02539.5.7	Pipe diameter 600 mm	lm	1,900.00
02539.5.8	Pipe diameter 700 mm	lm	2,250.00
02539.5.9	Pipe diameter 900 mm	lm	3,880.00
2539.6	<u>Reinforced Concrete Encasement for Pipes under Paved or Unpaved Surfaces</u>		
02539.6.1	Pipe diameter 150 mm for house connection.	lm	1,200.00
02539.6.2	Pipe diameter 200 mm	lm	1,425.00
02539.6.3	Pipe diameter 250 mm	lm	1,110.00
02539.6.4	Pipe diameter 315 mm	lm	820.00
02539.6.5	Pipe diameter 400 mm	lm	570.00
02539.6.6	Pipe diameter 500 mm	lm	1,045.00
02539.6.7	Pipe diameter 600 mm	lm	150.00
02539.6.8	Pipe diameter 700 mm	lm	250.00
02539.6.9	Pipe diameter 900 mm	lm	480.00
2539.7	<u>Concrete Encasement for Pipes in Water Course</u>		
02539.7.1	Pipe diameter 200 mm	lm	1,060.00
02539.7.2	Pipe diameter 250 mm	lm	1,450.00
02539.7.3	Pipe diameter 315 mm	lm	2,610.00
02539.7.4	Pipe diameter 500 mm	lm	380.00

2539.8	<u>Reinforced Concrete Manholes and Chambers</u>		
02539.8.1	Cast in situ reinforced concrete chamber for house connection, internal size 600 x 450 mm, with medium duty ductile iron covers and frames, clear opening size 600 x 450 mm, chamber depth up to 2.0 m.	№	1,775.00
02539.8.2	Precast concrete manhole, circular chamber of diameter 1200 mm, or cast in situ reinforced concrete manhole, square chamber of size 1200 x 1200 mm, with heavy duty ductile iron manhole covers and frames, clear opening size 600 mm diameter, manhole depth up to 2.0 m.	№	2,073.00
02539.8.3	Ditto but, manhole depth from 2.0 m to 3.0 m.	№	280.00
02539.8.4	Precast concrete manhole, circular chamber of diameter 1500 mm, or cast in situ reinforced concrete manhole, square chamber of size 1500 x 1500 mm, with heavy duty ductile iron manhole covers and frames, clear opening size 600 mm diameter, manhole depth up to 2.0 m.	№	120.00
02539.8.5	Ditto but, manhole depth from 2 m to 3 m.	№	63.00
02539.8.6	Ditto but, manhole depth from 3 m to 4 m.	№	55.00
02539.8.7	Ditto but, manhole depth from 4 m to 5 m.	№	17.00
02539.8.8	Ditto but, manhole depth from 5 m to 6 m.	№	7.00
02539.8.9	Precast concrete manhole, circular chamber of diameter 1800 mm, or cast in situ reinforced concrete manhole, square chamber of size 1800 x 1800 mm, with heavy duty ductile iron manhole covers and frames, clear opening size 600 mm diameter, manhole depth up to 2 m.	№	6.00
02539.8.10	Ditto but, manhole depth from 2 m to 3 m.	№	16.00
02539.8.11	Ditto but, manhole depth from 3 m to 4 m.	№	17.00
02539.8.12	Ditto but, manhole depth from 4 m to 5 m.	№	3.00
2539.9	<u>Backdrop Connections to Manholes</u>		
02539.9.1	Backdrop connections to manholes, drop depth greater than 1.0 m to 2.0 m.	№	11.00
02539.9.2	Ditto, but drop depth greater than 2.0 m to 3.0 m.	№	6.00
02539.9.3	Ditto, but drop depth greater than 3.0 m to 4.0 m.	№	1.00
02539.9.4	Ditto, but drop depth greater than 4.0 m to 6.0 m.	№	2.00
02539.9.5	Ditto, but drop depth greater than 8.0 m to 10.0 m.	№	1.00
3.1	Additional Cost for Working in an Area with Steep Slopes: HZL28 to HZL48	LS	1.00
3.2	Final Design Supply and Install of Pipe Works and Steel Support at Bridge Crossing	LS	1.00
3.3	Additional Cost for Work in An Area of Difficult Access - Twaiy	LS	1.00
3.4	Additional Cost for Work in a Restricted Area - Saadnayel	LS	1.00
3.5	Additional Cost for Work in a Restricted Area - Hazzerta	LS	1.00

2. Pumping Stations

Item	Description	Unit	QTY
1.0000	<u>General</u>		
1.0001	Checking, completing, and/or performing topographic survey and site delimitation	Site	1.00
1.0002	Site clearance	L.S.	1.00
1.0003	Site rearrangement after construction	L.S.	1.00
1.1000	<u>Earthworks</u>		
1.1200	<u>Excavation</u>		
1.1201	Excavation in all types of soils and rocks and demolition of existing concrete structures and transport of unsuitable backfilling material to disposal sites	cu.m	550.00
1.1400	<u>Backfilling</u>		
1.1401	Backfilling and compaction	cu.m	200.00
1.2000	<u>Concrete works and accessories</u>		
1.2100	<u>Concrete works</u>		
1.2101	Blinding and mass concrete Class C20	cu.m	12.00
1.2102	Reinforced concrete class C30, 350 kg of cement /cu.m, for buildings, including formwork	cu.m	170.00
1.2103	Water stop up to 25 cm in width	lin.m	32.00
1.2104	Cyclopean concrete	cu.m	10.00
1.2105	Steel reinforcement for buildings	Ton	20.00
1.3000	<u>Plastering</u>		
1.3001	Rendering or plastering of interior and exterior surfaces	sq.m	100.00
1.4000	<u>Waterproofing</u>		
1.4001	Internal lining for sewer pit	sq.m	500.00
1.4002	Waterproofing of reservoir and other buildings roof slabs with thermal insulation	sq.m	90.00
1.5000	<u>Metal works</u>		
1.5001	Supply and installation of steel covers including painting	sq.m	4.00
1.5002	Supply and installation of metal works: steel protection bars for exterior windows, metallic ladders with or without safety hoops, gratings for channels, railings, locks and all other metal works, including painting (blue color)	kg	300.00
1.6000	<u>Finishing works</u>		
1.6100	<u>Industrial flooring</u>		
1.6101	Supply and application of industrial flooring	sq.m	50.00
1.62	<u>Washable Paint internal or external use coating</u>		
1.6201	Supply and application of internal or external use coating	sq.m	200.00
1.6202	Supply and application of external use coating	sq.m	140.00
1.7000	<u>Fence</u>		
1.7001	Supply and installation of site's external fence, including painting	lin.m	102.00
1.7002	Supply and installation of the access gate (L = 4 m)	L.S.	1.00
1.8000	<u>Asphalting</u>		
1.8001	Subgrade compaction, sub-base and base preparation, and asphalting	sq.m	100.00
1.000	<u>Supply of mechanical, electrical & control equipment and accessories as per particular specifications</u>		
1.000	<u>Supply of mechanical, electrical and control equipment and accessories as per particular specifications</u>		
1.001	Motopumpsets (H= 40m , Q= 3.5 l/s)	Nr.	2.00
1.001	Motopumpsets (H= 50m , Q= 3.5 l/s)	Nr.	2.00
1.001	Motopumpsets (H= 50m , Q= 4.58 l/s)	Nr.	2.00
1.001	Motopumpsets (H= 57m , Q= 30 l/s)	Nr.	3.00
1.001	Motopumpsets (H= 60.18m , Q= 6.28 l/s)	Nr.	2.00
1.001	Motopumpsets (H= 64m , Q= 12.38 l/s)	Nr.	2.00
1.001	Motopumpsets (H= 74m , Q= 3.5 l/s)	Nr.	2.00
1.002	Double Air release valve DN60, PN16 with isolating valve	Nr.	12.00
1.002	Double Air release valve DN80, PN16 with isolating valve	Nr.	3.00
1.003	Dismantling Joints DN125 PN16	Nr.	4.00
1.003	Dismantling Joints DN200 PN16	Nr.	5.00
1.003	Dismantling Joints DN80 PN16	Nr.	20.00
1.004	Check Valve DN125 PN16	Nr.	2.00
1.004	Check Valve DN200 PN16	Nr.	3.00
1.004	Check Valve DN80 PN16	Nr.	10.00
1.005	Gate Valve DN125 PN16	Nr.	4.00

1.005	Gate Valve DN200 PN16	Nr.	5.00
1.005	Gate Valve DN80 PN16	Nr.	20.00
1.006	Odor control system.	Nr.	7.00
1.007	Manual stainless steel 316 Bar Screen	Nr.	7.00
1.008	Flanged sluice valves (1m x 1m)	Nr.	7.00
1.009	Piping and fittings for screening room and bypass manhole	L.S.	7.00
1.010	Drinking water network and reservoir capacity 4.0 m3 with its steel supports and all necessary accessories	L.S.	7.00
1.011	Hydraulic accessories (bends, tees, pipes, flanges, gaskets, joints, bolts, nuts, supports, insert well head piece...)	LS	7.00
1.012	Pole-mounted power transformer dual primary voltage: 15/20 KV, secondary voltage: 400 volt rated power 100 KVA	Nr.	5.00
1.012	Pole-mounted power transformer dual primary voltage: 15/20 KV, secondary voltage: 400 volt rated power 160 KVA	Nr.	1.00
1.012	Pole-mounted power transformer dual primary voltage: 15/20 KV, secondary voltage: 400 volt rated power 250 KVA	Nr.	1.00
1.013	Subscription to EDL	LS	7.00
1.014	Standby generator 110 kva	Nr.	1.00
1.014	Standby generator 250 kva	Nr.	1.00
1.014	Standby generator 30 kva	Nr.	1.00
1.014	Standby generator 40 kva	Nr.	2.00
1.014	Standby generator 60 kva	Nr.	2.00
1.015	Main ATS panel 135A	Nr.	1.00
1.015	Main ATS panel 150A	Nr.	4.00
1.015	Main ATS panel 220A	Nr.	1.00
1.015	Main ATS panel 400A	Nr.	1.00
1.016	VFD Starter control panel 10 kW	Nr.	2.00
1.016	VFD Starter control panel 12.5 kW	Nr.	4.00
1.016	VFD Starter control panel 15 kW	Nr.	4.00
1.016	VFD Starter control panel 42 kW	Nr.	2.00
1.016	VFD Starter control panel 70 kW	Nr.	3.00
1.017	Low voltage cable 1*(3*25+16) mm ²	lin.m	240.00
1.017	Low voltage cable 1*(3*70+35) mm ²	lin.m	85.00
1.018	Low voltage cable 1(3*120+70) mm ²	lin.m	25.00
1.018	Low voltage cable 1(3*150+70) mm ²	lin.m	100.00
1.018	Low voltage cable 1(3*35+16) mm ²	lin.m	25.00
1.018	Low voltage cable 1(3*50+25) mm ²	lin.m	50.00
1.018	Low voltage cable 1(3*70+35) mm ²	lin.m	25.00
1.018	Low voltage cable 1(3*70+50) mm ²	lin.m	25.00
1.019	Low voltage cable 1(3*185+95) mm ²	lin.m	25.00
1.019	Low voltage cable 1(3*95+50) mm ²	lin.m	125.00
1.019	UPS system	L.S.	7.00
1.021	Electrical accessories	L.S.	7.00
1.021	Grounding system - Lightning & Surge Protections	L.S.	7.00
1.022	Piezoresistive pressure measurement (suitable for sewage application)	Nr.	10.00
1.024	Temperature measurement (set of 3 per motor)	set	15.00
1.025	Piezoresistive level measurement	Nr.	11.00
1.025	Temperature measurement (set of 3 per motor)	set	15.00
1.026	Oil leakage detection system	Nr.	15.00
1.027	Electromagnetic flowmeter DN 20 PN 16 suitable for sewage application with its Manhole.	Nr.	1.00
1.028	Electromagnetic flowmeter DN 125 PN 16 suitable for sewage application.	Nr.	1.00
1.028	Electromagnetic flowmeter DN 80 PN 16 suitable for sewage application.	Nr.	5.00
1.029	Instrumentation and control accessories	L.S.	7.00
1.029	Monitoring and control system to Zahle SCADA system.	L.S.	7.00
1.030	Fire extinguishers	L.S.	7.00

<u>2.000</u>	<u>Installation of mechanical, electrical and control equipment</u>		
2.001	Motopumpsets	Nr.	15.00
2.002	Piping and accessories	L.S.	7.00
2.003	Portable fire extinguishers	L.S.	7.00
2.004	EDL Electrical Power Transformer	L.S.	7.00
2.005	Generator set	L.S.	7.00
2.006	Odor control system	Nr.	7.00
2.007	Monitoring and control system to Zahle SCADA system	L.S.	7.00
2.008	Drinking water network and reservoir	L.S.	7.00
2.009	Electrical system	L.S.	7.00
2.010	Solar System	L.S.	7.00
2.011	Instrumentation and Control	L.S.	7.00
2.012	Training, testing and commissioning	L.S.	7.00
<u>3.000</u>	<u>Design, supply and installation of a complete surge suppression system</u>		
3.001	Surge suppression system	Nr.	7.00
<u>1.000</u>	<u>New Items</u>		
1.001	Connect 7 stations to Zahle SCADA center including all required al Licenses programing and engineering.	Nr.	1.00
1.002	Supply, install and connect monitoring system at Aitanit WWTP	Nr.	1.00

Annex B: HKBros' ESHS Policy



H-ALH-1
ID: 01-10-2013

ENVIRONMENTAL, SOCIAL, HEALTH AND SAFETY POLICY

It is the policy of **Hanna Khoury & Brothers (HKBROS)** to conduct its business in a manner that protects the health and safety of its employees, of others involved in its activities, and of the public.

HKBROS will conduct its business in a manner that is compatible with the environmental and economic needs of the communities in which it operates.

HKBROS stresses on all employees, workers, subcontractors, and others working on its behalf their responsibility and accountability for health and safety performance whilst at work and encourages safe behaviour outside of work.

HKBROS takes all measures to protect the environment and to limit damage and nuisance to people and property resulting from pollution, noise, and other outcomes of its operations.

HKBROS does not engage in or support the use of child labour, forced labour, discrimination, or disciplinary practices in its activities neither in its partners' activities.

HKBROS respects freedom of association and the right to collective bargaining according to applicable laws and regulations, and applies responsible standards of the ILO Convention and the Universal Declaration of Human Rights where laws and regulations do not exist.

HKBROS undertakes appropriate reviews and evaluations of its operations to measure progress and to foster compliance with this policy.

HKBROS is committed to continuous efforts to improve health and safety, and environmental and social performance throughout its operations.

Hanna Khoury & Brothers Co. s.a.r.l



Hanna Khoury
General Manager

Annex C: ESHS Regulations

C-1. National Environmental and Social Legal Framework

The extension and rehabilitation of sewers involves a variety of activities that need to abide by national legislations enforced by various government institutions. Table C-1 describes a legal framework governing Lot 1, taking into consideration that no land acquisition or expropriation will be required during its implementation.

Table C-1: National Legal Framework related to the Project

Year	Legislation	Title	Relevant Provisions
Labor			
1946	Labor Law	The Lebanese Labor Code	The Labor Law covers the industrial accident prevention and compensation. It regulates the minimum wage, the minimum age of employment based on their ages and the workplaces, resting periods and vacations for adolescent workers. It also sets the working hours, and the penal code regulation of strikes and lock out in essential employments.
2001	Law No. 335	Pursuant to International Labor Organization (ILO) Convention No 128	This ratified convention addresses the minimum age of employment.
2002	Law No. 400	Pursuant to the ILO Convention No 138	Elimination of the worst form of child labor.
2012	Decree 8987	Prohibition of employment of minors under the age of 18 in work that may harm their health, safety or morals	This Decree restrict the employment of minors under the age of 18 in activities and works that can be harmful to their health, morals and that can limit their education.
2016	Decree 3791	Minimum Wage	Raises the minimum daily wage to 20\$/day.
2018	Decision 29/1	Businesses, professions, crafts and jobs that must be restricted to Lebanese only	Restricts a substantive number of jobs to Lebanese citizens in order to protect the workforce and reduce unemployment. These consist of all jobs practiced by Lebanese citizens include tiling, plastering, gypsum board, iron, wood and aluminum profile installation and other decorative tasks. Engineering is also restricted to Lebanese citizens. On March 21, 2018, a clarification letter was issued by MoL regarding Decision 29/1, which states that Syrians are allowed to occupy jobs in the construction sector that are not restricted to the Lebanese as per Decision 29/1 of 2018.
2000	Law 207	Amendment of Articles in Labor Law	Prohibits all forms of discrimination between men and women in the workplace concerning employment type, remuneration, employment, promotions and raises, vocational training and attire.

Year	Legislation	Title	Relevant Provisions
Environment			
1933	Decree 2761	The prohibition of wastewater discharge into water streams	States the characteristics of channels and reservoirs where wastewater is discharged. In addition to the prohibition of direct or indirect wastewater discharges and waste disposal
1974	Decree 8735	Conservation of Public Hygiene	Solid waste management including collection and disposal is under the control of the municipality. It restricts disposal of wastes in public or private lands adjacent to roads and residential districts Protection against pollution from solid and liquid waste (prohibiting the digging of wells for the disposal of raw sewage, banning sewage infiltration from septic tanks and the use of untreated sewage for the irrigation of vegetables and some fruit trees), and assigning solid waste
1996	Law 558	Protection of forests	Classifies protected forests and defines the prohibited activities and works into the mentioned forests. It also contains offences and penalties.
1996	MOE Decision 52/1	Requirements to protect air, water, and soil pollution	Allowable noise level according to type of areas and the permissible duration of exposure
2001	MOE Decision 8/1	Revised standards for air emissions, liquid effluents and wastewater treatment plants	The decision sets limits for discharge of wastewater into water bodies
2002	Law 444	Framework Law for Environmental Protection	Protect the natural environment against all forms of degradation, air and water and soil pollution, and the promotion of sustainable use of natural resources and conservation of biodiversity
2002	Decree 8803 and its amendments	Organizes the activity of quarries and crushers, licensing procedures, as well as the operation, management, and rehabilitation of quarries.	Ensures the provision of construction material and the disposal of construction waste comply with the decree
2012	Decree 8633	Fundamentals of Environmental Impact Assessment (EIA)	Includes the requirements for conducting and EIA
2017	Circular 7/1	Integrated Solid Waste Management guidelines on the for Municipalities, Union of Municipalities, Qaem maqams and Governors.	Includes information regarding: Sorting at source, List of establishments accepting recyclables, Positive Environmental Impact related to sorting at source, and the scope of use of recyclables.
2020	Law 192	Water Law	Tackles protection of water resources from pollution and management and monitoring of public wastewater treatment facilities
2018	Law 78	Air Quality Law	The investment in any facility or establishment that emanate foul or toxic odors should abide by the different environmental conditions issued by a decision from MOE

Year	Legislation	Title	Relevant Provisions
2018	Law 80	Integrated Solid Waste Management	Covers the management of non-hazardous and hazardous waste, and responsibilities and penalties related to violations of waste management laws
2019	Decree 5605	Management of domestic solid waste	Specifies the principles for sorting domestic solid waste at the source into three categories: organic waste, recyclables, and inert waste.
2019	Decree 5606	Management of hazardous waste	The decree specifies the principles of management (sorting, storage, transport, and disposal) of hazardous waste.
Health and Safety			
2008	Decree 11802	Occupational prevention, safety, and health in all enterprises subject to the Code of Labor	Provides the general regulations for the prevention of occupational hazards and accidents, and the promotion of health and safety in all industrial establishments subject to the Labor Law. These cover prevention and safety, occupational health, the safe use of chemicals at work, as well as
Cultural and Municipal			
1933	Law 166 amended by law 37 of 2008	Antiquity Law	This law defines heritage and antiquity, identifies its ownership, states legislation for excavation and judicial procedures due to violation
1977	Decree-Law 118	Municipal Act	Defining the responsibilities of municipalities
1983	Decree-Law 68	Organizing drilling to extend lines of public services in roads	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	Any archaeological artefact located in Lebanon and deemed to be of historical, artistic, architectural or anthropological significance by the Ministry of Culture must be protected
2016	Decree 3057	Procedures for the preventive and rescue excavations	Defines and regulates the procedures followed by the DGA for the preventive and rescue excavations
Traffic			
2012	Law 243	New Traffic Law	Provide general driving rules and defines the penalties upon violation of the law
General			
1943	Legislative Decree 340	Penal Code	The law defines the type of crimes such as rape; lewd acts by threat, violence, or against minors; and other similar crimes. It also states punishments and legality of penalties
1997	Law 623		Implementing penalties for vandalism of water, telephone and electricity infrastructure

Year	Legislation	Title	Relevant Provisions
1991	Law 58	Expropriation law	States general and specific provisions for land acquisition. Also includes improvement tax resulting from the implementation of public works
2016	Law 340	Amendment of Penal Code	Under sexual violence Article 522 of the Penal Code exonerated a perpetrator of kidnapping and adultery who married his victim. This was abolished in this law.
2016	Law 293	Law on Protection of Women and Family Members from Domestic Violence.	Advances women's rights and safety. Establishes important protection measures and related policing and court reforms.

Numerous governmental public institutions will be involved in the different stages of the implementation of the ESMP/ CESMP of the Project. They are described in Table C-2, along with their mandate and relevant responsibilities.

Table C-2: Relevant Institutions

Institution	Relevant Role
Council for Development & Reconstruction (CDR)	<p>The CDR will lead the execution of the project components and designate competent parties to implement them. The CDR will also supervise the implementation of the Environmental and Social Management Plan (ESMP) and will make sure that the recommendations are included in the Terms of Reference (TOR) of the contractors executing the construction activities.</p> <p>The CDR will oversee the implementation of Environmental and Social Safeguards to ensure compliance with the World Bank safeguards policies. In addition to that, the CDR will prepare the necessary reports to be submitted to the World Bank. Finally, CDR will share reports on CESMP and OESMP implementation as needed with the MoE focal point who is part of the LQPPP PMU. No reports will be sent officially to the MoE during the construction period.</p>
Ministry of Energy and Water (MoEW)/ Bekaa Water Establishment (BWE)	<p>The MoEW, through the BWE, is responsible for wastewater and potable water management. The MoEW will be responsible for approving the design of wastewater networks, and other matters related to water resources management. The BWE will monitor the implementation of the ESMP for the project activities during the operation phase.</p>
Litani River Authority (LRA)	<p>LRA has overall responsibility for the management of the Litani River and the Qaraoun lake. As part of the Lake Qaraoun Committee, it shall oversee the implementation of this project which contributes to the protection of the quality of the River and the Qaraoun</p>
Ministry of Environment (MoE)	<p>MoE is the national competent authority responsible for the protection of the environment in Lebanon. MoE is responsible for setting regulations and standards, and approving implementation and the development of projects sustainably.</p> <p>MoE is responsible to enforce and supervise the implementation of the Environmental and Social Management Plan (ESMP), through reviewing and approving the Construction Environmental Management Plan (CEMP) and the Operation Environmental Management Plan (OEMP) prepared by the contractor and submitted by CDR and BWE respectively, imposing regular reporting on their implementation by CDR (construction phase) and BWE (operation phase) to monitor their proper implementation, conducting regular audits/inspections during construction and operation activities, pointing out non-compliances, and mandating corrective action) as needed. Moreover, MoE is responsible for making sure the environmental monitoring plan is being implemented by requesting that CDR and BWE provide the monitoring results for the construction and operation phases respectively in the periodic reports to be submitted to MoE and verifying them.</p>

Institution	Relevant Role
Ministry of Public Works and Transport (MoPWT)	According to Decree 13379/1998, the Directorate General of Roads and Buildings of the MoPWT is responsible for the inspection of sewage networks. Moreover, classified road networks fall under the MoPWT authority. Consequently, it is important to coordinate with the MoPWT when implementing the project.
Ministry of Interior and Municipalities (MoIM)/ Municipalities	The MOIM is responsible for law enforcement and stopping infractions and violations and oversees the affairs and operations of local authorities. On the other hand, responsibilities of municipalities include general programs of works, cleanliness, health, water, lighting projects, the implementation, rectifying and enlarging of roads, transportation organizing. In addition, it includes preparation of general plans related to sanitary projects, maintenance of infrastructure including wastewater networks, as well as working for the protection of the environment. Local road networks fall under the municipalities' authority. Consequently, it is important to collaborate and coordinate with the municipalities when implementing the project, especially for the communication with the impacted communities. The municipalities and Unions of Municipalities will supervise the implementation of the ESMP and facilitate the implementation of some mitigation measures. The municipalities and Unions of Municipalities may be involved if complaints are received during Project implementation, including communication with the impacted community.
Ministry of Labor (MoL)	The MoL is responsible for ensuring that the labor law is applied for all workers present on the working sites
Ministry of Culture (MoC)	Any artefacts of potential historical importance that can be found on a rehabilitation site fall under the jurisdiction of the Directorate General of Antiquities at the MOC

C-2. Word Bank Policies

3. Safeguards Policies

The Project activities should comply with two safeguards operational policies and procedures of the World Bank– specifically OP/BP 4.01 on Environmental Assessment and OP/BP 4.12 on Involuntary Resettlement.

The OP 4.01 is triggered as the project could have impacts on the environment due to the extension and rehabilitation of wastewater networks and associated civil works. Under this policy, this project falls under Category “B” according to the Project Appraisal Document (PAD) and the Environmental and Social Management Framework (ESMF).

Although OP 4.12 was triggered by this project. A Resettlement Policy Framework was developed for the LQPPP. No involuntary resettlement or land acquisition will take place in Lot 1, the subject of this CESMP.

4. Access to Information

The WB's Policy on Access to Information governs the public accessibility of information in the WB's possession. The WB allows access to any information in its possession that is not on a list of exceptions. This Policy is based on five principles:

- Maximizing access to information;
- Setting out a clear list of exceptions;
- Safeguarding the deliberative process;
- Providing clear procedures for making information available; and
- Recognizing requesters' right to an appeals process.

5. Consultation and Disclosure Policy

According to OP/BP 4.01, a public consultation with project-affected people and local nongovernmental organizations (NGOs) must be conducted for all projects under Category A and Category B. The aim of the consultation is to present to the public the components of the project along with potential environmental and social impacts and takes their comments and concerns into consideration.

Accordingly, during the preparation of the ESMP, ELARD organized a public consultation on August 28, 2018 at the Chamber of Commerce Zahle to discuss the findings of the ESMP. In addition, this ESMP is disclosed on the CDR website.

6. Guidelines and Manuals

The World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines are mandatory and need to be adopted throughout the project duration. In addition, the WB has developed guidelines and manuals that need to be adopted during the ESMP implementation phase of the project. These guidelines and manuals include technical reference documents with general and sector-specific examples of good practices during all phases of the proposed project. Guidelines and manuals include:

- WBG Environmental, Health and Safety (EHS) Guidelines.
- Disclosure Handbook.
- The World Bank Participation Sourcebook.
- Doing Better Business through Effective Public Consultation and Disclosure – A good Practice Manual, issued by IFC.
- Good Practice note addressing Gender Based Violence in Investment Project Financing involving Major Civil Works.

C-3. International Treaties and Conventions

Table C-3 presents the international conventions that Lebanon is a signatory to whose provisions may be relevant to the project.

Table C-3: Relevant International Treaties and Conventions

Agreement	Date of Ratification	Relevance to Project
Convention on Biological Diversity, Rio de Janeiro – 1992	Ratified in 1994	Protection and conservation of biodiversity during construction and operation activities
Convention to Combat Desertification – 1994	Ratified in 1994	Control land clearance and Project footprint size
The Framework Convention on Climate Change, or Global Warming Convention (UNFCCC)– 1992	Ratified in 1994	Reduce greenhouse gas emissions from construction and operation activities
The Kyoto Protocol – 1997	Ratified in 2006	
Paris Agreement – Paris Climate Conference (COP21), part of the UNFCCC – 2015. Agreement Entered into force in October 2016.	Signed in 2016. Not yet Ratified.	

Agreement	Date of Ratification	Relevance to Project
Vienna Convention for the Protection of the Ozone Layer – 1985 Montreal Protocol on Ozone- Depleting Substances – 1987 and its amendments	Ratified between 1993 and 1999	Regulate the use of ODS (ozone depleting substances) during all phases of the Project
Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property; Paris, 14 November 1970	Ratified in 1992	Protection of any potential cultural properties and natural heritage found in the project sites
Convention concerning the Protection of the World Cultural and Natural Heritage; Paris, 16 November 1972	Ratified in 1983	
Convention 120 concerning Hygiene in Commerce and Offices	Ratified in 1977	Protects workers health and ensures proper sanitation and hygiene.
Convention 136 concerning Protection against Hazards of Poisoning Arising from Benzene	Ratified in 2000	
Convention 139 concerning Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents	Ratified in 2000	

C-4. Environment, Health and Safety Standards and Guidelines

1. Wastewater Discharge Targets

Table C-4 represents the allowable contaminants concentration for wastewater when discharged into the surface water bodies, or the public sewers, according to the MOE decision 8/1 dated 30/1/2001, as well as the corresponding EHS guidelines for treated sanitary sewage discharges into surface water bodies that are adopted by the IFC of the World Bank Group in the Environmental, Health, and Safety Guidelines for environmental wastewater and ambient water quality (WBG-IFC, 2007). Note that the limits that will apply for the project are those of WBG EHS guidelines for treated sanitary sewage discharges where they are more stringent.

Table C-4: Limits for Wastewater Discharge into Receiving Water Bodies and Public Sewers (MOE Decision 8/1 for 2001) and WBG EHS Treated Sanitary Sewage Discharge Guidelines

Parameter	(MOE Decision 8/1 for 2001)		WBG EHS guidelines
	Discharge into Public Sewers	Discharge into Surface Water Bodies	Treated Sanitary Sewage Discharge
Color	none	none	
pH	6-9	6-9	6-9
Temperature	35°C	30°C	
BOD (5-day 20°C)	125 mg/l	25 mg/l	30 mg/L
COD (dichromate)	500 mg/l	125 mg/l	125 mg/L
Total Phosphorus	10 mg/l	10 mg/l	2 mg/L
Total Nitrogen	60 mg/l	30 mg/l	10 mg/L

Parameter	(MOE Decision 8/1 for 2001)		WBG EHS guidelines
	Discharge into Public Sewers	Discharge into Surface Water Bodies	Treated Sanitary Sewage Discharge
Suspended solids	600 mg/l	60 mg/l	50 mg/L
AOX	5	5	
Detergents	-	3 mg/l	
Coliform Bacteria 37°C in 100 ml	-	2,000	400
Salmonellae	Absence	Absence	
Hydrocarbons	20 mg/l	20 mg/l	
Phenol Index	5 mg/l	0.3 mg/l	
Oil and grease	50 mg/l	30 mg/l	10 mg/l
Total Organic Carbon (TOC)	750 mg/l	75 mg/l	
Ammonia (NH ₄ ⁺)	-	10 mg/l	
Silver (Ag)	0.1 mg/l	0.1 mg/l	
Aluminum (Al)	10 mg/l	10 mg/l	
Arsenic (As)	0.1 mg/l	0.1 mg/l	
Barium (Ba)	2 mg/l	2 mg/l	
Cadmium (Cd)	0.2 mg/l	0.2 mg/l	
Cobalt (Co)	1 mg/l	0.5 mg/l	
Chromium total (Cr)	2 mg/l	2 mg/l	
Hexavalent Chromium (Cr ^{VI})	0.2 mg/l	0.2 mg/l	
Copper total (Cu)	1 mg/l	0.5 mg/l	
Iron total (Fe)	5 mg/l	5 mg/l	
Mercury total (Hg)	0.05 mg/l	0.05 mg/l	
Manganese (Mn)	1 mg/l	1 mg/l	
Nickel total [Ni]	2 mg/l	0.5 mg/l	
Lead total (Pb)	1 mg/l	0.5 mg/l	
Antimony (Sb)	0.3 mg/l	0.3 mg/l	
Tin total (Sn)	2 mg/l	2 mg/l	
Zinc total (Zn)	10 mg/l	5 mg/l	
Active (Cl ₂)	-	1 mg/l	
Cyanides (CN ⁺)	1 mg/l	0.1 mg/l	
Fluorides (F)	15 mg/l	25 mg/l	
Nitrate (NO ₃ ⁻)	-	90 mg/l	
Phosphate (PO ₄ ³⁻)	-	5 mg/l	
Sulphate (SO ₄ ²⁻)	1,000 mg/l	1,000 mg/l	
Sulphide (S ²⁻)	1 mg/l	1 mg/l	

Source: EHS 2007 and MOE Decision 8/1 for 2001

2. Air Emissions Targets

Table C-5 shows the WHO Ambient Air Quality Guidelines (WHO, 2005) that are adopted by the IFC of the World Bank Group in the Environmental, Health, and Safety Guidelines of Air Emissions and Ambient Air Quality and the National Ambient Air Quality Standards (NAAQS) of MOE Decision 52/1-1996. As can be noted from comparison of these levels, the NAAQS maximum levels of the ambient air quality are much higher for several pollutants comparing to the same pollutants of the WHO. These elements are SO₂, NO₂, PM₁₀, Lead and Benzene. However, the other pollutants have similar values. Therefore, for this project, the WHO standards apply.

Table C-5: WHO Guidelines for Ambient Air Quality of 2005 and NAAQS of MOE Decision 52/1-1996

Parameters	WHO Guidelines (µg/m ³)	NAAQS Maximum Levels
Sulfur dioxide (SO₂)	500 (10 minutes) 20 (24 hrs)	-
Nitrogen dioxide (NO₂)	200 (1 hr) 40 (Annual)	200 (1 hr) 150 (24 hrs) 100 (Annual)
Carbon Monoxide (CO)	30,000 (1 hr) 10,000 (8 hrs)	30,000 (1 hr) 10,000 (8 hrs)
Ground-level Ozone (O₃)	100 (8 hrs)	150 (1 hr) 100 (8 hrs)
Total Suspended Particles (TSP)	150 (24 hrs)	120 (24 hrs)
PM₁₀	50 (24 hrs) 20 (Annual)	80 (24 hrs)
PM_{2.5}	25 (24 hrs) 10 (Annual)	NA
Lead	0.5 (Annual)	1 (annual)
Benzene	Unit Risk Life 6x10 ⁻⁶	16.2 (annual)

Source: WHO 2005 and MOE Decision 52/1-1996

3. Noise Emissions Targets

Article 46 of Law 444 recognizes that loud noises, particularly noises caused by machinery and vehicles, may be harmful to human health and the environment. Table C-6 shows the noise level guidelines according to the EHS Guidelines (WHO Noise Levels) and the national noise standards as per MOE Decision 52/1. Comparing these levels, although some characteristics differ for WHO in reference to the type of area and the day hours that extend to 10 pm instead of 6 pm for the national standards, the noise limits for institutional and educational areas by the WHO are more stringent and therefore apply. Noise limits for residential, industrial and commercial areas are more stringent in the national standards and therefore apply.

Table C-6: WHO Noise Level Guidelines Compared to National Levels

Type of Area	WHO Noise Level (dB)		Noise Standards as per MOE Decision 52/1-1996		
	Day (7 am - 10 pm)	Night (10 pm - 7 am)	Day (7 am - 6 pm)	Evening (6 pm - 10 pm)	Night (10 pm - 7 am)
Residential	55	45	45-55	40-50	35-45
Institutional	55	45	-	-	-
Educational	55	45	55-65	50-60	45-50
Industrial	70	70	60-70	55-65	50-60
Commercial	70	70	55-65	50-60	45-50

Table C-7 presents the hours of work permitted under noise levels exceeding 90 dB.

Table C-7: Hours of Work Permitted under Noise Level

Noise Level (dB)	95	100	105	110	115
Hours permitted to work	4	3	1	0.5	0.25

مدونة سلوك - Code of Conduct

مشروع الأعمال المتبقية المتعلقة بتوسيع شبكة الصرف الصحي لربطها بمحطة معالجة مياه الصرف الصحي في رحلة الممول من قبل البنك الدولي، بإدارة وتنفيذ مجلس الائتماء والإعمار لصالح وزارة الطاقة والمياه

تعتبر مدونة السلوك هذه وثيقة ضرورية لحماية جميع العاملين في مشروع تمديد شبكات تجميع مياه الصرف الصحي من جميع مظاهر العنف القائم على أسس اجتماعية، التمييز، سوء المعاملة، التحرش والاعتداء والاستغلال الجنسي وأي سلوك اجتماعي آخر يخلّ بحقوق الإنسان، المجتمع المحلي والآداب العامة، بما في ذلك المعايير التالية:

<ul style="list-style-type: none"> • الالتزام بمعاملة النساء والرجال والشباب باحترام بغض النظر عن انتمائهم الديني، العرقي، الطائفي، اللغوي، التوجه السياسي، الإعاقة، الجنسية، الجندرة، الخ. • احترام موقع العمل وأدوات العمل المشتركة: نظافة المكان، عدم التعدي على الممتلكات العامة المجاورة للأعمال، الخ. 	<p>١- التزام الاحترام والآداب العامة</p>
<ul style="list-style-type: none"> • العنف القائم على النوع الاجتماعي: أي فعل مؤذٍ يُرتكب ضد إرادة الشخص. وهو مبني على الفروق بين الذكور والإناث التي يُعزى وجودها لأسباب اجتماعية. • العنف الجنسي: الاغتصاب، الاعتداء الجنسي، التحرش الجنسي، الخ. • العنف الجسدي: الضرب، الصفع، الضرب المتكرر أو باستعمال أداة، الخ. • العنف العاطفي: الاستغلال النفسي، والابتزاز، الخ. • العنف الاقتصادي: الحرمان من الموارد، الحصول على أدوات العمل، عدم الالتزام بالأجر المتفق عليه، الخ. 	<p>٢- عدم استعمال العنف بشئ أشكاله</p>
<ul style="list-style-type: none"> • الالتزام بالتصدي لأي شكل من أشكال التحرش أو التمييز أو التخويف أو الاستغلال أو الاعتداء الجنسي بما في ذلك التعليقات المهينة المتعلقة بالميل الجنسي، القبح بألقاب أو عبارات ذات دلالات جنسية، التحديق بطريقة ذات إيحاء جنسي، اللمس غير مرغوب فيه، القيام بحركات جنسية غير لائقة، تبادل الحكايات أو النكات الجنسية، توجيه رسائل ذات إيحاء جنسي بأي شكل من الأشكال، محاولة الاعتداء الجنسي أو ارتكابه، بما في ذلك الاغتصاب. 	<p>٣- التحرش والاعتداء والاستغلال الجنسي</p>

أنا الموقع أدناه، أقر بأنني قرأت وتلّيت وفهمت وتلّفت الشرح والتدريب والمعلومات الكافية عن مدونة السلوك التابعة للمشروع. وأوافق على الامتثال للمعايير الواردة فيها وأعرف أن أي إجراء يتعارض مع مدونة السلوك هذه قد يؤدي إلى اتخاذ إجراء تأديبي وقد يؤثر على استمرارية عملي ضمن مشروع تمديد شبكات مياه الصرف الصحي.

أسم وامضاء المشرف على الاعمال (من قبل الاستشاري) التاريخ:	أسم وامضاء مسؤول الموقع (من قبل المتعهد) التاريخ:	أسم وامضاء العامل التاريخ:
---	---	-----------------------------------

☐ العامل يجيد القراءة، وقد دَوّن اسمه وإمضاءه

☐ العامل لا يجيد القراءة، وقد تَلّيت عليه مدونة السلوك وتمّ الامضاء نيابةً عنه من قبل الأخصائي الاجتماعي

Code of Conduct

REMAINING WORKS RELATED TO THE EXPANSION OF SEWAGE NETWORK TO CONNECT TO ZAHLE WASTEWATER TREATMENT PLANT

Funded by the World Bank and Managed and Implemented by the Council for Development and Reconstruction on behalf of the Ministry of Energy and Water

This Code of Conduct is considered as an essential document for the protection of all personnel working on the Expansion of Wastewater Collection Networks project from all manifestations of gender-based violence, bullying, ill-treatment, harassment, assault, sexual exploitation and any other social behavior that violates human rights, the local community and public morals, including the following:

1. Commitment to respect and public morals	<ul style="list-style-type: none">• Commitment to treating women, men and youth with respect, regardless of race; color; language; religion; political or other opinion; national, ethnic or social origin; sexual orientation or gender identity; disability; birth or other status.• Respecting the work site and common work tools, the cleanliness of the place, not trespassing on public property in the vicinity of the works
2. Non-use of violence in all its forms	<ul style="list-style-type: none">• Gender-based violence: any harmful act that is committed against a person's will and is based on socially ascribed (i.e. gender) differences between males and females• Sexual violence: rape, sexual assault, sexual harassment, etc.• Physical violence: hitting, slapping, hitting repeatedly or using an object, etc.• Emotional violence: psychological exploitation, blackmail, etc.• Economic violence: deprivation of resources, access to work tools, non-compliance with the agreed wage, etc.
3. Harassment, assault, and sexual exploitation	<ul style="list-style-type: none">• The obligation to stand up to any form of harassment, discrimination, intimidation, exploitation or sexual assault, including degrading comments related to sexual orientation, defamation using titles or phrases with sexual connotations, staring in a sexually suggestive manner, unwelcome touching, and making inappropriate sexual moves, exchanging sexual tales or jokes, sending sexually suggestive messages in any form, attempting or perpetrating sexual assault, including rape.

I, the undersigned, acknowledge that I have read, have been read to, understood, and received explanation, training and sufficient information about the project's code of conduct, and agree to comply with the requirements contained therein, and know that any action that contradicts this Code of Conduct may lead to disciplinary action and may affect the continuity of my work within the Expansion of Wastewater Collection Networks project.

Name and signature of worker	Name and signature of site engineer (contractor)	Name and signature of supervisor (consultant)
Date:	Date:	Date:

- ☐ The worker can read and has written his name and signature
- ☐ The worker cannot read, and the Code of Conduct was read to him and was signed on his behalf by the Social Expert or the ESHS Officer



مشروع الحدّ من تلوث بحيرة القرعون
الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي
معالجة الصرف الصحي في زحلة وعيتيت



آلية مراجعة الشكاوى (GRM)

للاستفسار أو لتقديم الاقتراحات أو الشكاوى، يرجى الاتصال بوحدة مراجعة الشكاوى لدى مجلس الانماء والإعمار من الاثنين إلى الجمعة بين التاسعة صباحاً والثالثة بعد الظهر، وذلك عبر:

- الهاتف: ٩٨٠٠٩٦ - ٠١ / ٩٨٠٠٩٧ - ٠١ / مقسم ١٤٩
- البريد الإلكتروني: GRM.LQPPP@cdr.gov.lb
- تسجيل كتاب رسمي لدى مجلس الانماء والاعمار على العنوان: تلة السراي - رياض الصلح، بيروت - لبنان

كما يمكن إبداء الرأي حول تنفيذ المشروع عن طريق مسح هذا الباركود




لأي مراجعة: ٧٨٤٩٢٢ - ٧١
مركز الاتصال: ٦٤٨٧٢٥ - ٠٣



Annex F: Letters on Initiation of Works and Request for Designation of Construction Waste Disposal Sites

1. Zahleh Municipality- Construction Waste


Hanna Khoury and Brothers. Co.

H-ALH-1
ID: 01-10-2013

بيروت في ٢٠٢٤/٥/١٤

رقم المرجع: QC1W1a /Mun/24-001

بلدية زحلة - مملكة
ور ١٨٥٢
تليد برقم ٥٥٤-٥-١٥

جانب: رئيس بلدية زحلة
المهندس اسعد زغيب المحترم

المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في زحلة وعيتيت
(مجلس الانماء والاعمار)

الموضوع: اخذ العلم بمباشرة الأعمال و تأمين مكب لنواتج الأعمال.

تحية وبعد،

لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه،
جننا بكتابنا هذا نحيطكم علماً باننا سوف نباشر بالأعمال وفقاً لمقتضيات العقد مع كامل استعدادنا للتعاون
والتسيق مع اجهزة البلدية وفقاً للقوانين والانظمة المرعية الاجراء.

كما نطلب من جانبكم المساعدة على تأمين مكب لنواتج الأعمال المنفذة ضمن النطاق البلدي.

وتفضلوا بقبول فائق الاحترام

شركة حنا الخوري و أخوانه

م. عماد الخوري
منسق المشروع


Hanna Khoury & Brothers
Co. sarl

Hanna Khoury & Brothers Co. SARL New Rawda – Najarian Bldg 3rd Floor. Tel: 01-689665 Fax: 01-692056 Mobile: 03-357183
Website: <http://www.hkbros.com> email: info@hkbros.com

2. Ferzol Municipality- Construction Waste



Hanna Khoury and Brothers. Co.

H-ALH-1
ID: 01-10-2013

بيروت في ١٤/٥/٢٠٢٤

رقم المرجع: QC1W1a /Mun/24-004

جانب: رئيس بلدية الفرزل
السيد ملحم الغصان المحترم

المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في رحلة وعيتيت
(مجلس الانماء والاعمار)

الموضوع: اخذ العلم بمباشرة الأعمال و تأمين مكب لنواتج الأعمال.

تحية وبعد،

لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه،

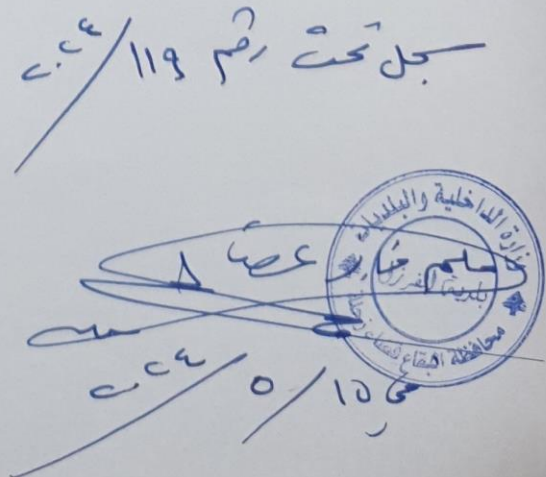
جننا بكتابنا هذا نحيطكم علماً باننا سوف نباشر بالأعمال وفقاً لمقتضيات العقد مع كامل استعدادنا للتعاون والتسيق مع اجهزة البلدية وفقاً للقوانين والانظمة المرعية الاجراء .

كما نطلب من جانبكم المساعدة على تأمين مكب لنواتج الأعمال المنفذة ضمن النطاق البلدي .

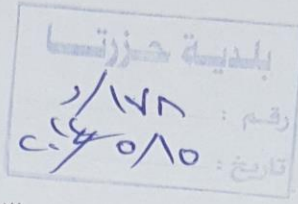
وتفضلوا بقبول فائق الاحترام

شركة حنا الخوري و اخوانه

م. عماد الخوري
منسق المشروع



3. Hazzerta Municipality- Construction Waste



H-ALH-1
ID: 01-10-2013

بيروت في ٢٠٢٤/٥/١٤

رقم المرجع: QC1W1a /Mun/24-005

جانب: رئيس بلدية حَزْرَتَا
السيد حسين ابو حمدان المحترم

المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في زحلة وعيتيت
(مجلس الانماء والاعمار)

الموضوع: اخذ العلم بمباشرة الأعمال و تأمين مكب لنواتج الأعمال.

تحية وبعد،

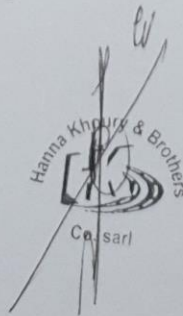
لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه،
جننا بكتابتنا هذا نحيطكم علماً باننا سوف نباشر بالأعمال وفقاً لمقتضيات العقد مع كامل استعدادنا للتعاون
والتسيق مع اجهزة البلدية وفقاً للقوانين والانظمة المرعية الاجراء .

كما نطلب من جانبكم المساعدة على تأمين مكب لنواتج الأعمال المنفذة ضمن النطاق البلدي .

وتفضلوا بقبول فائق الاحترام

شركة حنا الخوري و أخوانه

م. عماد الخوري
منسق المشروع



4. Qaa El Rim Municipality- Construction Waste



Hanna Khoury and Brothers, Co.

H-ALH-1
ID: 01-10-2013

بيروت في ٢٠٢٤/٥/١٤

رقم المرجع: QC1W1a /Mun/24-002

جانب: رئيس بلدية قاع الريم
المهندس وسام تنوري المحترم

المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في رحلة وعيتبت
(مجلس الانماء والاعمار)

الموضوع: اخذ العلم بمباشرة الأعمال و تأمين مكب لنواتج الأعمال.

تحية وبعد،

لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه،

جننا بكتابنا هذا نحيطكم علماً باننا سوف نباشر بالأعمال وفقاً لمقتضيات العقد مع كامل استعدادنا للتعاون
والتسيق مع اجهزة البلدية وفقاً للقوانين والانظمة المرعية الاجراء .

كما نطلب من جانبكم المساعدة على تأمين مكب لنواتج الأعمال المنفذة ضمن النطاق البلدي.

وتفضلوا بقبول فائق الاحترام


شركة حنا الخوري و اخوانه

م. عماد الخوري
منسق المشروع

Hanna Khoury & Brothers
Co. Sarl

محافظة البقاع
بلدية قاع الريم
رقم التسجيل
٢٨
التاريخ ٢٠٢٤/٥/١٤

5. Saadnayel Municipality- Construction Waste



Hanna Khoury and Brothers, Co.

بلدية سعدنايل
رقم الترخيص: ١٧٢
تاريخ: ٢٠٢٤/٥/١٥

H-ALH-1
ID: 01-10-2013

بيروت في ٢٠٢٤/٥/١٤

رقم المرجع: QC1W1a /Mun/24-003

جانب: رئيس بلدية سعد نايل
السيد حسين شوباصي المحترم

المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في زحلة وعيتيت (مجلس الانماء والاعمار)

الموضوع: اخذ العلم بمباشرة الأعمال و تأمين مكب لنواتج الأعمال.

تحية وبعد،

لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه،


جئنا بكتابنا هذا نحيطكم علماً باننا سوف نباشر بالأعمال وفقاً لمقتضيات العقد مع كامل استعدادنا للتعاون والتنسيق مع اجهزة البلدية وفقاً للقوانين والانظمة المرعية الاجراء.


كما نطلب من جانبكم المساعدة على تأمين مكب لنواتج الأعمال المنفذة ضمن النطاق البلدي.

وتفضلوا بقبول فائق الاحترام

شركة حنا الخوري و اخوانه

م. عماد الخوري
منسق المشروع





Hanna Khoury & Brothers Co. SARL New Rawda – Najarian Bldg 3rd Floor. Tel: 01-689665 Fax: 01-692056 Mobile: 03-357183
Website: <http://www.hkbros.com> email: info@hkbros.com

Annex G: List of chemicals used

1- Chemicals used for construction works

- Rubberized Bitumen Coating (PLYKOTE)
- Curing Compound for Concrete (Weberad cure WH)

2- Chemicals used for vehicle maintenance


Type	Code	Item
Antifreeze	00.005.023.010.0001	Super coldmaster A/F (5 lit) [antifreeze]
Antifreeze	03.073.027.000.3257	Antifreez Febi 1.5 litre
Antifreeze	03.073.027.000.0334	Oil super coldmaster A/F (1 lit) [antifreeze]
Batteries	03.015.027.000.0005	Battery GLB0SMF66AH*56638 GLOBAL [66A] بطارية
Batteries	03.015.056.055.0001	Battery global Nx100-S6LS [45A]
Batteries	00.015.027.000.0004	Battery Motor Mech 56638
Batteries	00.015.027.000.0006	Battery Med 100AH
Batteries	03.015.027.055.0001	Battery Global / SMF 150A
Batteries	03.015.027.000.0004	Battery GLB0SMF60044*DIN100 GLOBAL [100A] بطارية
Batteries	03.015.027.000.0006	battery GLB0SMF55AH*55559 GLOBAL [55A] بطارية
Batteries	03.073.027.000.8124	Battery Global N120 SMF120A
Batteries	03.015.027.000.0018	Battery Global 180AH SMF68032
Batteries	03.073.027.000.8141	Battery Global SMF N200A
Batteries	00.015.027.000.0007	Battery Concord N-150AH
Batteries	00.015.027.000.0005	Battery Concord N-120AH
Batteries	03.015.027.000.0012	Battery Marelli run M 47 (AMP)
Batteries	03.015.027.000.0014	Battery Marelli run 53 AH
Batteries	03.015.063.055.0001	Battery Global SMF Nx120-7 [90A]
Batteries	00.015.027.000.0003	Battery Yigit Aku 100AH
Batteries	00.015.027.000.0002	Battery Motor Mech SMF60044
Batteries	03.015.027.000.0020	Battery 120AH SMF135F51-1 Forte
Batteries	00.015.027.000.0001	Battery National 180AH
Batteries	03.015.027.000.0019	Battery Wolv 90AH MF105D31R
Batteries	03.015.027.000.0017	Battery Wolf 120AH /MF62034
Batteries	03.015.174.000.0001	Battery Forte SMF50B24L 45AH
Filter Hydraulic Oil	01.007.027.225.0001	filter Hydraulic 294073005 PUTZMEISTER بومب باطون [T12]
Filter Hydraulic Oil	01.157.208.096.0001	filter hydraulic 51482wix ٩٥٠ رفش
Filter Hydraulic Oil	01.073.027.000.0015	Filter Hydraulic CS1551H = 51482
Filter Hydraulic Oil	01.005.194.096.0001	filter hydraulic 51163wix ٩٦٦ رفش
Filter Hydraulic Oil	01.157..096.0001	filter hydraulic 51524wix رفش كوماتسو
Filter Hydraulic Oil	01.157.191.096.0006	filter hydraulic 51247 / 581/18063 JCB
Filter Hydraulic Oil	01.005.027.000.0009	Filter Hydraulic China 518670 CGR
Filter Hydraulic Oil	01.157.027.000.0006	filter hydraulics 1799806
Filter Hydraulic Oil	01.157.027.000.0007	Filter Hydraulic 093-7521 cat

Type	Code	Item
Filter Hydraulic Oil	01.157.191..0001	filter hydraulic 5I8670 BLUMAQ BQ حفارة
Filter Hydraulic Oil	01.157.191.096.0004	filter hydraulic 126-2081/CT1262081 320,322,324 حفارة
Filter Hydraulic Oil	01.157.027.210.0001	Filter Hydraulic CAT 93752 HF35018
Filter Hydraulic Oil	03.073.027.000.2680	Filter Hydraulic 5I-8670C 320 حفارة
Filter Hydraulic Oil	03.005.000.000.0091	filter hydraulic BT8876-MPG رفش ٩٦٣
Filter Hydraulic Oil	01.157.151.096.0001	filter hydraulic 51551wix محدلة زفت
Filter Hydraulic Oil	01.157.191.096.0005	filter hydraulic 51621wix lube spin on 325 حفارة
Filter Hydraulic Oil	03.005.000.000.0087	filter hydraulic P/N7012314 S630 بوبكات
Filter Hydraulic Oil	03.073.027.000.8134	Filter Hydraulic 1446691
Filter Hydraulic Oil	01.157.151.096.0002	filter hydraulic 51586wix CAT محدلة زفت
Filter Hydraulic Oil	01.073.027.000.0010	Filter Hydraulic 7248874 bobcat 630
Filter Hydraulic Oil	01.157.158.096.0001	filter hydraulic 51448wix [SFH8840] S220 بوبكات
Filter Oil	01.005.179.000.0001	Filter Cars Oil SP-1079 Nissan Alco
Filter Oil	01.005.027.096.0001	Filter Oil wix 51806 MP
Filter Oil	01.005.201.212.0001	filter oil FILTRON موتير لحام OP526/1
Filter Oil	01.005.191.096.0001	filter oil motor 51515wix tractor تركور حفارة
Filter Oil	01.005.151.096.0002	filter oil 51261 محدلة + موتار جرة خلفي
Filter Oil	01.005.027.000.00010002	Filter Cars Oil VIC C-806 HONDA
Filter Oil	01.005.030.102.0001	filter oil HU12140x mann actros [this one]
Filter Oil	01.005.027.000.0003	Filter Cars oil FH006Z= 8200033408=WL7254 Rapid + Kango
Filter Oil	01.010.028.014.0001	filter oil motor 44 HU947/1Z-2 / E197HD23
Filter Oil	01.005.031.103.0001	filter oil motor E251hd11 hengst [LB] [this one]
Filter Oil	01.005.027.102.0002	filter oil H601/4 /wl7026 فلتر زيت دركسيون
Filter Oil	01.005.180.000.0002	Filter Cars Oil VIC C-111 Toyota
Filter Oil	01.005.031..0001	filter oil HENGST E174HD11 [8CYLINDER]
Filter Oil	01.005.030.102.0002	filter oil H623 mann actros فلتز زيت دركسيون اكتروس طويل
Filter Oil	01.005.158.096.0003	filter oil 92095E / 57037wix [BT7237] case 440 بوبكات
Filter Oil	01.005.151.096.0001	filter oil 51342wix / WL7070 / WL719/5
Filter Oil	01.005.163.096.0002	filter oil Wix 51792 cat جرافة
Filter Oil	01.005.153.096.0002	filter oil motor B76 / 51791 حفارة [E7,E12] كرايدر
Filter Oil	01.073.027.000.0017	Filter Oil CS1424VL = 51791
Filter Oil	01.005..096.0001	filter oil 51748wix رفش كوماتسو
Filter Oil	01.005..096.0004	filter oil motor 57233 wix JCB
Filter Oil	01.073.027.000.0009	Filter Oil 15613EV014
Filter Oil	01.005.034..0001	filter oil E243HD13 hengst [TURBO] تيرو
Filter Oil	03.005.000.000.0085	filter oil 51820 / 1173430 SP427 كومبريسا اطلس
Filter Oil	01.005.153..0001	filter oil 51970 / 10L2105 NAT كسارة رقم ٣
Filter Oil	01.005.027.096.0002	Filter Oil Wix 51660
Filter Oil	01.005.147.237.0001	filter oil E196HND03 HENGST

Type	Code	Item
Filter Oil	01.005.158.096.0004	filter oil 51347wix بوبكات
Filter Oil	03.005.000.000.0094	Filter oil 51348MP wix محدة صغيرة
Filter Oil	01.005.027.000.0005	filter oil OP576/1 / 51307
Filter Oil	01.005.152.096.0001	Filter Oil 57521 Wix
Grease	00..027.000.0012	Grease رولمان شحم
Grease	00.004.027.000.0001	Grease lukoil EP3 (180KG)
Grease	03.073.027.000.8207	Grease Lukoil NLGI3 CA MP3 (15KG)
Grease	00.004.027.000.0003	Grease Fullexoil Red GR 15KG
Grease	711.004.027.000.0001	Grease Atlantic moly (15KG)
Grease	03.004.027.001.0001	Grease Cyclon complex NLGI2 Li - 15 KGS
Grease	00.004.027.000.0002	Grease Lukoil Polyflex EP3 (18KG)
Grease	00.004.168.001.0002	Grease cyclon NLGI3 CA [15KG] [this one] سطل شحم
Oil Hydraulic	00.005.014.000.0003	Oil Hydraulic ISO68 (205L) Champion
Oil Hydraulic	00.005.014.000.0004	Oil Hydraulic ISO68 (25L) Champion
Oils	03.073.027.000.8003	Oil 10w40 (5L) SilverHook Excel SS
Oils	03.073.027.000.8209	Oil Lukoil ATF DEXIII (1L)
Oils	03.073.027.000.8005	Oil 80w90 (25 L) Silverhook Gear Oil
Oils	00.073.027.000.0006	Release Oil (500ml)
Oils	00.005.014.000.0001	Oil Lukoil Geyser St ISO68 (200L)
Oils	00.005.026.007.0002	Oil ATM1L AQM RED comma trans fluid1 (1liter)
Oils	03.073.027.000.8004	Oil 10w40 (1L) SilverHook Excel SS
Oils	00.005.027.000.0008	Oil 25w50 Champion (205L) CH-4 Turbo Extra
Oils	00.005.016.007.0003	consumables oil 15w40 comma (205 L)
Oils	03.073.027.000.8006	Oil 20w50 (20L) Silverhook Diesel
Oils	03.073.027.000.8133	Oil DOT4 (500ml) SilverHook Brake fluid
Oils	00.005.018.000.0001	Oil 5W30 silverhook Supreme FS
Oils	03.073.027.000.8112	Oil comma 20w50 (1L)
Oils	00.005.015.000.0001	Oil 10W40 (4L) SilverHook Excel SS
Oils	00.073.027.000.0036	OIL CROWN THERM 68 (208L)
Oils	00.005.018.007.0001	Oil 5w30 comma XTC5L (5 lit)
Oils	03.073.027.000.8062	Oil 15w40 (20L) SilverHook LongDrain (sh-ld1540-020)
Oils	00.005.016.000.0001	Oil 15W40 Champion (205L) CI-4 TBN15
Oils	00.005.027.000.0013	Oil TOP ATF PETRO LIFCO DEXTRON III H
Oils	03.073.027.000.8065	Oil 15w40 (205L) SilverHook LongDrain
Oils	00.005.017.007.0001	consumables oil 20w50 comma (205 L)
Oils	00.005.016.000.0002	Oil 15W40 (208L) Petro Lifco
Oils	03.073.027.000.8187	Oil ACdelco (dexron 1L)
Oils	03.073.027.000.8132	Oil 20w50 (205 L) silverhook diesel
Oils	00.005.014.000.0005	Oil ISO68 (208L) Petro Lifco
Oils	00.005.027.000.0009	Oil 20W50 (200L) Rovel CH-4
Oils	00.073.027.000.0008	Oil DIESEL MAGIC 0.4 Lt (400ML) Blinker super treatmen
Oils	00.073.027.000.0007	Oil RAD SEAL (500ML)
Oils	00.005.051.007.0001	Oil 20w50 (20 lit) comma TFXP20L
Oils	00.005.027.000.0011	Oil 20W50 (25L) Champion SJ/CH-4
Oils	00.005.027.000.0002	Oil MVCHF MP2 زيت دبياج
Oils	00.005.016.007.0002	Oil 15w40 (5 lit) comma TFSD5L
Oils	00.005.027.000.0010	Oil 15W40 (25L) Champion CI-4 TBN15
Oils	00.005.016.008.0003	Oil 15w40 (20 lit) comma TFSD20L
Oils	711.005.152.007.0001	Oil Petrol Magic (400ml)
Oils	03.005.000.000.0010	Oil cyclon titanus Ep ISO 220
Oils	00.005.022.000.0002	Oil ADBLUE دواء M Germany (10L) [this one]
Oils	00.005.015.007.0002	Oil Comma 10W40 (20L) Diesel

Annex H: Enquiry letters on existing utilities

A) Letter to BWE


Hanna Khoury and Brothers. Co.

٢٠٢٤/٥/١٤ بيروت في

رقم المرجع: QC1W1a/PA/24-002


السادة: جانب مؤسسة مياه البقاع
عناية: القسم الفني

المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في زحلة وعيتيت
(مجلس الانماء والاعمار)

الموضوع: طلب خرائط لشبكات المياه والصرف الصحي الموجودة ضمن نطاق المشروع

تحية وبعد،
لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه، ولما كان تنفيذ الأعمال المطلوبة
يستوجب اجراء حفريات لزوم الصرف الصحي وأعمال البنى التحتية ضمن الطرقات والأماكن العامة.
وحرصاً من شركتنا على عدم الحاق اي ضرر بالبنى التحتية الموجودة،
نطلب من حضرتكم تزويدنا بالخرائط العائدة لشبكات المياه والصرف الصحي الموجودة ضمن نطاق
المشروع، كذلك تزويدنا بأسماء الاشخاص و أرقام هواتفهم ضمن النطاق الجغرافي للمشروع للتسيق والمتابعة.
وتفضلوا بقبول الاحترام

شركة حنا الخوري و أخوانه


Co. sarl

حنا الخوري
مدير/شريك

رابطاً: خريطة لموقع الأشغال

Hanna Khoury & Brothers Co. SARL New Rawda – Najarian Bldg 3rd Floor. Tel: 01-689665 Fax: 01-642056 Mobile: 03-357183
Website: <http://www.hkbros.com> email: info@hkbros.com

B) Letter to Ogero



Hanna Khoury and Brothers. Co.

H-A/H-1
ID: 01-10-2013

بيروت في ١٤/٥/٢٠٢٤

رقم المرجع: QC1W1a/PA/24-003

حائب مصلحة شركة الشرايع

المسادة:

المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في زحلة وعيتيت (مجلس الانماء والاعمار)

الموضوع: طلب خرائط للشبكات الموجودة ضمن نطاق طرق المشروع.

تحية وبعد،

لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه، ولما كان تنفيذ الأعمال المطلوبة يستوجب اجراء حفريات لزوم الصرف الصحي و أعمال البنى التحتية ضمن الطرقات والأماك العامة. وحرصاً من شركتنا على عدم الحاق أي ضرر بالشبكات الهوائية او الأرضية، نطلب من حضرتكم تزويدنا بالخرائط العائدة لشبكاتكم الموجودة ضمن النطاق الجغرافي للمشروع، كذلك تزويدنا بأسماء الأشخاص و أرقام هواتفهم لكي نتمكن من التنسيق و المتابعة.

وتفضلوا بقبول الاحترام

شركة حنا الخوري وأخوانه




حنا الخوري
مدير/شريك

عبدالله الشرايع

١٥ أيار ٢٠٢٤

ربطاً: خريطة لموقع الأشغال

C) Letter to EDZ


Hanna Khoury and Brothers. Co.

H-ALH-1
ID: 01-10-2013

بيروت في ٢٠٢٤/٥/١٤

رقم المرجع: QC1W1a/PA/24-003

السادة: شركة كهرياء زحلة المحترمين
عناية: القسم الفني


المشروع: الأعمال المتبقية لتوسعة شبكة الصرف الصحي للربط بمحطتي المعالجة في زحلة وعيتيت (مجلس الانماء والاعمار)

الموضوع: طلب خرائط للشبكات الارضية والهوائية الموجودة ضمن نطاق المشروع.

تحية وبعد،
لما كانت شركتنا قد التزمت تنفيذ اعمال المشروع المشار اليه اعلاه،
ولما كان تنفيذ الأعمال المطلوبة يستوجب اجراء حفريات لزوم شبكة الصرف الصحي و أعمال البنى التحتية ضمن الطرقات والأماكن العامة.
وحرصاً من شركتنا على عدم الحاق الضرر بالشبكات الممدودة تحت الأرض، نطلب من حضرتكم:
١- تزويدنا بالخرائط العائدة لتلك الشبكات الموجودة ضمن نطاق المشروع.
٢- تزويدنا بأرقام المكاتب أو بأسماء الاشخاص و أرقام هواتفهم لكي نتمكن من التنسيق والمتابعة.

وتفضلوا بقبول الاحترام

شركة حنا الخوري و أخوانه


Co. sarl

حنا الخوري
مدير/شريك

كهرياء زحلة ش.م.ل
ELECTRICITE DE ZAHLE S.A.L

ورد في 15 MAY 2024

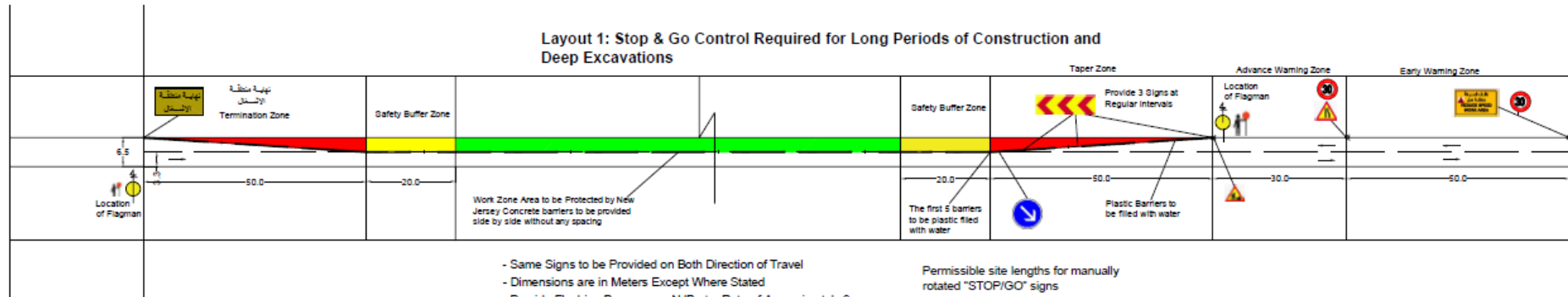
رقم في ٧٤٠

رابط: خريطة لموقع الأشغال

Hanna Khoury & Brothers Co. SARL New Rawda – Najarian Bldg 3rd Floor. Tel: 01-689665 Fax: 01-692056 Mobile: 03-357183
Website: <http://www.hkbros.com> email: info@hkbros.com

Annex I: Various Proposed Temporary Traffic Control Layouts

Layout 1: Stop & Go Control Required for Long Periods of Construction and Deep Excavations

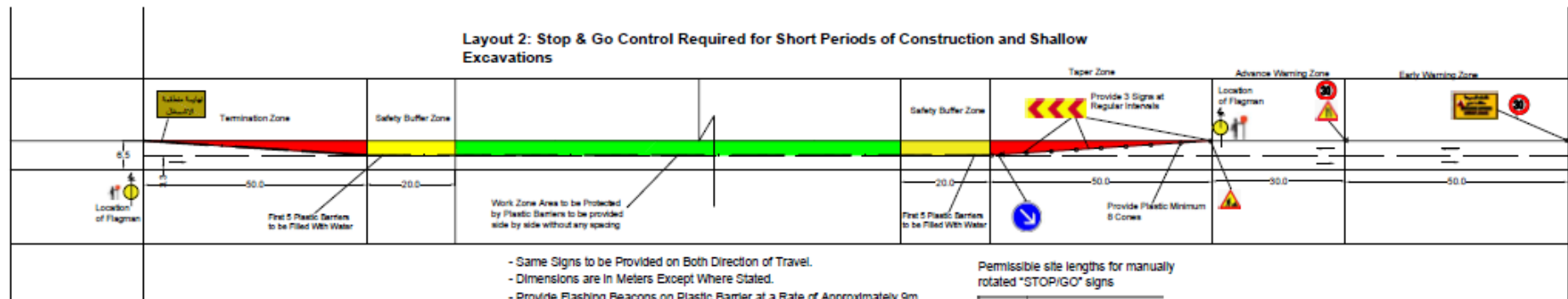


- Same Signs to be Provided on Both Direction of Travel
- Dimensions are in Meters Except Where Stated
- Provide Flashing Beacons on NJB at a Rate of Approximately 9m.
- Flagman to be Located in a Safe Place visible to Traffic.
- Length of Work Zone Depends on the Total Volume of Traffic (Both Direction).

Permissible site lengths for manually rotated "STOP/GO" signs

Site length m	Maximum two-way flow (veh/hr)	(veh/3 min)
100	1400	70
200	1250	63
300	1050	53
400	950	47
500	850	42

Layout 2: Stop & Go Control Required for Short Periods of Construction and Shallow Excavations

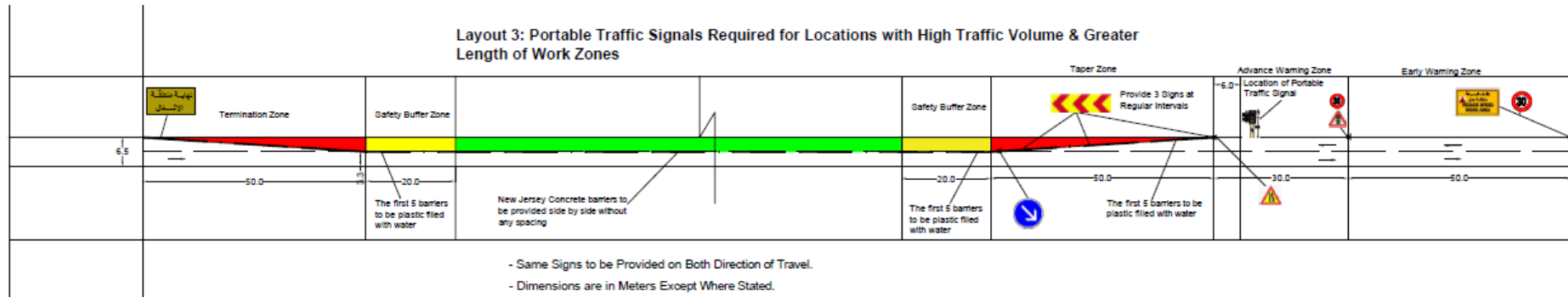


- Same Signs to be Provided on Both Direction of Travel.
- Dimensions are in Meters Except Where Stated.
- Provide Flashing Beacons on Plastic Barrier at a Rate of Approximately 9m.
- Flagman to Stand in a Safe Place Visible to Traffic.
- Traffic Lane Width can be Reduced to an absolute minimum of 3 m If Required.

Permissible site lengths for manually rotated "STOP/GO" signs

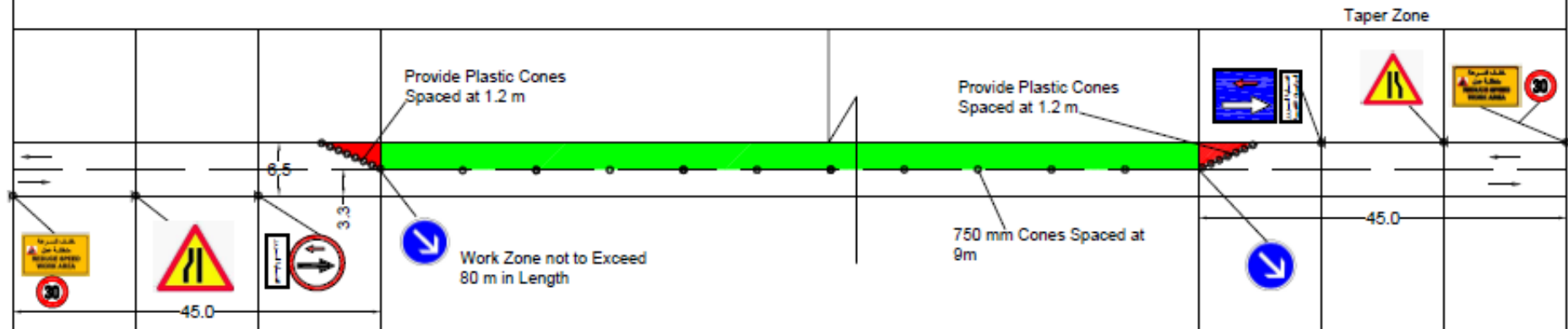
Site length m	Maximum two-way flow (veh/hr)	(veh/3 min)
100	1400	70
200	1250	63
300	1050	53
400	950	47
500	850	42

Layout 3: Portable Traffic Signals Required for Locations with High Traffic Volume & Greater Length of Work Zones



- Same Signs to be Provided on Both Direction of Travel.
- Dimensions are in Meters Except Where Stated.
- Provide Flashing Beacons on NJB at a Rate of Approximately 9m.
- Flagman to be Located in a Safe Place Visible to Traffic.
- Length of Work Zone to be determined depending on Traffic Volume and Delay Caused to Traffic. However, as a rule of Thumb, Work Zone Between 300m -500m in Length.
- Traffic Lane Width can be Reduced to an absolute minimum of 3 m If Required.

Layout 4: Priority Operation Layout - Required for Topo Survey Activities



- Dimensions are in Meters Except Where Stated
- Signs to have Dimensions of 600 mm
- Provide High Intensity Warning Lights Should Layout Remain During Dark Hours
- Presence of Flagman is Required Where Forward Visibility is Restricted or if Work Zone is at a Curve
- Traffic Lane Width can be Reduced to an absolute minimum of 3 m If Required.

Annex J: Rented Plot Real Estate Information

Note that this document refers to the full plot, including the plot with walnut trees. However, only the lower half of the plot was rented (excluding the walnut trees plot).

الجمهورية اللبنانية
المنيرة العامة للتقنين العقاري

الخدمات الإلكترونية

معلومات الصحيفة العقارية

أمانة السجل العقاري في: رجلة

طلب الاستفسار: ISMAIL AHMAD MOHAMMAD

رقم العملية: ٤٦٤٩٠٧

تاريخ العملية: ٢٠٢٤-٠٥-٠٩

تاريخ معلومات الصحيفة لعلية: ٢٠٢٤-٠٥-٠٧

العقد: ٣٢٥

المنطقة العقارية: حوش الأمراء (الشمس)

العملة: اللول

مساحة العقار (م^٢): ١٧٥٠٠

النوع الشرعي للعقد: إيجار

المرجع في السجل العقاري	الرقم	التاريخ	محتويات وصف العقار و الحقوق العينية و الوقوعات
وصف العقار: أرض من مقي مسكنة لزراعة الزيتون			
نوع العقار: أرض غير مبنية			
تسجيلات المساحة بالمترموم: تاريخ ٢٠٢٤-٠٥-٠٩			
تاريخ ٢٠٢٤-٠٥-٠٩			
هذا السجل يورد حد الماء القديم ٢٠٢٤-٠٥-٠٩ و يورد حتى هذا العقار سجل امتلاكها و يورد للحد المساحة المسماة للحد القديم			
المرجع في السجل العقاري			
الرقم	التاريخ	نوع الحق خلاصة الطور	المرجع في السجل العقاري
١٥١	٢٠٢٤-٠٥-٠٩	يج: قسمل هذا العقار بقسطين	
٢١٠٠		سجل: بطوان مسجل (اسم الآن: رول مسجل) مواليد: ١٩٩٤ - لبناني	
		سجل: سجد	

١٥١٢٠٢٤-٠٥-٠٩

صفحة ١ من ١

Annex K: CESMP in Table Format

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Air quality	<ul style="list-style-type: none"> • Compact site roads. • Perform regular watering of road sites. • Maintain a speed limit for project vehicles and machinery within working areas below 20 Km/h. • When practical, wheel-wash vehicles before departure from construction site. • Cover with canopies all trucks transporting construction material to and from the site. • Unload material from trucks will low heights. • Maintain raw material stockpiles at minimum heights and adequate slopes and cover or spray stockpiles with water on a regular basis if covering is not feasible. • Mix construction material during low to no wind conditions and in enclosed or semi-enclosed areas where possible. • Establish a Maintenance Plan and Schedule place for employed site machinery, vehicles, and power generators, along with maintenance records. • Avoid unnecessary idling of vehicles and equipment engines. • Maintain monthly fuel consumption records to keep track of consumption levels and identify overuse. • Inform sensitive receptors will of the scheduled construction works, ahead of time in conjunction with the concerned municipalities, especially for dust-generating activities 	<ul style="list-style-type: none"> • Dust and exhaust emissions 	<ul style="list-style-type: none"> • Visual observation and photographic documentation 	<ul style="list-style-type: none"> • Daily basis • During activities that generate significant amounts of air emissions 	<ul style="list-style-type: none"> • Generator stack • Work sites • Sensitive receptors
		<ul style="list-style-type: none"> • Maintenance record of all machinery, vehicles, and generators on site • Monthly fuel consumption records • Reported workers' respiratory problems 	<ul style="list-style-type: none"> • Visual checking 	<ul style="list-style-type: none"> • Monthly basis 	<ul style="list-style-type: none"> • Office

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Noise	<ul style="list-style-type: none"> Provide workers with hearing protectors and enforce their use whenever the workers are exposed to more than 90 dB as 8-hour time weighted average (TWA) Ensure that no noise is emitted outside the normal allowed working hours (7:00 am- 6:00 pm) Obtain prior approval of the concerned municipality and CDR where it is necessary to conduct some activities outside the normal working hours Ensure that all machinery, vehicles and generators are maintained on a weekly basis and on a per-need basis. Avoid unnecessary idling of machinery and switch off engines when not in use. Where possible, place noisy equipment away from sensitive receptors, behind stockpiles to provide acoustic barriers. Control speed limits of vehicles (less than 20 Km/hr) on site and in the surrounding area. Notify the residents of the plans and expected duration prior to initiating the works, in conjunction with concerned municipalities Remind municipalities and community of the grievance mechanism in place. At the yard, place the generator the farthest possible from residential buildings and equip the generator with a noise muffler. 	<ul style="list-style-type: none"> Noise measurements- Leq, Lmin and Lmax measured per location (average 10 min reading- 30 sec) 	<ul style="list-style-type: none"> Hand-held noise meter 	<ul style="list-style-type: none"> Daily during grading and excavation Weekly during concrete pouring and pipes laying Upon receiving a complaint 	<ul style="list-style-type: none"> Near sensitive receptors (schools, hospitals, etc.)
		<ul style="list-style-type: none"> Maintenance record of all machinery, vehicles, and generators on site Noise levels that are being measured 	<ul style="list-style-type: none"> Record review 	<ul style="list-style-type: none"> monthly 	<ul style="list-style-type: none"> Office
Archaeology & Cultural Resources	<ul style="list-style-type: none"> Where historical remains, antiquity or any other object of cultural or archaeological importance are discovered, apply a "Chance-Find Procedure" in accordance with the Lebanese regulations (Decree 3057/ 2016) and the World Bank Guidance – OP 4.11. 	<ul style="list-style-type: none"> The presence of any artefacts of archaeological significance The implementation of chance find procedures. 	<ul style="list-style-type: none"> Visual inspection and photographic documentation 	<ul style="list-style-type: none"> Continuous during excavation In case of Chance Find 	<ul style="list-style-type: none"> Worksites

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Water and Soil	<ul style="list-style-type: none"> • Ensure international standards (i.e. ASTM Soil Compaction Standards) are met during any excavation works, compaction and grading activities, in order to minimize expected disturbance • Manage fixed routes for equipment movement and avoid multiple routes • Re-use excavated/ cut materials as general fill where considered suitable • Install temporary structures to prevent runoff from reaching nearby water bodies • Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any water body • Prevent run-off from cleared or disturbed areas into rivers, streams or surface water bodies by using sediment control methods • Regularly inspect and maintain all erosion and sediment control structures • Place all spoil from water body crossings in the construction right- of-way at least three (3) meters from the water's edge, or in additional extra work areas. • Carry out the pipelines and manholes installation of seasonal streams preferably in the dry season; • Avoid working in rainy weather • Prohibit littering • Prohibit the discharge of wastewater into nearby water bodies under any condition. <p>Minimize the risk associated with leakage and spills of hazardous materials:</p> <ul style="list-style-type: none"> • Carry out regular maintenance of vehicles and machinery offsite. • Prohibit maintenance of machinery onsite unless absolutely necessary, and under the supervision of the HSE Officer. 	<ul style="list-style-type: none"> • Discharge of effluent from construction activities • Storage conditions of chemicals, oils and fuel • Preparedness for chemicals, oils and fuel spill incidents • Chemicals, oils and fuel spill incident logs • Implementation of spill response plan in the case of an incidence • Collection and disposal of oil and chemical containers and other related solid wastes 	<ul style="list-style-type: none"> • Visual observation 	<ul style="list-style-type: none"> • Weekly 	<ul style="list-style-type: none"> • Worksites • Nearby water bodies or open areas

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Water and Soil (cont'd)	<ul style="list-style-type: none"> • Carry out all re-fuelling in designated areas with impervious surfaces and guarantee no fuel spills. • Install a spill collection tray under generators and specific equipment requiring refuelling. • Store all chemicals in dedicated areas on a paved or sealed floor and in tightly closed containers protected from adverse weather conditions • Store used oil or chemical in an appropriate area until it is collected and disposed in licensed sites • Minimize the use of chemicals • Minimize soil exposure time • Use secondary containment basins for long term storage of lubricants and fuels • Abide by a Spill Response Plan • A fuel/ oil spill clean-up kit will be kept at all main fuel storage facilities within the protected area to facilitate any clean up in the event of a spill. This kit must include absorbent pads. • If a fuel spill occurs the flow must be stopped immediately if possible. • Any fuel spill at any storage site and in excess of 70 litres must be reported immediately to CDR. • Ensure that the oil spill response plan is present at the construction site and that oil spill response kits are available • Train all workers to implement this plan in case of accidental spillage 				•

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Solid Waste	<ul style="list-style-type: none"> Prohibit the discharge of the following substances to any water body, channel or drain. <ul style="list-style-type: none"> Pesticides and herbicides; Oil and / or solvent waste; Radioactive waste; Any waste material subject to the conditions of the Hazardous Materials Management according to the Lebanese legislations. Prohibit the disposal of any solid or liquid waste by burying or dumping on land or into water courses. Segregate waste materials generated at work sites and offices into domestic (organic/ paper and cardboard/ metals, glass and plastics) and hazardous waste and dispose it into the color-coded containers, provided in dedicated locations. Segregate inert waste (construction) into bulky and fine aggregates and store separately at designated areas. Where municipal bins are not available nearby, provide 2 separate heavy-duty plastic 'Refuse Containers' with tight fitting lids at construction site for disposal of all domestic waste (garbage or trash), one for the disposal of organic waste and one for recyclables (paper, cardboard, aluminium, glass and plastics). Containers will be color-coded and clearly labelled. Containers shall not have openings that allow access of rodents. Keep the domestic waste containers upright with their lids shut tightly and empty the organic waste containers 2 to 3 times per week by the municipality to maintain construction site sanitation. Empty the recyclable waste containers on a per need basis To keep the area free of litter and garbage and prevent random disposal of waste, designate specific locations for consuming food and snacks. 	<ul style="list-style-type: none"> Good housekeeping practices- storage and disposal of waste 	<ul style="list-style-type: none"> Visual inspection 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Worksites Yard

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Solid Waste (cont'd)	<ul style="list-style-type: none"> • Train workers on waste reduction and waste segregation procedures • Clean domestic waste containers on a bi-monthly basis. • Keep storage areas clean and materials neatly stacked. • Collect and maintain waste disposal records and receipts from waste collector (where applicable) for inspection and audit purpose. • Clean the work zone on a daily basis. • Remove construction leftovers that are external to the working zone regularly. Maintain site housekeeping. • Store on-site construction waste remaining overnight and protect in a manner to avoid any spillovers. • Collect construction waste on a daily basis and dispose at designated disposal sites approved by the concerned municipalities. • Resue part of the excavation waste in backfilling; and dispose of the rest (if any) in an adopted/authorized construction and demolition waste dump. • Ensure that material stockpile side slopes do not exceed 2:1 and are well covered and contained. • Dispose of the domestic / municipal waste generated during works on the sewer networks at the Zahle Solid Waste Facility as indicated by the concerned municipalities of Zahle, Ferzol, Saadnayel, Qaa El Rim, and Hazzerta. • Dispose of the domestic / municipal waste generated during works on the pumping stations at sites designated by the municipalities of Qaraoun and Baaloul. • Send segregated recyclables separately to the Zahleh Solid Waste Facility. 	<ul style="list-style-type: none"> • Frequency of removal of all types of waste including recyclables • Good housekeeping practices at the construction sites. • Waste management log form 	<ul style="list-style-type: none"> • Visual inspection and photographic documentation 	<ul style="list-style-type: none"> • Daily 	<ul style="list-style-type: none"> • Worksites and Yard

Solid Waste (cont'd)	<p>Hazardous Material</p> <ul style="list-style-type: none"> • No hazardous substance will be brought on site without prior approval from the Supervision Engineer • Provide a Material Safety Data Sheet (MSDS) and maintain a copy at the HSE department and the place of storage of the hazardous substance • Store and handle any hazardous substances in accordance with the manufacturer's instructions (MSDS) and local legislation. • Maintenance of machinery is prohibited on-site unless necessary. • Instruct workers dealing with hazardous substances/chemicals on the risks associated with their use and the importance of suitable PPE. • If a chemical/hazardous substance is poured from the original container into a new one, label the new container properly. • Prohibit smoking, drinking or eating in the area where work with hazardous materials is carried out. • Collect any waste oil and/or hazardous substances and contain in a secured area prior to offsite disposal or recycling. The collection area will be sized to store sufficient containers such that off-site transport and disposal is efficient. • If a significant spill occurs, notify the authorities. Any required clean-up will be started promptly as required by the relevant manufacturer instructions (MSDS) and the emergency response plan. • Return all spent chemical and oil containers to the supplier when possible. • Contain and remove any spill of hazardous substances immediately. • Provide spill kits in all areas where chemicals will be stored. • Provide suitable spill absorbing materials readily available on the project site 	<ul style="list-style-type: none"> • Storage and handling of hazardous material • Availability of spill kit 	<ul style="list-style-type: none"> • Visual inspection 	<ul style="list-style-type: none"> • Weekly 	<ul style="list-style-type: none"> • Worksites and Yard
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Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Wastewater management	<ul style="list-style-type: none"> Prohibit the discharge of wastewater into nearby water bodies under any condition Restrict vehicle washing to contained maintenance areas offsite, with impermeable concrete pavement and proper drainage. Ensure that the quality of the hydro-test water is compliant with decision 8/1 for the discharge of wastewater into sewage network or surface water bodies Wash tail pipe of concrete mixer on-site on impervious surface before leaving Wash the concrete mixer off-site at the concrete batching plant. 	<ul style="list-style-type: none"> Wastewater discharge Inspection of wastewater management log form 	<ul style="list-style-type: none"> Visual inspection 	<ul style="list-style-type: none"> Weekly 	<ul style="list-style-type: none"> Worksites Office
Biodiversity	<ul style="list-style-type: none"> Avoid construction works at the Qaraoun pumping stations during the peak Spring and Fall bird migration season Store waste within appropriate containers, lidded where necessary Prohibit waste disposal into nearby areas will be prohibited. Proper disposal of domestic and construction waste at designated sites. Suppress dust by sprinkling water during construction. Enclose all fine earth materials during transportation to and from the site to prevent spillage and dust emissions. Prompt transportation of construction material to prevent them from being washed away during rainfall or carried by wind. Provide signage to indicate prohibited activities (i.e., hunting, collecting, and trapping of animals and bird). Highlight to workers the requirement to protect wildlife and habitats from unnecessary construction damage, hunting and general disturbance. 	<ul style="list-style-type: none"> Activity scheduling against restricted bird migration season Construction activities and protection measures. 	<ul style="list-style-type: none"> Scheduling Visual inspection 	<ul style="list-style-type: none"> Spring and Fall Weekly 	<ul style="list-style-type: none"> Office Worksite

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Biodiversity	<ul style="list-style-type: none"> • Avoid construction works at the Qaraoun pumping stations during the peak Spring and Fall bird migration season • Store waste within appropriate containers, lidded where necessary • Prohibit waste disposal into nearby areas will be prohibited. • Proper disposal of domestic and construction waste at designated sites. • Suppress dust by sprinkling water during construction. • Enclose all fine earth materials during transportation to and from the site to prevent spillage and dust emissions. • Prompt transportation of construction material to prevent them from being washed away during rainfall or carried by wind. • Provide signage to indicate prohibited activities (i.e., hunting, collecting, and trapping of animals and bird). • Highlight to workers the requirement to protect wildlife and habitats from unnecessary construction damage, hunting and general disturbance. 	<ul style="list-style-type: none"> • Activity scheduling against restricted bird migration season • Construction activities and protection measures. 	<ul style="list-style-type: none"> • Scheduling • Visual inspection 	<ul style="list-style-type: none"> • Spring and Fall 	<ul style="list-style-type: none"> • Office • Worksite
Water & Energy Consumption	<ul style="list-style-type: none"> • Inspect site regularly to detect water leakages • Whenever possible, use dry-cleaning instead of wet cleaning • Use equipment with higher fuel efficiency when possible • Adopt a periodic inspection and maintenance schedule for power generators and equipment engines, as per manufacturer specifications, and maintain maintenance logs • Turn off light in the site offices during the night • Turn off machinery and equipment when not in use or keep on idle mode when necessary • Maintain a log of fuel and energy consumption records to keep track of consumption levels and identify overuse 	<ul style="list-style-type: none"> • Log of the quantities and types of the used fuel and oils (fuel and oils purchase bills) • Electricity bills • Water purchase bills 	<ul style="list-style-type: none"> • Review 	<ul style="list-style-type: none"> • Monthly 	<ul style="list-style-type: none"> • Office

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Social (cont'd)	<u>Traffic disruptions and accidents</u> <ul style="list-style-type: none"> Secure alternative routes to relevant destinations for all temporary road closures Inform the local community about the location of detours, road blockages or diversions through public announcements and proper diversion signage Coordinate with the municipal and local police Inform residents and place signs near the working areas. Place a flagman near the working area to warn the passing cars and ensure the traffic is not blocked. Ensure traffic is not blocked during transportation of materials. Operate well maintained vehicles. Label construction vehicles so the community knows the contractor in case they have any complaint. Cover transported material. Abide by traffic regulations. Ensure communities have access to external GRM on sign boards and at municipalities. 	<ul style="list-style-type: none"> Best practices are applied 	<ul style="list-style-type: none"> Visual observation and photographic documentation 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Worksites
	<u>Impact on existing infrastructure</u> <ul style="list-style-type: none"> Regular coordination with relevant municipalities by the E&S expert, Site Engineer, and the project management Checking the infrastructure locations and that excavation works do not interfere with infrastructure Executing trial pits along the network route to locate the existing infrastructure components Installing sewer lines 3 meters horizontally from and 0.3 meters lower than existing water main lines. 				

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Social (cont'd)	<u>Impact on livelihoods</u> <ul style="list-style-type: none"> • Timely completion of the rehabilitation phase • Maintaining a passing corridor within the alignment to grant access to nearby properties • Informing the shops' owners ahead of time about rehabilitation dates • Ensuring access is not blocked by installing overpass structures from the road to the businesses impacted by the road works, where necessary, • Ensuring business owners are aware of and have access to the external GRM • Encouraging contractors to purchase goods and services from the local communities when possible, • Proper installation of safety sign boards in Arabic and English. 	<ul style="list-style-type: none"> • Best practices are applied 	Visual observation and photographic documentation	Daily	Worksites
	<u>Public health and safety</u> <ul style="list-style-type: none"> • Apply best applicable practices on road safety • No children are allowed to be present on the work site, reminding workers and community members of this in all related communications • Secure the site and restrict access to it • Provide site boundaries by installing suitable physical barriers • Provide sufficient lighting • Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping • Mark excavation holes and openings with physical boundaries (barriers, tape or fence), or cover them • Store and stack work materials (such as pipes, manhole rings, and cement bags) in a safe manner so that they cannot topple or roll over • Tidily stack, protect and cover materials and equipment where necessary. Additionally, ensure an adequate space for new materials to be stored in secured covered areas to 				

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
	avoid damage, theft, and to protect these items from weather conditions <ul style="list-style-type: none"> • Keep machinery and vehicles passages clear • Properly manage trucks and heavy machinery entering and exiting the construction site • Train heavy machinery drivers about road safety • Implement a speed limit of 20 km/h for vehicles arriving to and leaving the construction sites • Inform the local community about the rehabilitation schedule and abide by assigned timing • Inform residents and place proper safety and diversion signs at sensitive areas within the project area (i.e. near schools, shops hospitals and agriculture areas) as well as physical obstacles such as bumps and rumble strips • Install pedestrian and vehicular passages near residential areas • Control accidental oil spillage • Ensure a first aid kit is present on the construction site • Ensure access to hospitals is not impeded at any time • Post an Emergency Contact List indicating the nearest police station and hospital with accident and emergency facilities • Encourage workers and communities to use the project GRM to report any health and safety issues. 				
Traffic Management	<ul style="list-style-type: none"> • Keep pedestrians and vehicles apart including on site and when vehicles enter and exit the workplace; • Minimize vehicle movements as practically possible; • Limit speed on the route to 20 km/h unless otherwise advised, and adopt careful logistical and route planning to combine trips; • Ensure construction vehicles are regularly maintained • Eliminate reversing vehicles or minimise their risks; • Ensure vehicles and pedestrians are visible to each other; 	<ul style="list-style-type: none"> • Traffic signs and road safety measures are in place • All road safety measures are in place • Worker training records including toolbox talks 	<ul style="list-style-type: none"> • Visual inspection and photographic documentation • Document review 	<ul style="list-style-type: none"> • Before works begin • Continuous • Weekly 	<ul style="list-style-type: none"> • Worksites • Office

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
	<ul style="list-style-type: none"> Determine the impact of traffic diversion on traffic flow and road capacity; Isolate the active work areas from live traffic through the provision of temporary safety barriers; Immediately fill up all holes and trenches, and level all mounds and heaps of earth which have been excavated or made in connection with the works; Maintain access for the local community, transport operators and businesses; Regularly inform road users and local communities in relation to changed traffic conditions or access; Deploy temporary traffic signals and signs to warn of hazards and provide directions to motorists; Position any necessary traffic diversion signs and devices correctly and clearly in the Arabic and English language; Coordinate with the relevant municipalities the organization and scheduling of the construction works to limit the disruption to the community; Follow a specific schedule for transport to avoid interference with peak traffic hours and minimise disturbance/ delay to commuters at rush hours on the roads leading to the Project. 	<ul style="list-style-type: none"> Incident log recording injuries and accidents within workers and community Vehicle maintenance inspection checklists 			
Occupational Health and Safety	<ul style="list-style-type: none"> Ensure all workers will wear and use the PPEs appropriate to the task while delivering the services. Maintain the PPE (cleaning when dirty and replacement when damaged or worn out); Mandatory PPEs include safety helmet, footwear, and vest. Mandatory PPEs if instructed include safety glasses, ear plugs or earmuffs, gloves, facemasks, sunscreen, safety harness and confined spaces equipment. Ensure proper signage in and around the site in local languages and access to an internal GRM; Ensure fire-fighting measures 	<ul style="list-style-type: none"> Signs are in place before works begin All site safety measures are in place All workers are wearing their PPEs OHS daily inspection form Worker training records including toolbox talks 	<ul style="list-style-type: none"> Visual inspection and photographic documentation Document review 	<ul style="list-style-type: none"> Before works begin Continuous Weekly 	<ul style="list-style-type: none"> Worksites Office

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Occupational Health and Safety (cont'd)	<ul style="list-style-type: none"> • Ensure guard rails and toe boards on openings and edges; • Ensure proper storage and signage of materials including MSDS's; • Ensure safety measures according to type of equipment; • Ensure fencing around the construction site at all times; • Ensure sanitary facilities are covered, easily accessible, ventilated, well lit, maintained, and sanitized; • Provide safe drinking water in accordance with regulations. • Ensure the availability of adequate loading and unloading space; • Inspect ladders on a weekly basis where available • Segregate passageways for pedestrians and vehicles and ensure easy, safe and appropriate access • Keep walkways free of tripping hazards such as work materials, and debris; • If work involving the use of flammable materials is being carried out, prohibit smoking and do not allow other work activities involving potential ignition sources to take place nearby; • Prohibit littering; • Avoid burning of materials on-site; • Provide easily accessible first aid kits; • Post adequate signs at visible locations throughout the construction area indicating type of operation, potential risks, and appropriate medical/emergency action response; • Perform staff training • Implement the required air emissions and noise mitigation measures • Prohibit working under the effect of alcohol or drugs • Ensure normal working hours (from 8:00 till 16:30 with 30 minutes lunch break). Additional working hours can reach a maximum of 4 hours and will be paid as overtime. 	<ul style="list-style-type: none"> • Near miss and accident logs recording injuries and accidents with the workers • Muster Roll to check working hours 	<ul style="list-style-type: none"> • Record review 	<ul style="list-style-type: none"> • Weekly • Monthly 	<ul style="list-style-type: none"> • Office

Impact	Mitigation Measures	Monitoring			
		Parameter	Means	Frequency	Location
Demobilization and Cleaning	<ul style="list-style-type: none"> • Ensure the removal of all construction vehicles, equipment, and material from worksites following the mitigation measures outlined above • Ensure that all types of solid waste are completely removed from the site as outlined above. • Ensure that the constructed and rehabilitated networks, appurtenances (manholes, etc.), and pumping stations are cleaned and ready for use. • Ensure that no construction or waste material or equipment is left in the rented yard upon completion of the works. 	<ul style="list-style-type: none"> • Site cleaning activities 	Visual observation and photographic documentation	Daily	Worksite and de-commissioned sites