

Lebanon Emergency Assistance Project (LEAP)
Council for Development and Reconstruction (CDR)
TERMS OF REFERENCE (TOR)

**Technical Assistance for the Provision of Engineering/Consulting Services
for Rubble Management in Quarry Sites**

Ref: LEAP-CS-TA-02

Dated August 18, 2025

1. BACKGROUND	2
2. OBJECTIVES	2
3. SCOPE OF WORK.....	3
<i>Main Objectives of ESIA Studies:</i>	<i>3</i>
<i>Scope of Work of ESIA Study:</i>	<i>3</i>
<i>Methodology:</i>	<i>5</i>
<i>Deliverables of Activity 1 (A1):.....</i>	<i>5</i>
ACTIVITY 2 – DETAILED DESIGNS AND TENDER DOCUMENTS FOR THE CONSTRUCTION OF THE MATERIAL RECOVERY FACILITIES AND SANITARY LANDFILLS (SLFs) INCLUDING TRANSPORTATION OF RUBBLE	6
<i>Main Objectives:</i>	<i>6</i>
<i>Scope of Work for Engineering Design Services and Tender Documents:</i>	<i>7</i>
Task # 1: Site Inspection, Survey and Assessment	7
Task # 1.1: Site Inspection and Data Collection for the Assignments' Sites	7
Task #1.2: Geotechnical Assessment and Topographic Surveys:	8
Task #1.3: Survey Report (SR).....	10
Task #2– Preparation of Detailed Designs	11
Task #2.1– Preparation of Detailed Designs.....	11
Task # 2.1.1: Design Brief.....	12
Task #2.1.2: Detailed Design Packages	12
Task #2.1.3: Detailed Design Review Process.....	14
Task #2.2- Quarry Restoration Plans (QRP).....	15
<i>Main Objectives of the QRP:</i>	<i>15</i>
<i>Scope of Work for the QRPs:</i>	<i>15</i>
Task #1: Draft Quarry Restoration Plan:.....	15
Task #2: Final Quarry Restoration Plan.....	15
<i>Deliverables of Activity 2 (A2):.....</i>	<i>15</i>
ACTIVITY 3 – PREPARATION OF TENDER DOCUMENT AND ASSISTANCE DURING TENDERING.	16
ACTIVITY 4: SUPERVISION SERVICES	16
<i>Deliverables of Activity 4 (A4): (For each site separately).....</i>	<i>18</i>
4. DURATION AND PAYMENTS SCHEDULE FOR ACTIVITIES A1, A2 & A3	19
5. DURATION AND PAYMENTS SCHEDULE FOR ACTIVITY A4 (TIME BASED).	21
5. MEETINGS AND REPORTING	22
6. KEY STAFF	23
7. WORKING HOURS.....	26
8. CONSULTANT'S FACILITIES	26

ANNEX 1: ESIA SCOPING OUTLINE	27
ANNEX 2: ESIA OUTLINE	29
ANNEX 3. CONCEPTUAL DESIGN.....	36
ANNEX 4. TRANSPORTATION SERVICES OF RUBBLE FROM MUNICIPAL COLLECTION POINTS TO CENTRAL PROCESSING AND DISPOSAL FACILITIES	37

**Technical Assistance for the Provision of Engineering/Consulting Services
for Rubble Management in Quarry Sites**

Terms of Reference (TOR)

1. Background

Prior to the 2023 conflict, Lebanon's natural capital was already witnessing a severe degradation with a Cost of Environmental Degradation in 2023 of US\$2 billion, constituting 11 percent of Lebanon's GDP¹. According to the Rapid Damage and Needs Assessment (RDNA) of the conflict covering the period between October 8, 2023, and December 20, 2024, the conflict has resulted in around 17 million tons of rubble². The RDNA also indicated that the recovery needs for the environment sector are estimated at US\$444 million; US\$105 million of this amount are dedicated to the critical safe removal and management of 16.9 million tons of rubble and hazardous waste.

Sound environmental management of the rubble (clearance, sorting, and recycling of rubble, including hazardous waste and e-waste) is a key priority in the recovery phase, to mitigate social, environmental and public health risks, particularly that the solid waste management (SWM) sector was already suffering from inefficiencies and financial instability before the conflict: only 8% of waste was treated in facilities with less than 3% recovered and 55% disposed of in sanitary landfills, thus leaving an estimated 42% of waste ending and burning in open dumps, leading to harmful pollution and public health risks.

Accordingly, priority interventions include rubble clearance and sustainable management to ensure safe disposal and recycling. To this end, the Ministry of Environment (MoE) identified quarry sites in the various governorates affected by the conflict, that could serve as treatment and processing sites for rubble and as final disposal sites for the rubble that cannot be reused/recycled. Several sites were retained and a general conceptual design for the treatment and disposal sites was developed based on capacity requirements.

2. Objectives

The objective of this Technical Assistance (TA) is to provide the Engineering/Consulting Services needed for **up to 3 different sites** (*sites will be listed in the RFP*), in line with the World Bank Environment and Social Framework (ESF) and Industry Good Practices, for the following activities:

- Activity 1: Prepare the Environmental and Social Impact Assessment (ESIA) studies for the Material Recovery Facilities (MRF) where only rubble is processed and crushed into different size aggregates and Sanitary Landfills (SLF) which will be used as final disposal sites for rubble that cannot be reused/recycled and be part of the restoration plan of these sites.
- Activity 2: Develop the Detailed Designs (DD) of the MRFs and SLFs and prepare the Tender Documents (TD) for construction (including the implementation of the restoration plan – activity 3).
- Activity 3: Prepare the Restoration Plans (RP) for these sites.
- Activity 4: Supervise the construction of the MRFs, sanitary landfills and the restoration of the quarry sites.

It should be noted that MoE has prepared, in collaboration with UNDP, Standard Operating Procedures (SOPs) for post disaster rubble management that include SOP1: Debris Pre-Processing Measures, SOP2: Debris Processing, and SOP3: Quarry Rehabilitation (referred to as MoE/UNDP 2025 SOPs). The scope of work of each of the above activity should align with these SOPs and respect the steps, methods and safeguards listed in each.

¹ World Bank. 2024. Cost of Environmental Degradation for Lebanon 2023.

² World Bank and CNRS, 2025. Rapid Damage and Needs Assessment (RDNA) of the conflict in Lebanon

It is also worth mentioning that the transport of rubble from identified municipal collection points to the central treatment/disposal facilities for rubble is part of the scope of this TA while transport of rubble from demolition sites to temporary collection points is not within the scope of this TA.

3. Scope of Work

The Consulting firm(s), individual or Joint Venture (JV) shall perform the assignments in a manner that would fully attain and fulfill the following objectives and outcomes:

ACTIVITY 1 - Environment & Social Impact Assessment (ESIA) Studies

The Consultant shall prepare the ESIA for the proposed Project (MRFs for rubble recycling, SLFs for inert non-recyclable rubble and Restoration Plans) in consultation with the Contracting Authority, the Council for Development and Reconstruction (CDR), the Ministry of Environment (MoE) and the relevant identified stakeholders, including the municipalities that will be served by these MRF and SLF and the surrounding affected communities and vulnerable groups. The Consultant shall undertake all the steps specified in the EIA Decree 8633/2012 and its annexes (especially annexes 7 on EIA scoping and 8 on information required for the preparation of the EIA report) as well as all the related ministerial decisions, applicable World Bank Environmental and Social Standards (ESSs) and World Bank Environmental Health and Safety General Guidelines and Industry Good Practices.

Main Objectives of ESIA Studies:

- To identify and assess the cumulative potential environmental and social risks and impacts of the proposed Projects on the physical, biological and socio-economic environment, and provide appropriate mitigation measures to reduce, limit or halt identified impacts,
- To review the planning for sites selection and technical designs with the purpose of determining mitigation measures to avoid and minimize adverse impacts following the mitigation hierarchy.
- To present suitable projects alternatives,
- To provide appropriate environmental and social management plans consisting of the mitigation plans, the monitoring plans and the institutional strengthening plans,
- To conduct inclusive stakeholder consultations and address their concerns, and to disseminate the project grievance mechanisms.

Scope of Work of ESIA Study:

The ESIA will cover the following key areas outlined in the table below:

Project Description	<ul style="list-style-type: none">• Detailed description of the rubble MRF, sanitary landfill and Restoration Plan, including location, design, capacity, and technology.• Description of associated facilities (if any) and infrastructure. Noting that associated facilities or activities are not funded as part of the project and are: (a) directly and significantly related to the project; and (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist
Baseline Conditions	<ul style="list-style-type: none">• Collection of site-specific baseline data on environmental and social conditions in the project area.• Assessment of current land use including any land ownership issues and presence of informal land users, water resources, air quality, and socio-economic conditions.• Conduct surface surveys of locations proposed for SLF development for evidence of cultural heritage.
Impact Assessment	<ul style="list-style-type: none">• Identification and assessment of potential environmental impacts, including:<ul style="list-style-type: none">○ Soil, water, and air pollution.○ Noise and vibration○ On biological environment

	<ul style="list-style-type: none"> ○ On traffic and road safety ○ Generation and management of hazardous and non-hazardous waste. ○ Resource use and efficiency (water and energy). ○ Greenhouse Gas (GHG) emissions. ● Identification and assessment of potential social impacts, including: <ul style="list-style-type: none"> ○ Labor risks (hazardous work, child labor, forced labor, discrimination, occupational health and safety). ○ Impacts on land use, land access and livelihood impacts due to loss of land including presence of any informal land users (informal waste pickers). ○ Community health and safety. ○ Impacts on vulnerable groups. ○ Risks of gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH). ○ Tangible and intangible cultural heritage.
Analysis of project alternatives	<ul style="list-style-type: none"> ● Overview of the various alternatives considered during the planning phase of the proposed project, along with a list of other potential options that could achieve the same objectives. ● Comparison of these alternatives focusing on potential environmental and social impacts; capital and operating costs; suitability under local conditions; and institutional, training, and monitoring requirements ● Analysis to estimate the preliminary costs and benefits of all alternatives, and consider the scenario where the project is not implemented,
Environmental and Social Management Plan	<ul style="list-style-type: none"> ● Development of an Environmental and Social Management Plan (ESMP) with specific mitigation measures for identified impacts. ● Measures to promote adherence to good construction practices and use of special mitigation techniques to avoid pollution and excessive resource use. ● If the surveys mentioned above determine that tangible or intangible cultural heritage may be encountered during ground-disturbing activities, develop and implement a Cultural Heritage Management Plan (CHMP) that is consistent with the requirements of the World Bank ESS8.
Stakeholder Engagement	<ul style="list-style-type: none"> ● Carry out inclusive stakeholder engagement to ensure meaningful consultation with affected communities and stakeholders. ● Establish a Grievance Redress Mechanism (GRM) for addressing complaints and concerns.
Legal and Institutional Framework	<ul style="list-style-type: none"> ● Review relevant national legislation ● Review World Bank Requirements, particularly: <ul style="list-style-type: none"> ○ Environments and Social Framework, "ESF", 2018. ○ World Bank Group (WBG) Environmental, Health and Safety General Guidelines ("WBG EHS General Guidelines³"), December 10, 2007. ○ Public consultation, stakeholder engagement and information disclosure in accordance with ESS10 ○ Access to information policy. ● Review laws, regulations and policies of Lebanon pertaining to environmental protection, environmental assessment and management; labor legal rights, health and safety requirements, land acquisition and social development goals. ● Review relevant international conventions and protocols. ● Identify institutional responsibilities for environmental and social management.

³https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

Methodology:

The ESIA will be conducted using the following methodologies:

- **Literature Review:** Reviewing existing documents, reports, and data relevant to the project.
- **Field Surveys:** Conducting field surveys to collect primary data on environmental and social conditions.
- **Stakeholder Consultations:** Engaging with stakeholders through meetings, interviews, and public consultations.
- **Impact Assessment:** Using qualitative and quantitative methods to assess the potential impacts of the project.
- **Mitigation Planning:** Developing mitigation measures based on the impact assessment findings.

Deliverables of Activity 1 (A1):

The Consultant shall deliver the following reports for each selected site:

- [A1-D1] **Inception Report:** Outline of the methodology and work plan.
- [A1-D2] **Draft Screening Report and Draft EIA Scoping Report,** as per Annex 7 of the EIA Decree 8633/2012 to be submitted to the MoE
- [A1-D3] **Final Screening Report and Final EIA Scoping Report.**
- [A1-D4] **Draft ESIA Report**
- [A1-D5] **Final ESIA Report** Incorporating feedback from the concerned stakeholders, the WB, MoE and CDR (the Client). The ESIA report shall be compliant with the national legislation in Lebanon, and the World Bank ESF requirements. Outlines of the EIA scoping report and the ESIA report are provided in **Annex 1 and 2, respectively.**

Inclusive stakeholder consultations shall be documented in ESIA report. The basic requirements of public participation, transparency and stakeholder engagement should be observed during the preparation of the ESIA study as required by the MoE and the World Bank requirements under the Environmental and Social Standard 10 (ESS10) of the World Bank (WB) Environmental and Social Framework (ESF). Public consultation shall be undertaken with all project affected persons, other interested parties and vulnerable groups, and feedback/comments from consultations must be included in the relevant section of the final ESIA. The Consultant shall conduct all necessary actions to prepare and complete the ESIA study in compliance with the Lebanese laws, regulations, and policies of Lebanon, World Bank (WB) Environmental and Social Standards and World Bank Group Environmental, Health and Safety (WBG EHS) General Guidelines.

The Consultant shall be responsible for submitting all reports and addressing all comments received by the different stakeholders until clearance/approval by MoE. The ESIA shall be prepared in English. The executive summaries of the draft and final ESIA reports should be translated into Arabic. All reports shall be disclosed after the review and approval of the World Bank and MoE, on MoE's and CDR's websites jointly.

The consultant shall submit all the deliverables to MoE for review, clearance and approval. Under this activity, all communications such as emails, formal letters, deliverables, etc... shall be addressed to MoE with copies to CDR.

ACTIVITY 2 – Detailed Designs and Tender Documents for the Construction of the Material Recovery Facilities and Sanitary Landfills (SLFs) including transportation of rubble.

Main Objectives:

The objective of Activity 2 is to develop the most cost-effective, environmentally and socially sound and affordable detailed engineering designs (based on the enclosed conceptual design – Annex 3 and MoE/UNDP-2025 SOP2 for Debris Processing) with final design drawings, construction details, cross-sections, final quantities, cost estimates, and technical specifications. The Detailed Designs (DDs) for each of the 3 sites should ensure an operational capacity for the minimum period specified in the conceptual design (based on the volume of rubble to be crushed, flow rate, timeline, etc.). The DDs shall feed into the ESIA for the whole project and be an integral part of it.

This will also include needed transportation services and their requirements as detailed in Annex 4.

The DDs shall include the following facilities and systems without being limited to them, subject to the outcome of initial consultations with the counterparts and site investigations – further details can be checked in the attached conceptual design (Annex 3):

1. Site preliminaries and preparatory works prior to MRF and SLF construction (surveying, access roads, ramps, location for stockpiling of excavated materials, etc...)
2. Construction works related to the MRFs, including the following areas and equipment (which should all have built-in magnetic separators):
 - a. Reception area where the incoming rubble is received
 - b. Initial sorting area, including the pulverizer for the reduction of large concrete parts
 - c. Primary crushing area – primary crusher reducing material size down to 300mm
 - d. Initial screening – flip flow screening process (bottom deck) of the crushed material, classifying it into three fractions (<10mm, 10-50mm, 50-300mm)
 - e. Separation area, with a handpicking station - including the air separator for segregating lighter fractions
 - f. Secondary crushing area – where the remaining material, following recovery of clean material and recyclable materials, is further crushed into 80mm particles.
 - g. Final screening area – another flip flow screening process (single deck) to refine the material further (<10mm and 10-80mm)
 - h. Storage area
3. Construction works related to the SLFs, including:
 - a. General excavation/embankments with grading, compaction, contour, and subgrade treatment to reach the required levels.
 - b. Construction of the cells' bases and sides and the cells' geometry formation.
 - c. Construction of temporary roads, tracks, and drainage networks
 - d. Lateral side slope, berms, and embankment constructions- cut fill works
 - e. Construction of passive and active barrier systems, sealing on cells' bases and sides
 - f. Geo-synthetic materials supply and placement (liner barrier protection system)
 - g. Construction of stormwater (runoff water), collection, and drainage systems
 - h. Construction of the leachate drainage layers, chambers, networks, piping, manholes and sump/reservoir works
 - i. Construction of the sanitary cells' bottom/details around the slotted pipes
 - j. Construction of the leachate storage reservoir and connection system (pumping, piping, earthworks) and concrete leachate storage tank
 - k. Earthworks, anchor trenches, dikes, civil, and electromechanical works
4. Other auxiliary works, ancillaries, peripheral equipment, and site final developments.

The Consultant will be in charge of the following:

- Liaising with relevant local authorities and representing CDR on the ground and for all project's management deliverables,
- Coordinating all on-the-ground assignment related activities with the various relevant parties (government, private sector etc.),
- Establish all sites' coordinates and required land info, etc... and coordinate for permitting procedures with relevant parties,
- Examine the proximity of the public utilities available at the project site (i.e. electricity, water, access, etc.) to the proposed, and access for use,
- Review available information and collect specific site data and analyze pre-design data,
- Inspect the current environmental baseline surveying, benchmarking, sampling, testing etc. for the selected site, and examine the degree of compatibility of the selected site of the project with the physical environment concerns not limited to site topography, drainage, soil, geohydrology, surrounding land-use, and seismicity.
- Evaluate design conditions and report the engineering analysis, complete with identification of design issues and needs; in terms of technical, time, cost, quality and sustainability. In addition to the integration of the alternatives and findings of the ESIA in the engineering design
- Develop appropriate general conceptual layouts, and process design schemes including the preliminary engineering cost estimate, conduct stakeholder discussions and feedback, and proceed to get the required approvals and related consents from the relevant authorities.
- Preparation of technical specifications, sketches for the detailed design and construction and bill of quantities with estimated costs of the Material Recovery Facilities and landfill sanitary cells and all site auxiliary infrastructure, developments, electromechanical works and relevant preliminaries.
- Produce the detailed drawings, specifications, and bill of quantities (BOQ) for each item or activity according to the general requirements and in terms of the appropriate quantity and cost estimates.
- Provide access, internal roads, ramps and traffic management systems for safe and efficient flow of traffic into and out of, as well as within the landfill facility.
- Develop an operation and maintenance manual to enable site preparation, MRF and landfill cell construction, soil cover, record-keeping activities, closure activities, and environmental monitoring (during landfilling post-closure) to be conducted in a safe, efficient, and environmentally sound manner.
- Develop health and safety measures based on CDR & WB requirements and ESMPs prepared under Activity 1 to protect workers, visitors and surrounding residents during construction, operation, closure, and environmental monitoring activities associated with implementation of the Material Recovery Facilities and sanitary cells.
- Adopt and follow the site ESMPs, during the construction phase of the MRF and sanitary landfills elaborated in the ESIA.

Scope of Work for Engineering Design Services and Tender Documents:

Task # 1: Site Inspection, Survey and Assessment

Under this task, the Consultant shall perform the following tasks:

Task # 1.1: Site Inspection and Data Collection for the Assignments' Sites

- a. Perform site visits and data collection- including collecting existing as- Built drawings, notes of materials, existing design data, and all pertinent data from the concerned municipalities or any other relevant authority.
- b. Conduct a comprehensive inspection and survey of the sites, including the inspection and survey of any existing structure(s), utilities and installations within the targeted areas of intervention, utilizing the topographic surveys to amend/ generate any as built drawings where needed.
- c. Perform a detailed survey of the land that is currently not in use, specifically any existing

Mechanical, Electrical and Plumbing MEP installations at the target sites of the assignment including those connected to utilities, e.g. clean water, sewage, electricity, telephone, etc. while providing description of their conditions, adequacy, capacity, efficiency and safe operation and determining whether any parts of the same can be retained and rehabilitated or to be totally dismantled and replaced;

d. Prepare a detailed survey and list of the demolition, dismantling, scrubbing, reinstatement, and rehabilitation works that might be needed prior to the commencement of the construction works.

Task #1.2: Geotechnical Assessment and Topographic Surveys:

The Consultant shall provide its expertise as required to manage, coordinate and execute all the required services related to the Geotechnical Assessment and Topographic Surveys. The Consultant shall conduct a comprehensive investigation based on existing records, site inspections and tests. This is a pre-requirement for the preparation of the Detailed Design. The Consultant shall collect any geotechnical data available for the site and shall conduct additional geotechnical testing, all in coordination with the CDR team. More specifically, the Consultant shall perform the following sub-tasks:

- Data Collection and On-Site Investigations/ Survey— this shall include, inter alia, the following:
 - 1) Perform data collection (General notes of material, topographical and geological maps, geotechnical investigations etc.);
 - 2) Conduct visual survey and inspection of the site and its facilities; and other activities needed to perform geotechnical testing and topographic survey.
 - 3) With respect to the topographic survey, the services to be provided under this Task are aimed at preparing a comprehensive topographical investigation which is necessary for the design and construction of the disposal facilities.
- All existing physical features as well as existing surface and underground services will be surveyed and shown in plan. The topographical survey will include, but not limited to, the following:
 - 1) Contour lines (i.e. elevations and other landforms) with 30mm minimum equidistance.
 - 2) Land boundaries, location of reference marks.
 - 3) Natural and manmade features within the land (e.g. natural features and structures, canals, trees with diameter above 15 centimeters, stream, fences, buildings, etc.).
 - 4) Access roads and street level.
 - 5) Other information relevant to or important to take note of for construction projects, such as, drainage, earthworks, etc.
 The trial pits or boreholes from the geotechnical investigation shall be clearly identified in the topo survey. The survey of existing utilities from the site inspection shall be clearly identified in the topographic survey where possible.
- Performing Tests and Desk Assessment— this shall include, inter alia, the following:

Field and lab tests: The Consultant should under his responsibility and as part of his scope under this study, in cooperation with a qualified Geotechnical firm and certified testing lab, perform the minimum field and lab tests as per the below:

 - 1) Conduct drilling and sampling of three (3) boreholes and 1 test pit for each site; with a 25m depth per borehole
 - 2) All excavations and boreholes to be carefully backfilled with suitable fill material;
 - 3) Conduct field tests including Standard Penetration Test (SPT) through the soil at 1.5m depth intervals;
 - 4) Determine the compactness of the soil strata at field at different elevations;
 - 5) Explore the subsurface conditions at various locations underneath the proposed foundation locations and conduct the required in- situ tests; and
 - 6) Conduct the necessary laboratory testing on the representative samples obtained during field investigation and drilling and evaluate relevant engineering parameters of the subsurface soils.

The field and laboratory testing shall be in accordance with international standards (BS EN 1997-2:2007, Eurocode 7 – Geotechnical design – Part 2: Ground investigation and testing, NA to BS EN 1997-2:2007, etc...)

- Desk Assessment: The Consultant shall perform the following tasks:
 - 1) Prepare engineering analysis of field and laboratory findings;
 - 2) Assess the relevant engineering parameters of the surface and subsurface soils; and
 - 3) Identify the geological features, outcrops, topography, surface drainage, surficial materials and general site conditions.
- Submission of Geotechnical Testing and Topographic Survey Narrative Report (GTTR) on Findings and Recommendations – the Consultant shall produce a Geotechnical Testing and Topographic Survey Report (GTTR) for the Selected Area. The information provided shall be adequately detailed to enable an informed decision by CDR, and shall include at minimum the following:
 - 1) Brief Project background with the Methodology followed for the Geotechnical Surveys.
 - 2) Mechanical, physical and chemical laboratory tests shall be performed in accordance with the approved standards by an independent Third-party laboratory chosen by the Consultant and approved by CDR. The tests shall comprise but not be limited to:
 - a. Grain-size distribution
 - b. Natural in place density moisture content.
 - c. Laboratory Moisture density relationships (ASTM D698 or D1557).
 - d. Attenberg limits for cohesive soil.
 - e. Laboratory Permeability and Coefficient of Permeability.
 - f. Shear box.
 - g. Unconfined compressive strength.
 - h. Compaction proctor or modified proctor.
 - i. Consolidation.
 - j. Soil aggressiveness.
 - k. Soil plasticity.
 - l. Groundwater chemical composition analysis.
 - m. Hydraulic conductivity of in place clay/soil materials.
- Submission of a Hydrogeological Study: In this study, the general geology and groundwater conditions should be described in the down to and including the lowest aquifer that may be affected by the landfill, including the following: stratigraphic, lithologic, and physical characteristics and thickness of each stratum, including the location and depth of each aquifer; the hydrogeologic characteristics of each aquifer, including hydraulic conductivity, groundwater hydraulic gradient and velocity, the geologic structure at the proposed facility and its relation to the regional geological structure, the uses of each aquifer, aquifer characteristics necessary to describe three dimensional groundwater flow underlying the proposed facility. The scope of the hydrogeological study should cover the following key areas:
 - 1) **Site Characterization:** This involves studying the existing conditions of the site, including geology (stratigraphy, rock types and permeability, faults and fractures, slope stability, etc.), hydrology, and natural resources. It helps in understanding the subsurface conditions which are critical for the design of the project, particularly the landfill.
 - 2) **Groundwater Flow Determination:** Mapping the direction and rate of groundwater flow is essential to predict the potential spread of leachate and to design appropriate containment systems.
 - 3) **Hydraulic Conductivity:** Measuring the ease with which water can move through subsurface materials, which affects the potential for leachate migration.
 - 4) **Water Table Elevation:** Determining the depth to the water table to ensure that the landfill base is above it, reducing the risk of direct contamination.

- 5) **Aquifer Testing:** This includes pumping tests to determine the hydraulic properties of the aquifers, such as transmissivity and storability, which are important for modeling groundwater flow and contaminant transport and aquifer characteristics. Studying the properties of aquifers, such as their depth, thickness, flow direction, and recharge rates, helps understand how they might interact with potential contaminants.
- 6) **Water Balance Analysis:** This involves assessing the inflow and outflow of water in the area, including precipitation, evaporation, surface water runoff, and groundwater flow, to manage the leachate and surface water control systems.
- 7) **Leachate and Contaminant Transport Modeling:** Predicting how potential contaminants in the leachate might move through the subsurface environment is critical for assessing risks to groundwater and designing mitigation measures.
- 8) **Soil Permeability Tests:** These tests are conducted to determine the permeability of the soil, which is important for designing the base and cover systems of the landfill to prevent leachate migration.
- 9) **Assessment of Geological Hazards:** Identifying potential geological hazards such as fault lines, sinkholes, or landslides is important for ensuring the long-term stability of the landfill.

For guidance, please refer to [Environmental Health and Safety Guidelines for Waste Management Facilities, dated December 10, 2007.](#)

- Submission of a geotechnical report which shall include the following:
 - 1) Outline of the activities undertaken; A plot showing the location of test borings and/or excavations.
 - 2) Existing geotechnical (e.g. surface and subsurface, Soil condition findings) conditions and assessment.
 - 3) Location of subsurface exploration logs on the site plan.
 - 4) Earthquake seismicity parameters.
 - 5) Documentation on tests undertaken and test results / reports, data analysis.
 - 6) Method statements for any remedial or retrofitting procedure that shall be executed where needed along with calculation sheets.
 - 7) Allowable soil bearing capacity and foundation recommendations, settlement, compaction requirements, ground-water levels, construction materials, and others; and
 - 8) For the Topographical Survey Report, the Consultant should provide one topographical map in 1 set soft version in AutoCAD and PDF and 1 set hard copy on A3 size for the site. These shall include:
 - a. the elements surveyed and mentioned in the earlier section (e.g contour lines, land boundaries, location of reference marks, natural and manmade features within the land etc...)
 - b. Photo records on all field tests, Information on all data collected from site; and
 - c. Conclusions/ Evaluation and recommendation.

Task #1.3: Survey Report (SR)

Upon completion of all the subtasks under Task #1.1 and 1.2, the Consultant shall prepare a comprehensive Survey Report (SR) comprising the following:

- a. Detailed description of the site survey and data collection activities;
- b. The GTTR and its annexes; and
- c. Clear description of the findings and outcomes along with clear recommendations that need to be taken into account and feed into the completion of the following tasks.

Upon the submission of the Survey Report and the approval of the same by CDR, the Consultant shall proceed to prepare the Detailed Design, nevertheless, subject to the approval of the CDR PM, subtasks under Task #2 can be started prior to the completion of Task #1 in coordination with the CDR Project Team and the Beneficiaries, in a manner that would respect the timeliness of the Project

and the quality of the deliverables.

Task #2– Preparation of Detailed Designs

Task #2.1– Preparation of Detailed Designs

Under this Task, the Consultant shall prepare full Constructible Detailed Design– ready for construction shop drawings– for all the disciplines (e.g. Architectural, Civil, Structural, Mechanical, Electrical, SPVHS, Landscaping, Roads, etc..) needed to construct the MRF and sanitary landfill. Under this Task, the Consultant shall conduct the following sub-tasks:

Task# 2.1.1 Design Brief

Task# 2.1.2 Detailed Design

Task# 2.1.3 Design Review: Final Detailed Design

Detailed Design Methodology: in preparing the detailed design, the Consultant shall:

- a. Verify the correctness and accuracy of the As- Built Drawings against the existing built structures and systems. In case of discrepancy between the As- Built Drawings and the existing built structures and systems, the Consultant shall be responsible to either produce or modify the pertinent As-Built Drawings and to produce new drawings to reflect the actual situation on the ground, moreover in case of the unavailability of the As-Built Drawings, the Consultant shall produce new drawings to reflect the actual situation on the ground.
- b. Utilize the Narrative Reports on Findings & Recommendations related to the GTTS and the SR prepared under Task #1, to prepare the detailed design in a manner that would maintain the integrity of the site and take into consideration the bearing capacity of the soil and the method statements indicated in the said Narrative Reports.
- c. Take into consideration climatic data related to temperature, humidity, rainfall, wind speed, etc. which shall be collected and obtained by the Consultant.
- d. Be responsible for producing the detailed design taking into consideration the actual situation on the ground, the social assessments, the results of the stakeholders' consultation sessions, and reflect, to the extent possible, the stakeholders' requests, concerns, and preferences. The proposed designs will be evaluated in terms of their feasibility, practicality, compliance with MoE design planning manuals/requirements/guidance, ability to meet the diverse needs and preferences of the site's end users and shall respond to the comments by and comply with requirements of the MoE. The Consultant shall also obtain the approval of the concerned stakeholders (MoE, WB & CDR) on the Final Detailed Design package.
- e. Prepare the Detailed Design in a manner that ensures meeting minimum requirements for safety and functionality as per CDR & WB Health and Safety Requirements for Contractors.
- f. Optimize the design in a manner that would highly meet value for money and designed to adequately comply with and meet international standards and MoE requirements.
- g. Utilize Specialized Computer Aided Design Software for the design of the various disciplines of each of the three assignments (e.g. 5D BIM- Building Information Modelling, etc.).
- h. Provide full details (dimensions, sizes, distances, elevations, weights of the various sections/components/equipment of the design, etc..), clear technical specifications, calculation notes, scope of work, testing and commissioning procedures, operation and maintenance procedures, standards of procedure (SOP) for the rubble management system, and training requirements.
- i. With respect to the equipment and materials specifications, these shall be prepared in a manner that guarantees highest performance, efficiency, reliability and availability, and shall be in accordance with the applicable international standards. The Consultant shall not extract from specific manufacturers catalog sheets.
- j. Take into consideration that the Government of Lebanon will conduct procurement processes for the implementation of the construction works, based on the Detailed Design prepared by the Consultant.

Detailed Design Components

The Detailed Design to be prepared by the Consultant based on the conceptual design shall comprise, inter alia, the following:

Task # 2.1.1: Design Brief

The Consultant shall build on the Survey Report and set out the Technical Objectives, Functional Statements and Performance Requirements, as well as spatial requirements, and shall prepare the Design Brief to tackle/include, inter alia, the following:

- a. Facility Data, site information and surveys, as well as all other technical surveys conducted/collected under the scope of this consultancy (Geotechnical and Topographic Surveys, etc.).
- b. Detailed description of the existing above/underground systems, installations, and facilities, highlighting the configuration, type and make of equipment and the proposed enhancements.
- c. Setting Out Technical Objectives, Functional Statements and Performance Requirements for each assignment's components and facilities.
- d. Spatial requirements of the Project and linkages between its various sections as well as the neighboring buildings/structures/facilities, etc. including design sketches.
- e. Detailed list of stakeholders and their roles, and communication strategy to continually correspond with and involve all stakeholders.
- f. Donor and Stakeholders' requirements, including End- User needs, such as women and girls, persons with disabilities (PWD) and other groups.
- g. Proposed Detailed Design methodology and Approach.
- h. Identification of design assumptions and criteria, design solutions to meet End-Users needs, including women and girls, elderly, PWD and other marginalized groups.
- i. Description of the various facilities, installations, equipment (e.g. civil, electrical, Solar, mechanical-HVAC and Plumbing, irrigation, drainage, storm water, water treatment and storage, fire protection/fighting, etc....).
- j. Codes and standards (Local and International) pertaining to all disciplines that will be adopted, noting that the applicable codes and standards suggested by the Consultant shall be subject to the approval of CDR & MoE as part of accepting the Design Brief.
- k. Forecast about the rubble, types, proposed rubble management system, size, operation and maintenance protocols and Standards of Procedure (SOP).
- l. Detailed Design methodology and Approach, Implementation plan and schedule for the rehabilitation/construction works including list of risks and precautions to be considered.
- m. List of licenses/permits that are needed to commence the Rehabilitation/ Construction works along with detailed requirements and steps needed to obtain the same.
- n. Preliminary cost estimates for the whole Project (Rehabilitation, construction, including a breakdown of anticipated costs related to materials, labor, and other resources, operation and maintenance, management, etc..); and Annexes (e.g. SR, etc.).

The Design Brief shall be submitted by the Consultant to MoE for its review, comments and approval/disapproval. The Consultant shall respond to the comments that would be provided by MoE & CDR Project Team and amend the Design Brief accordingly.

Task #2.1.2: Detailed Design Packages

The Consultant shall fully develop and provide the Detailed Design. The design parameters need to be optimized to include all required rehabilitation, and construction works to produce a complete and coherent holistic design. The Consultant shall prepare and submit a draft detailed design including all necessary execution drawings, including interior design packages where applicable, calculations, details, Bills of Quantities and Specifications, whilst abiding by the defined standards, codes and guidelines and acquiring the MoE Approval. The Consultant shall also revise the Detailed Design

package to incorporate and comply with the comments to be received from the MoE & CDR Design Review.

The Detailed Design must include, inter alia, the following:

- a. Detailed Design Drawing Set which shall include the following packages:

- i. Architectural Package
- ii. Civil Works Package
- iii. Structural Package
- iv. Mechanical Package
- v. Electrical System Package

The above engineering disciplines drawings lists are not exhaustive. The Consultant shall prepare other drawings as might be deemed necessary by the MoE & CDR. The Consultant shall provide fully coordinated plans/layouts/drawings showing the multi-disciplinary layers of the different engineering systems.

- b. Construction details:

The detailed design must provide extensive construction details and schedules that can be executed without compromising the design intent and can be monitored on site by the CDR Project Team during site visits. The Design shall provide full details, dimensions, sizes, distances, elevations, weights where applicable (e.g. Steel Structure, retaining walls, gates, manholes etc..) of structural elements to be constructed and all the centralized and stand-alone systems, in addition to schedules of equipment, welding methods, connections as well as the specifications of the materials, protection, painting, etc. where applicable.

- c. Supporting Calculations Notes:

The Detailed Design must be supported by calculation notes (structural, electrical, mechanical, lighting, electrical, etc.). In preparing the design calculations, as indicated above, the Consultant must use internationally recognized design software based on recognized standards and, when working manually, prepare neat and proper records of the design calculations. The design record must be made available for third party reviews and checks at any time and must be handed over as part of the end users Taking-Over package.

- d. Detailed Technical Specifications:

The Consultant shall submit Technical and Functional Requirements and Technical Warranties of all the components and equipment.

- e. Detailed Scope of Work:

The Consultant shall submit the Detailed scope of the construction contractors in addition to general obligations (e.g. Abiding by CDR Health Safety Security and Environment- HSSE and the ESMP).

- f. Standards, Codes and Guidelines:

The Consultant shall abide in the detailed design by International and local standards, codes and codes of practice.

- g. Visibility:

The Consultant shall provide high quality photos capturing the components and the impact of the project. CDR will provide the Consultant with photography and branding guidelines to adhere to.

- h. Determine Training requirements:

The Consultant shall determine the training requirements for operation and maintenance and management services (O&M of landscape areas, O&M of solar systems, O&M of MEP systems etc.), and SOPs for the rubble management system.

- i. Project Implementation Schedule:

Regular updates of the implementation schedule in MS Project.

- j. Detailed Bill of Quantities and Detailed Cost Estimates:
Including recommended Spare Parts list, cost of operation and maintenance and management.
- k. Other reports:
The Consultant shall submit other reports as might be deemed necessary to comply with CDR Requirements.

At the completion of the preparation of the Detailed Design:

- a. All coordination exercises should have been profoundly conducted.
- b. Layouts prepared, facilities and sections identified and indicated on the layouts along with clear and precise determination and design of the proposed equipment schedules and locations, Civil/Structural engineering information, Mechanical, and Electrical.
- c. Any necessary government and other stakeholders would have been consulted, and the concerns/requirements of relevant stakeholders incorporated to the highest extent possible into the Final Design.
- d. Approval by the concerned Municipalities of the Final Design has been obtained by the Consultant.
- e. All aspects of design have been completed and incorporated, including training requirements, operation and maintenance and management services, spare parts, health, safety and sustainability considerations and SOPs for rubble management systems.

Task #2.1.3: Detailed Design Review Process

The Consultant shall take into consideration that all Deliverables would be subject to review by MoE. The Consultant shall provide comprehensive clear and accurate Deliverables with full details in order to avoid a lengthy review process. Submissions that do not include the required documentations will not be accepted for review by the MoE..

The Consultant shall provide MoE with the final full Detailed Design on the set deadline complete without omissions. The deliverables shall not be considered Final until the MoE deems that the Design Documents substantially and fully meet the requirements. Design reviewer's liability shall be limited to evaluating the compliance of the design against the minimum requirements set out in the design planning manual and shall not include any liability for the design itself, which shall remain with the Consultant.

The consultant shall submit all the deliverables to MoE for review, clearance and approval. Under this activity, all communications including the deliverables shall be addressed to MoE with copies to CDR. Payments under this activity shall be processed by CDR based on MoE approval of related deliverables.

a. Duration of The Design Review Process:

The Design Review process starts when the complete design package is submitted to the MoE by the Consultant. The duration of review from first submission depends on the complexity of the works, the quality and detail of the design package. The review process may require multiple review cycles and clarifications might be raised by the MoE, CDR and the World Bank as well as further design development/amendment by the Consulting Firm.

b. Individual Submissions (Review Cycles):

For each individual submission to Design Review, MoE commits to providing reviews within 10 working days. A gap analysis of the submitted documentation requires a shorter time frame, no longer than a week. If a longer time-period for technical review is required, due to unavailable technical resources or an unusually large scope within the design, MoE will notify the Consultant as soon as possible, no later than 10 working days after submission.

Task #2.2- Quarry Restoration Plans (QRP)

Main Objectives of the QRP:

Based on Decree 8803/2002 and its amendments related the organization of the quarrying sector, and in line with the technical requirements set in the joint decision of the MoE and the Ministry of Industry dated July 1, 2024 (Decision #1/2024), the Consultant shall prepare a Quarry Restoration Plan (QRP) for the identified quarries, taking into consideration the space allocated for treatment and final disposal of the rubble. The QRP shall follow the guidelines set forth in MoE/UNDP 2025 SOP3 for Quarry Rehabilitation. The QRP shall feed into the ESIA for the whole project and be an integral part of it.

The QRPs shall include at minimum the following:

1. The QRP objectives (safety, stability, environmental, socio-economic, etc.)
2. The restoration considerations (climate; aspect and topography; soil; available species; site accessibility and proximity; geologic formation, site stability, cut face conditions and safety; vulnerability- geology and hydrogeology, surface water; public concerns; land use planning; legislation and enforcement; cost implications; etc.)
3. The restoration options (nature conservation, wetland, recreational, development- industry or other, water reservoir, agriculture, etc.) and related limitations including preliminary design.
4. Stakeholder consultations
5. The most preferred restoration options (with related schematics, maps, etc.)
6. The restoration design
7. The estimated QRP costs
8. The restoration schedules and phasing with the remaining elements of the project
9. Other recommendations for implementation and monitoring.

Scope of Work for the QRPs:

The Consultant shall perform for each site two tasks:

Task #1: Draft Quarry Restoration Plan:

For each of the designated quarry sites, the Consultant shall prepare a draft QRP comprising of the elements outlined above and following a consultative approach.

Task #2: Final Quarry Restoration Plan

The Consultant shall finalize the QRP based on input from CDR, MoE (and the National Council for Quarries, presided by MoE).

Deliverables of Activity 2 (A2):

The Consultant shall submit to MoE and CDR the below indicated Deliverables as per the Detailed Implementation Schedule. The Deliverables include, *inter alia*, the following (for each site):

- [A2-D1.1] Site Inspection, Survey and Assessment Reports including Draft Detailed Survey Report for Task # 1.1: Site Inspection and Data Collection for the Assignments' Sites
- [A2-D1.2] Final Detailed Survey Reports including Geotechnical Testing and Topographic Study Reports (GTTR) for Task #1.2: Geotechnical Assessment and Topographic Surveys and Task #1.3: Survey Report (SR)
- [A2-D2.1.1a] Draft Design Brief Reports for Task # 2.1.1: Design Brief
- [A2-D2.1.1b] Final Design Brief Reports for Task # 2.1.1: Design Brief
- [A2-D2.1.2] Draft Detailed Designs
- [A2-D2.1.3] Final Detailed Designs
- [A3-D2.2.1] Draft Quarry Restoration Plan
- [A2-D2.2.2] Final Quarry Restoration Plan

The Consultant shall submit the Deliverables in both electronic and hard copy forms. After MoE approval of DRAFT and FINAL Deliverables, the Consultant shall provide three (3) signed hard copies and one soft copy of the approved documents. MoE and CDR shall become the sole owners of all the documents/deliverables produced by the Consultant under this Assignment; MoE and CDR have the full right to utilize the same at its sole discretion without any restrictions.

The consultant shall submit all the deliverables to MoE for review, clearance and approval. Under this activity, all communications such as emails, formal letters, deliverables, etc... shall be addressed to MoE with copies to CDR.

ACTIVITY 3 – Preparation of Tender Document and Assistance during tendering.

The Consultant shall prepare and submit the construction tender Documents that shall contain at minimum the compilation of drawing sets, specifications with technical preface, BOQs, Guidelines, contractor's qualification criteria, etc. The Consultant shall advise on the qualification criteria of the contractors including inter alia, administrative, commercial, financial, EHS and technical criteria, as well as the terms of payment and other procurement documents as deemed necessary.

The Construction Tender Document shall comprise the Following Volumes and Documents:

Volume 1: Request for Bid (RFB)

Volume 2: Specifications

Volume 3: Bill of Quantities

Volume 4: Detailed Drawings

Final Design Report

Also, The Consultant shall support CDR throughout the solicitation and evaluation of construction tenders. More specifically the Consultant shall:

- Provide CDR/PMU with answers to the Clarifications Requests raised by the Prospective Bidders as might be requested, prior to **Bid Submission Date (BSD)** of the Construction of the Material Recovery Facilities and Sanitary Landfills Bid Project
- Support in the technical and financial evaluation of the offers received and prepare the evaluation reports needed.

Deliverables of Activity 3 (A3):

The Consultant shall submit to CDR the below indicated Deliverables as per the Detailed Implementation Schedule. The Deliverables include, inter alia, the following (for each site):

- [A3-D1.a] - Draft Tender Document
- [A3-D1.b] –Final Tender Document
- **[A3-D2]**Providing CDR/PMU with answers to the Clarifications Requests raised by the Prospective Bidders as might be requested, prior to Bid Submission Date.
- **[A3-D3]**Draft Technical and Financial Evaluation Reports
- **[A3-D4]**Final Technical and Financial Evaluation Reports

ACTIVITY 4: Supervision Services

The Consultant will provide support to CDR at all stages of projects implementation. The Consultant shall supervise the implementation of the construction of the material recovery facilities, sanitary

landfills and restoration of quarry sites at the selected number of locations (3 sites). In this regard, the Consultant will be called to mobilize multi-disciplinary teams simultaneously to execute related tasks which may include, without being restricted to:

1. The Consultant will ensure that the contractor constructs the works in accordance with the approved designs, specifications, terms of the contract, and relevant engineering standards and codes of practice;
2. The Consultant will ensure that the contractor achieves all construction performance measures and especially those related to time, cost, quantity and quality of the works, environmental protection, community relations, worker health and safety and protection of works;
3. The Consultant shall ensure a permanent presence of his key personnel at the works site/sites in accordance with Contractors' work plan;
4. The Consultant is responsible to control all the mitigation measures and the monitoring plan as given in the Environmental Impact Assessment (ESIA) studies to prevent the environmental pollution due to construction works (e.g. oil. leakage. noise. air pollution);
5. The Consultant is responsible to review of the emergency action plans to be prepared by the Contractors;
6. The Consultant is responsible for promptly informing CDR in case of likelihood or existence of deviation from the construction work plan, increase in costs and duration for completion of works;
7. Preparation of supplementary plans and additional technical studies and investigations that may be required in order to resolve actual unforeseen conditions on the site and because of carrying out the review of the contractor's detailed design and construction drawing;
8. Review and approval of shop drawings and specifications issued by the Works Contractor;
9. Review and approval of test results of laboratory tests;
10. Maintain a presence on the site/sites, as well as specific visits by specialists in order to observe and to report on the progress and the quality of construction and the installation of equipment;
11. Reviewing and issuing payment certificates;
12. Participation in weekly site meetings with the contractors and other affected parties;
13. Study and verification of the contractor's work program, organization and method statements, proposals for material sources and quality assurance plan: review and comment as necessary or recommend acceptance;
14. Study and verification of the contractor's proposals for implementation of the Environmental Management Plan (EMP), Health and Safety Plan (HSP), public health and public safety awareness program and traffic management plan: review and comment as necessary or recommend acceptance;
15. The Consultant shall set up a supervisory organization including monitoring systems to ensure a fast and efficient administration of the activities, a timely implementation of the works and an efficient use of the financial resources.

In summary to the above, the Supervision and follow-up of the project will comprise the following activities:

1. Site/field visits and inspections;
2. Review/approve shop drawings/ as-built drawings,
3. Review/approve/reject submittals presented by the contractor,
4. Review/approve/reject the implementation programme submitted by the contractor,
5. Ensure that works meet the technical specifications,
6. Review/approve/reject the Works implemented by the contractor,

7. Designate, review and approve test results,
8. Supervise infrastructure all works and installations on sites,
9. Monitor progress in accordance to the implementation programme and take active steps to mitigate any delays in implementation,
10. Anticipate potential claims and take steps to mitigate their effect,
11. Analyze and provide detailed reports on submitted claims, and all other activities as deemed necessary for the good execution of the works in conformity with the requirements of the contract documents and best engineering professional practice.
12. Participation to meetings with the different stakeholders concerned with the project and prepare the relevant Minutes of Meeting;
13. Formulation of technical notes about the execution;
14. Preparation of the necessary contractual documentation to initiate the acceptance process;
15. Any other activity that might be deemed necessary to execute this technical assistance in a perfect manner
16. Provide assistance in Payments Validation through the approval on payment requests initiated by the contractor and issuing Interim Payment Certificates. The Consultant is expected to operate the required control and due diligence processes for the validation (existence of an original invoice submitted with the necessary justifications; conformity of the invoicing with the services rendered, supplies or works effectively provided, delivered or executed; conformity of the invoicing in terms of quantity, quality and schedule with the provisions of the contracts; conformity of the amounts invoiced with the unit cost and budget appropriation of the contracts; etc..).

The technical validation of the payments will be operated by the Consultant; in this regard, the Consultant shall:

- a) Perform any necessary inspections (site visits, verification of documents, drawings and designs, approval on Requests for Inspections, etc.);
- b) Produce "a certificate of conformity" for the expenses he deems receivable; and
- c) Produce a technical note for the expenses he rejected or about which he has a certain reservation.
- d) Any other activity that might be deemed necessary to execute this technical assistance in a successful manner;

Deliverables of Activity 4 (A4): (For each site separately)

- [A4-D1] Monthly Progress Reports
- [A4-D2] Quarterly Supervision Progress Reports
- [A4-D3] Final Supervision Report

4. Duration and Payments Schedule for Activities A1, A2 & A3

The Commencement Date is the contract Notification Date (ND). The Consultant shall complete the total assignment within **23 months** (Activities 1 and 2 shall be completed within a period of 7 months, Activity 3 shall be completed within 2 months after the completion of final design and Tender document with a total consultant input/effort of around 1 month), and activity 4 within 14 months) within and provide the deliverables within the deadlines/durations specified below (**for each site separately**).

Timeline of Activity 1 (A1):

Deliverable	Report	Duration	Payment Schedule
[A1-D1]	Inception Report	ND + 3 weeks	10% of the Total amount of Activity 1
[A1-D2]	Draft Screening Report and Draft ESIA Scoping Report	ND + 6 weeks	20% of the Total amount of Activity 1
	Review and Comment by MoE	3 weeks	
[A1-D3]	Final Screening Report and Final ESIA Scoping Report	ND + 10 weeks	20% of the Total amount of Activity 1
[A1-D4]	Draft ESIA Report; and Draft Environmental and Social Management Plan (ESMP) Report	ND + 14 weeks	25% of the Total amount of Activity 1
	Review and Comment by MoE	9 weeks	
[A1-D5]	Final ESIA Report; and Final Environmental and Social Management Plan (ESMP) Report	ND + 25 weeks	25% of the Total amount of Activity 1
	Approval by MoE	1 week	
	Completion of Activity A1 (from ND to start this activity)	26 weeks	

Timeline of Activity 2 (A2):

Deliverable	Report	Duration	Payment Schedule
<i>Task # 1: Site Inspection, Survey and Assessment</i>			
[A2-D1.1]	Site Inspection, Survey and Assessment Report including Draft Detailed Survey Report	ND + 3 weeks	10% of the Total amount of Activity 2
	Review and Comment by MoE	3 weeks	
[A2-D1.2]	Final Detailed Survey Report (SR) including Geotechnical Testing and Topographic Study Report (GTTR)	ND + 9 weeks	15% of the Total amount of Activity 2
	Approval by MoE	1 week	
	Completion of Activity A2.1 (from ND to start this activity)	10 weeks	
<i>Task #2- Preparation of Detailed Design</i>			
<i>Task #2.1- Preparation of Detailed Design</i>			
[A2-D2.1.1a]	Draft Design Brief Report	ND + 11 weeks	10% of the Total amount of Activity 2
	Review and Comment by MoE	2 weeks	
[A2-D2.1.1b]	Final Design Brief Report	ND + 15 weeks	10% of the Total amount of Activity 2
	Review and Comment by MoE	2 weeks	
[A2-D2.1.2]	Draft Detailed Design	ND + 20 weeks	15% of the Total amount of Activity 2
	Review and Comment by MoE	2 weeks	

[A2-D2.1.3]	Final Detailed Design	ND + 25 weeks	15% of the Total amount of Activity 2
	Approval by MoE.	1 week	
	Completion of Activity A2.1 (from ND to start this activity)	26 weeks	
<i>Task #2.2: Quarry Restoration Plans (QRP).</i>			
[A2-D2.2.1]	Draft QRP	ND + 12 weeks	10% of the Total amount of Activity 2
	Review and Comment by MoEMoE	3 weeks	
[A2-D2.2.2]	Final QRP	ND + 20 weeks	15% of the Total amount of Activity 2
	Approval by MoE	1 week	
	Completion of Activity A2 (from ND to start this activity)	21 weeks	

Timeline of Activity 3 (A3):

Deliverable	Report	Duration	Payment Schedule
[A3-D1.a]	Draft Tender Document	ND+ 28 weeks	20% of the Total amount of Activity 3
	Review and Comment by CDR	2 weeks	
[A3-D1.b]	Final Tender Document	ND + 31 Weeks	25% of the Total amount of Activity 3
[A3-D2]	Answers to CDR/PMU with answers to the Clarifications Requests raised by the Prospective Bidders as might be requested, prior to Bid Submission Date (BSD) of the Construction of the Material Recovery Facilities Material Recovery Facilities and Sanitary Landfill Bid Project	up to 4 weeks before BSD	15% of the Total amount of Activity 3
[A3-D3]	Draft Technical and Financial Evaluation Report and possibly requesting clarifications from Bidders	BSD + +2 weeks	20% of the Total amount of Activity 3
	Review and Comment by CDR.	1 week	
[A3-D4]	Final Technical and Financial Evaluation Report	BSD + 4 weeks	20% of the Total amount of Activity 3
	Approval by CDR	1 week	
	Completion of Activity A3 (from BSD)	5 weeks	

Where ND: is the Notification of Contract.

Intermediate partial submissions of parts of reports and/or plans for discussion are not considered official submissions. Review time is included in the time duration of services.

In view of the above activities to be achieved, it is anticipated that staff input will be 96 Man/Month (key-staff months).

5. Duration and Payments Schedule for Activity A4 (Time Based).

In view of the tasks to be achieved, it is anticipated that staff input will be 74 key-staff months per site, as follows:

Key Staff	Input in staff-months
1. Resident Engineer	14 staff-months
2. Site Engineer/ Mechanical Engineer	14 staff-months
3. Geotechnical Engineer	7 staff-months (Half Time)
4. Rubble Recycling Expert	7 staff-months (Half Time)
5. Quarry Rehabilitation Expert	4 staff-months (Part Time)
6. Environmental Expert	7 staff-months (Half Time)
7. Occupational Health and Safety Expert	7 staff-months (Half Time)
8. Social Expert	7 staff-months (Half Time)
9. Air Quality and Dust Control Specialist	7 staff-months (Half Time)

Non-Key Staff	Input in staff-months
1. Site Inspector	14 staff-months
2. Surveyor	14 staff-months
3. Office Administrator	14 staff-months

The Consultant shall quote the cost of his staff, technical, equipment and other costs as he deems to be required. He shall summarize his monthly costs and accompany the same with a schedule showing the involvement of project staff. As part of the Works Contract, the Consultant will be provided for on-site office space and 2 Vehicles per site.

Staff Remuneration cost

Staff remuneration covers the monthly remuneration rates for each local and expatriate personnel.

Reimbursable Expenses

Monthly Communication Costs: This includes costs for local and international communication, internet, and fax services.

Report Production Costs: Expenses related to the production of reports, including printing, shipping, and delivery to the client.

Payment of reimbursable costs, which covers all out-of-pocket payments, will be made based on actual and reasonable costs against acceptable documentary evidence.

No other payments will be made to the Consultant under this contract.

General Obligations: the Consultant's remuneration shall be deemed to cover his liabilities, travel costs, and support of his head office staff and all his obligations other than additional services not covered by these Terms of Reference.

An advance of not more than 15% of the total supervision cost may be provided for mobilization costs against an acceptable (to the Client) bank guarantee. The advance payment will be deducted from the first ten months' invoices presented by the Consultant for payments until it is fully recovered, following a schedule agreed upon with the Client.

The engagement shall be deemed to have started upon the issuance of the Notice to Commence by the Client and shall terminate after the DNP when the final inspection of the works has been done and the Consultant has fulfilled all his obligations, whichever comes later.

The estimated duration of the services is 14 months to check the quality and performance of works according to the scope of the services.

The Consultant must review, adapt, and rationalize the outlined staff input in his proposal, such that there will be as much continuity of employment as is practicable in the teams it proposes to assign. The Consultant should consider the prospective peaks of construction activity and ensure the adequacy of staffing levels during such periods, and, at the same time, periods with low productivity levels should not be un-economically over-staffed. The objective is that the Consultant should propose to assign a team that will be best suited to the methodology of its supervision and management systems. The Consultant should also consider the added value that the organization will provide.

Depending on the works currently in progress, details of staffing levels will be agreed through the course of the assignment with the Client.

It should be noted that the Consultant shall work according to the contractor's work schedule, which may include work during 7 (seven) days a week. Night shifts may be expected as well. The Consultant will not be entitled to any overtime payment.

The Consultant shall provide Activity 4 deliverables within the deadlines/durations specified below (for each site separately).

Timeline of Activity 4 (A4) Deliverables:

Deliverable	Report	Time for Completion
[A4-D1]	Monthly Progress Report	At the end of each month from the CO
[A4-D2]	Quarterly Progress Reports (from Commencement Order-CO)	at the end of each Quarter starting from the CO.
	<i>Review and Comment by CDR</i>	3 weeks
[A4-D3]	Final Supervision Report	CO+ 60 weeks
	<i>Approval by CDR</i>	1 week
	<i>Completion of Activity A4 (from CO to start this activity)</i>	61 weeks

5. Meetings and Reporting

The Consultant shall prepare technical reports and/or presentations as might be deemed necessary by CDR. The Consultant shall attend all meetings (Including those with the Stakeholders, and other entities) that the CDR requests the Consultant to attend with the proper representation as would be determined by the CDR. Furthermore, the Consultant shall prepare regular updates of the implementation schedule and methodology.

6. Key Staff

For Activities 1, 2 & 3, The Consultant shall:

- Provide highly experienced staff (Environmental Engineers, Social Specialists, OHS specialists, rubble management experts, Architects, Landscapers, Electrical, Civil/Structural and Mechanical Engineers, Quality Controller, Quantity Assessors, Geologist/Hydrogeologist, etc..).
- Provide a description of the inputs/resources (team of experts, facilities, etc.) required to achieve the expected results.
- Describe the structure and composition of its key experts for provision of the services, including support staff and list the main activities of the Assignment, and the key expert(s) responsible for these activities. Including the division of gender of all staff that will be working under this contract.
- Provide an organogram illustrating the reporting lines together with a description of such organization of the team structure.
- Provide the curriculum vitae of all proposed experts including their gender, annexed to the proposal.
- Provide a schedule for the activities to be carried out within the noted assignment duration, annexed to the proposal.
- Provide a methodology to carry out the required activities, annexed to the proposal.

The Consultant staff shall deploy for the execution of the Assignment, as a minimum, the below key experts on a full-time work basis for Activities 1, 2 and 3:

- 1- **Team Leader** – she/he shall:
 - a. Have a minimum 15-year experience in the Solid Waste management field. Experience in the management of rubble is preferable.
 - b. Have experience in leading large-scale, multi-site infrastructure projects
 - c. Have experience in technical coordination of multidisciplinary teams across different trades of a project.
 - d. Have experience in project and/or design management.
 - e. Have a Bachelor degree in Environmental Engineering or any related field.
 - f. Be responsible for coordination and overseeing the activities of the Assignment.
 - g. Act as Key focal person to liaison and to communicate with CDR.
- 2- **Circular Economy/Rubble Recycling Expert** – She/he shall:
 - a. Have a minimum 10-year experience in the reuse/recycling of construction materials and concrete aggregates.
 - b. Have strong experience in waste management processing and/or quarrying operation and machineries.
 - c. Have experience in coordination between different trades of a project.
 - d. Have experience in project and/or design management:
 - e. Have a Bachelor degree in Environmental/Civil Engineering or any related field.
- 3- **Landfill Design Expert**- She/he shall:
 - a. Have a minimum 10-year experience in the Solid Waste or rubble management field.
 - b. Have strong experience in the design, construction, and operation of sanitary engineered landfills, landfill liner barrier protection systems, and sanitation and leachate management systems.
 - c. Have experience in coordination between different trades of a project.
 - d. Have experience in project and/or design management:
 - e. Have a Bachelor degree in Geotechnical/Environmental/Civil Engineering or any related field.

4- Quarry Rehabilitation Expert- She/he shall:

- a. Have a minimum 10-year experience in design, construction and implementation of quarry restoration.
- b. Have experience in coordination between different trades of a project.
- c. Have experience in project and/or design management:
- d. Have a Bachelor degree in Geotechnical/Environmental/Civil Engineering or any related field.

5- Geotechnical Expert– she/he shall:

- a. Have a minimum 10-year experience in the geotechnical field.
- b. Have experience in geotechnical engineering and related design for SWM infrastructure projects.
- c. Have experience in coordination between different trades of a project.
- d. Have experience in project and/or design management.
- e. have a Bachelor degree in Geotechnical Engineering or any related field.

6- Mechanical Engineer- Specialized in Infrastructure Water, Irrigation and Drainage Systems Design - she/he shall:

- a. have a minimum 7-year experience in the mechanical engineering field.
- b. Have a demonstrated experience in the design of sanitary landfills.
- c. Have experience in coordination between different trades of a project.
- d. Have experience in project and/or design management.
- e. have a Bachelor degree in the Mechanical Engineering field.

7- Landscaper - she/he shall:

- a. have a minimum 7-year experience in landscaping.
- b. have a BS or BE (MSc or PhD are a plus), in Urban Planning or Landscaping or other relevant disciplines.

8- Environmental Expert - she/he shall:

- a. have a minimum 7-year experience in preparation of ESIsAs in the solid waste sector or rubble management.
- b. MSc or PhD in Environmental Sciences or Engineering, Geology, or other relevant disciplines.

9- Health and Safety Specialist - she/he shall:

- a. have a minimum 7-year experience in health and safety in the solid waste industry or rubble management.
- b. have experience in implementing standard operating procedures related to health and safety at work sites.

10- Social Specialist(s) - she/he shall:

- a. have a minimum 7-year experience in Lebanon, including public consultation in the local context, community health and safety, and/or resettlement expertise, as required.
- b. have a BS or BE (MSc or PhD are a plus), in Social Studies, or other relevant disciplines.

11- Transport Engineer – she/he shall

- a. have a minimum of 7-year experience in transportation management including routing, distance optimization and safety management.
- b. have a BS or BE in transportation management.

12- Air Quality and Dust Control Specialist – she/he shall

- a. have a minimum of 7-year experience in air quality monitoring and management particularly in relation to dust mitigation and air quality compliance from transport, crushing and handling operations of rubble.
- b. have a BS in environmental sciences or Engineering with emphasis on air quality management and monitoring.

Other Supporting highly competent staff that are needed to conduct and deliver high quality Engineering Services and communication tasks (e.g. Social Specialist, Environmental Engineer, Geologist/hydrogeologist, Quality Controller, Quantity/Cost Assessor, Draftsperson, Surveyor, Communications Officers, Enumerators etc.)

For Activity 4: Construction Supervision Staff

The Consultant shall make his assessment of the staff needed and their time participation in carrying out the work but this must comprise at least the minimum specified here. The Consultant shall also make his assessment of the staff necessary to perform the pre-construction services and supervision of the contractor during construction. However, upon construction start-up, the consultant shall seek the client's approval on the Field staff and their number.

No staff shall be mobilized until the Consultant has received formal written approval from the employer for each member of staff. Such approval shall be provisional. During the first three months of their duties, the performance of each member of the Consultant's staff will be monitored. If the performance of a member of the Consultants' staff is deemed inadequate by the CDR, the Consultants shall provide a replacement.

An indicative list of staff is presented below:

1- Resident Engineer

- a. A minimum of B.Sc. degree in Civil Engineering/ environmental Engineering with at least 15 years of experience out of which 10 years of experience as a Resident Engineer or equivalent capacity in the Solid Waste management field. Experience in the management of rubble is preferable. He shall be a Registered Engineer or equivalent membership with extensive experience in Solid Waste management field. Duties include overall responsibility for the management of staff. Maintaining contact with the Employer and Consultant's head office. Liaison with public authorities and general members of the public. Ensuring adequate supervision of works and maintaining control of programming, claims, and variations. Issuing instructions to Contractor.
- b. Languages: English and Arabic.

2- Site Engineer/ Mechanical Engineer

- a. A minimum of B.Sc. degree in Civil Engineering with 10 years of experience in similar works. Responsible for Supervision of site works – materials and workmanship. Maintaining records of the Contractor's activities, plant and labor. Maintaining records of complete works.
- b. Languages: English and Arabic.

3- Geotechnical Engineer:

- a. A minimum of B.Sc. degree in Civil Engineering with 10 years of experience in geotechnical field in similar works. Responsible for Supervision of site works – materials and workmanship. Maintaining records of the Contractor's activities, plant and labor. Maintaining records of complete works.
- b. Languages: English and Arabic.

4- Rubble Recycling Expert:

- a. A minimum of Bachelor degree in Environmental/Civil Engineering or any related field, with 10-year experience in the reuse/recycling of construction materials and concrete aggregates. Have strong experience in waste management processing and/or quarrying operation and machineries.
- b. Languages: English and Arabic.

5- Quarry Rehabilitation Expert:

- a. A minimum of Bachelor degree in Geotechnical/Environmental/Civil Engineering or any related field, with minimum 10-year experience in design, construction and implementation of quarry restoration.
- b. Languages: English and Arabic.

6- Environmental Expert:

- a. A minimum of Bachelor degree in Environmental Sciences or Engineering, Geology, or other relevant disciplines, with minimum 7-year experience in preparation of ESIAs in the solid waste sector or rubble management.
- b. Languages: English and Arabic

7- Occupational Health and Safety Expert:

- a. A minimum of Bachelor degree in Health and Safety, Engineering or other relevant disciplines, with minimum 7-year experience in health and safety in the solid waste industry or rubble management.
- b. Languages: English and Arabic.

8- Social Expert:

- a. A minimum of BS or BE (MSc or PhD are a plus), in Social Studies, or other relevant disciplines, with minimum 7-year experience in Lebanon, including public consultation in the local context, community health and safety, and/or resettlement expertise, as required.
- b. Languages: English and Arabic.

9- Air Quality and Dust Control Specialist:

- a. A minimum of BS in environmental sciences or Engineering with emphasis on air quality management and monitoring, with minimum 7-year experience in air quality monitoring and management particularly in relation to dust mitigation and air quality compliance from transport, crushing and handling operations of rubble.
- b. Languages: English and Arabic.

The above staffing is an indication of the requirements, but the consulting firm has the ultimate responsibility to staff the supervision teams adequately to take full responsibility for the quality of the work and timely implementation.

7. Working Hours

During site construction and installation works the Consultant shall ensure that his staff are on site at all times when the Contractor is working.

8. Consultant's Facilities

Office space, furnishings and site transportation will be provided in the Contractor's site offices.

Annex 1: ESIA Scoping Outline

1. **Introduction:** This section defines the objective of the ESIA scoping report, the project under study, in addition to explanation of the ESIA executive measures.
2. **Background information:** This section includes relevant information about potential parties conducting the ESIA study, a synopsis of the basic content of the proposed project, a statement of the importance of the project, its objectives, the implementing office, and a summary of the history of the project, the alternatives and related projects. Reference will be made to any projects planned or currently implemented in the same area since they could be competing with the project under consideration in terms of resources.
3. **Objectives:** This section identifies the ESIA scope and discusses its timing in view of the phases of preparing, designing and implementing the project.
4. **ESIA requirements:** This section sets forth any regulations and guidelines organizing the ESIA implementation. It defines the content of the ESIA scoping report.
5. **Study area:** This section shows the boundaries of the area covered by the study for the purposes of environmental impact assessment. And if there is a neighboring or far away area that should be studied in terms of the potential consequences of implementing or managing this project, such area should be included in the ESIA scoping report.
6. **Scope of work:** In some cases, knowing clearly the tasks of the project owner facilitates defining them fully in the ESIA scoping report. However, in other cases, there is a need to carry out specialized field studies or forming models in order to assess the consequences of the proposed project, and at that point, the project owner is required to define these certain tasks in detail. The scope of work includes the following points:
 - o **Policy, legal and administrative frameworks:** An investigation of the enforceable regulations, principles, and standards observed by the environment sector at the local and national levels (the study sets forth the known considerations, and the project owner is requested to verify the existence of any other considerations), laws governing the sector under which the project is included. The information should address specifying the official department concerned, and its potential at the local and national levels.
 - o **Assistance in coordinating among official departments and public participation:** Assistance in carrying the study with official departments, seeking feedback of local NGOs and groups affected by the project, and keeping the minutes of meetings, other activities, communications, comments and how to act regarding them (The ESIA scoping report identifies the types of activities such as the meeting on work scoping attended by stakeholders, briefing sessions at the environment sector for project employees, supporting consultants of the environment sector, public seminars etc.).
 - o **Description of the proposed project:** Description of project components, the relevant maps according to the appropriate scale and photos, information of project location, comprehensive design, size, capacity, work program, services, the duration of operation, etc.
 - o **Description of the surrounding environment of the project:** Gathering and evaluation basic information of environmental characteristics of the study location (physical, chemical, biological, social and economic environment) taking into consideration any expected modifications before the commencement of the project or any likely changes in future.
 - o **Potential environmental and social impacts of the project:** It should be distinguished between positive and negative effects, direct and indirect impacts, short term and long-term impacts. Permanent unavoidable consequences should be identified, as well as defining universal and cross border effects. Project owner should describe estimation means and techniques used in assessing the impact of the project on the environment. The scope and quality of available

information will be determined, together with an explanation of significant information gaps and uncertainties regarding the assessment of the potential impact of the proposed project. It is advisable to review the conditions of some planned studies in order to obtain the missing information. This paragraph should list the possible mitigation measures per each impact and recommend the most effective and low cost measures.

- o Analysis of project alternatives: Preliminary description of alternatives studied during the preparation of the proposed project and listing other alternatives that can achieve the same objectives. The concept of these alternatives generally includes the selection of project site, its designs and technology, construction methods and the stages, and the operation and maintenance procedures. A preliminary comparison will be made among these alternatives in terms of potential environmental effects, their costs relative to the capital and operation, adequacy of local conditions, institutional requirements, training needs, and monitoring and control requirements. It should, as much as possible, identify the preliminary cost and profits of all alternatives, as well as the estimated cost of mitigation measure. The alternation regarding the no implementation of the project should also be included to clarify environmental conditions "AS IS" without the project.

7. Environmental and social management plan:

- Institutional capacity development plan to implement recommendations contained in the ESIA report.
- Mitigation measures for negative impact s
- Monitoring and control plan

Annex 2: ESIA Outline

In accordance with the World Bank Environmental and Social Framework, the ESIA Outline shall be as follows:

(a) Executive Summary

Concisely discusses significant findings and recommended actions.

(b) Legal and Institutional Framework

- Analyzes the legal and institutional framework for the project, within which the environmental and social assessment is carried out, including the issues set out in ESS1, paragraph 26.46
- Compares the Borrower's existing environmental and social framework and the ESSs and identifies the gaps between them.

(c) Project Description- infrastructure of service area

- Briefly describe the service area (number of inhabitants, residential areas, land use, including previous use over the last 20-50 years, industrial areas, etc.).
- Concisely describe the proposed project and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers.
- Include a map of sufficient detail, showing the project site and the area that may be affected by the project's direct, indirect, and cumulative impacts.
- Determine the distance and direct haul routes and transfer routes from various serviced communities to the sanitary landfill/sorting facility, surrounding environment of Project location:
- Determine and describe the demographic setting of the landfill/sorting facility location.
- Describe the surrounding topography and land use characteristics and proximity to residential neighborhoods from the proposed landfill/sorting facility, including past land use patterns, whether agriculture, and forestry.
- Determine and describe the overall direction of groundwater flow, drinking water recharge areas downstream of the location, and receiving waters into which groundwater and leachate treatment plant discharge.
- Meteorological data regarding wind directions, precipitation, and net infiltration.
- Facts about the landfill development:
 - Layouts, cross-sections, and construction details for the landfill, including all receiving facilities, landfill cell construction details, leachate and landfill gas collection and management facilities, mitigative measures, monitoring systems, and final closure plans.
 - Construction and operation schedules, including scheduling of site preparation, cell construction, interim road development of each phase of landfill development.
 - Description of the responsible parties, including organization structure and staffing for the landfill development.
 - Confirmation and consultation program with affected people in area.
 - Operational plans for rubble types and quantities which might be allowed to be received; including special handling requirements for hazardous wastes;
 - Operation plans for handling of waste types and quantities which are not expected to be allowed to be received; including municipal waste, untreated septic tank or cesspit contents, and surgical wastes;
 - Occupational health and safety plans;
 - Final closure procedures; and
 - monitoring plans (short- and long-term).

(d) Landfill Siting assessment

The consultant is expected to perform siting justification as per the Landfill siting paragraph of the World Bank Group Environmental Health and Safety Guidelines for Waste Management Facilities, dated December 10, 2007.

(e) Baseline Data

The Consultant is expected to critically review secondary data before using them for this assignment and supplement them with primary data as needed. *Secondary data* shall be used where relevant (e.g. trustworthy statistical records, census records, government reports, NGO publications, academic studies and articles, topographic maps, aerial photos, satellite imagery, international databases etc.).

- *Primary data necessary* to meet the requirements of this assignment shall be collected by specialists applying industry-recognized survey and analysis methods to fill the gaps in the secondary data and provide an updated overview of the Project Area of Influence. All primary data collection activities shall be designed and undertaken using appropriated statistically rigorous approach. Field sampling shall take account of seasonal factors, as relevant⁴. A field planning exercise will be undertaken to facilitate the collection of primary data. This will include scheduling of activities, logistics planning and the development of field tools. Prior to primary data collection, those working in the field will be given training of data collection methods and the field tools to be utilized to ensure a consistent approach to data gathering. In addition, the consultant will ensure that all team members are aware of the importance of Health and Safety (H&S), especially whilst in field, to prevent the occurrence of accidents
- The Consultant shall perform a detailed Site investigation and site-specific risk analyses following Applicable Requirements and Good International Industry Practice. The data collected and presented in the baseline section of the ESIA (either primary or validated secondary data) will be used as benchmark for future monitoring purposes and to identify potential impacts and related mitigation measures. As such, the Consultant will present the existing E&S situation and related context in an objective manner and with clear reference to the primary and/or validated secondary data that substantiate the description.

Environmental aspects to populate the baseline section	
Physical environment:	<ul style="list-style-type: none">• Nature of surrounding environment (including homes, farms, forest areas, industry, small business enterprises and other establishments) and proximity to these.• Description of the existing topography and regional setting of the proposed Site and areas which will be affected by the Project.• Traffic conditions along the major haul routes between the rubble processing centers and the proposed Site at present. The existing traffic conditions must be based on field survey; and proposed traffic patterns should be examined as well.• Determination of the geology of the Site area through a geological description of adequate number of borings and geophysical testing such as electromagnetic and resistivity surveys.• Soil quality.• Water Quality• Determination of groundwater table, direction and hydraulic characteristics of aquifers and use if any (groundwater monitoring points at differentiated depth to be used if more than one aquifer is present).• Determination of meteorological data (net infiltration, temperature variations and prevailing wind directions).

⁴ mixed method when needed (qualitative and quantitative approach) can be used for the socio-economic data collection only.

	<ul style="list-style-type: none"> • Ambient air quality. • Seismicity and Earthquake. • Noise and vibrations. • Infrastructure and Public Utilities, including Drinking Water Supply, Solid Waste including rubble Management, Wastewater Management, and other Infrastructural Facilities and Related Activities of interest.
Biological environment	<ul style="list-style-type: none"> • Survey all major terrestrial flora and fauna. • Collect any information on sensitive habitats in the area and any rare, endangered or commercially important species. • Identify any nearby protected areas.
SOCIAL ASPECTS TO POPULATE THE BASELINE SECTION	
General guidance	<ul style="list-style-type: none"> • Collect socio-economic data on the communities including vulnerable groups and waste pickers likely to be affected directly and indirectly by the project activities and its components. • Before starting the data collection activities, the Consultant is expected to identify and delimit the social project area of influence (which may need to be wider than the environmental one depending on the consultant expert judgment) and clearly indicate in which areas the secondary and primary data will be collected and why. • Provide maps of current land use and ownership within the proposed Project area. • For all the social aspects in the following table the Consultant shall include in the baseline presentation a very brief, succinct, and thoughtful overview of the regional & local context - 70% of each section at minimum shall be dedicated to the Project Area of Influence.
Socio-cultural, historical and institutional context	<ul style="list-style-type: none"> • Describe the most significant social and cultural features, different interests in the project and their levels of influence. • For the historical component, indicate the big picture, those conditions in the history of the country and then the region/city that might uniquely impinge upon the project. • Describe the political background relevant to the project and the institutional environment which may have a level of influence or may be influenced by the project outcome.
Demography, population, vulnerable groups, and household survey result	<ul style="list-style-type: none"> • Include in a tabular and graphical manner details about gender, age, health and mortality, literacy/education, household size, ethnicity, religion, vulnerable groups within the project area. Each table and graphical presentation shall be introduced and explained by the consultant.
Economy and employment	<ul style="list-style-type: none"> • Describe economy and employment including GDP, income, means of livelihood and poverty level within the project area. • Include details about those working on the existing landfill with particular attention to be paid to waste pickers and others likely to be affected by the project. • Include details about the number of workers likely to be hired/needed for the construction and operation activities, details of where they will accommodate (workers camp and where it will be located or in existing structures and which is the capability of the existing structures), if migrant workers are likely to be hired
Land, access to commonly used	<ul style="list-style-type: none"> • Include details about the land required for the project (type, use (formal and informal), amount in hectare, location, and claims over the land if any), those

resources and Livelihood	using the project site or neighboring area, include details about commonly used resources (if relevant) and details about the means of livelihood linked with land use and commonly used resources, including the existing landfill use (i.e. waste pickers).
Informal land users/informal quarry users and informal waste pickers	<ul style="list-style-type: none"> • Assess presence of informal users (quantify) and type of activities conducted. • Assess the impact of any livelihoods of quarry restoration and SLF on informal land users and waste pickers • Assess opportunities to include informal waste pickers into SLF employment and training opportunities
Public utilities, services, infrastructure and transportation	<ul style="list-style-type: none"> • Describe infrastructure and services which are likely to be affected by the project (including by project workers and related accommodation, if relevant). Pay particular attention to access to water including safe drinking water, health services, energy & telecommunications. Include details about transportation networks (including access roads) and the current traffic patterns.
Site of cultural interest/ cultural heritage	<ul style="list-style-type: none"> • Describe any site of cultural interest (sacred sites, cemeteries, archaeology) which is likely to be affected by the project and including sites important to the Project affected people and other stakeholders.

(f) Environmental and Social Risks and Impacts

Identify and analyse the environmental and social impacts and risks and related mitigation measures for all relevant stages of the project cycle, including pre-construction, construction, operation, and post closure activities such as rehabilitation or restoration, in the context of the identified Project Area of Influence covering the project footprint and other areas likely to be directly and indirectly affected by project activities.

The assessment will cover all E&S risks and impacts using recognized methods as applicable and shall pay particular attention to the potentially significant impacts. The consultant shall develop the impact section taking into account the baseline data, the project design, and components and future landfill development activities and shall introduce the section with a detailed description of the impact assessment methodology. Each impact shall be presented taking into account at minimum: Impacts characterisation (negative, positive, mixed); Impacts nature and duration (direct, secondary, indirect, cumulative; short-term, long term, permanent, reversible); Impact significance/magnitude (negligible, minor, moderate, major); Impacts Likelihood (unlikely, possible, likely); Spatial Scale (national, regional, local); Measures to mitigate (adverse) or enhance (positive) impacts; Significance/magnitude of residual impacts (negligible, minor, moderate, major); Impact assessment also shall take into account the views and concerns of project affected people and other stakeholders. Mitigation measures shall be developed based on the mitigation hierarchy, commencing with avoiding risks/impacts, followed by minimizing them, and finally compensating/offsetting residual impacts if applicable.

The Consultant is expected to examine and address in this section also the project the (i) Occupation Health and Safety issues; and (ii) Community Health and Safety risks and issues; relevant for the project construction and operation phase in accordance with the Applicable Requirements of this Assessment.

The impact assessment section will address, but not be limited to:

In the environmental section the consultant shall pay particular attention among others to impacts of the project on:

- i. Ambient air quality
- ii. Soil quality;
- iii. Surface and groundwater quality;
- iv. Noise and vibration;

- v. Biological environment (biodiversity values, ecosystem services);
- vi. Site specific greenhouse gas emissions (comparison of the baseline scenario – continuation with the current practice and the project scenario);

The consultant shall also address the environmental consequences from:

- i. Leachate percolation into soil and groundwater; including estimates of quantity and quality of a potential leachate leakage and the consequences to groundwater and receiving surface water;
- ii. Impact to neighbourhoods along direct haul routes from increased traffic (primarily noise, dust, litter, odor, and vibrations), and including economic development due to improvements in roadways and trade from refuse haulage personnel;
- iii. Impact to neighbouring communities along transport haul routes from increased traffic (primarily noise, dust, litter, odor, and vibrations).

In the social section of the impact pay particular attention to any impact of the project on:

- i. Demography and migration (including workers influx/ migrant workers) and settlement and housing (including workers accommodation and any other impact on the settlement (formal and informal) in the Project Area of Influence);
- ii. Economy and employment, paying particular attention to (a) those working at the current landfill, including waste pickers and related impact on livelihood, (b) local vs migrant workers and their working condition, associated sexual exploitation and abuse/sexual harassment, flag any issue related to forced labour or child labour if applicable; any potential discrimination, unequal wages in employment;
- iii. Land and natural resources use/access and impact on livelihood linked with land acquisition and clearance, presence of informal land users and waste pickers and impacts on their livelihoods;
- iv. Social diversity and gender dimension;
- v. Public utilities, services, infrastructure and transportation including traffic;
- vi. Community health and safety;
- vii. Site of cultural interest;
- viii. Vulnerable groups, in particular, examine whether particular individuals and groups may be differentially or disproportionately affected by the Project's impacts because of their disadvantaged or vulnerable status, in particular, the Roma community and the waste pickers

(g) Mitigation Measures

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

(h) Analysis of Alternatives

- Systematically compare feasible alternatives to the proposed project site, technology, design, and operation—including the “without project” situation—in terms of their potential environmental and social impacts.
- Assess the alternatives' feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of alternative mitigation measures, and their suitability under local conditions; and the institutional training, and monitoring requirements for the alternative mitigation measures.
- For each of the alternatives, quantify the environmental and social impacts to the extent possible, and attach economic values where feasible.
- The Consultant shall:

- Justify the adequacy of the proposed sites, the various scenarios and configurations of project components, technology selection, construction techniques and phasing, and operation and maintenance procedures. The review of alternatives should be in terms of potential environmental and social impacts; capital and operating costs; suitability under local conditions; and institutional, training, and monitoring requirements (the Consultant shall draft terms of reference for any consulting services which may be needed to assist the Client, in monitoring the environmental and social impacts).
- When describing the impacts, indicate which ones are irreversible or unavoidable and which ones can be mitigated and how. To the extent possible, quantify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigating measures.
- The Consultant's review shall also include a comparison with the alternative "without the project" in terms of environmental and social impact. The analysis of alternatives shall also examine their feasibility of mitigating the impacts; their capital and recurrent costs; their suitability under local conditions.
- The Consultant, for each alternative, shall quantify the environmental impacts to the extent possible, and attach economic values where feasible. It shall state the basis for selecting the particular project design proposed and justifies recommended emission and/or discharge levels and approaches to pollution abatement and prevention.

(h) Environmental and Social Management Plan

The ESMP shall include the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation of a project to eliminate adverse environmental and social risks and impacts, offset them, or reduce them to acceptable levels. The ESMP shall also include the measures and actions needed to implement these measures. The Borrower will (a) identify the set of responses to potentially adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements. The ESMP will include:

Environmental and Social Mitigation Measures

The ESMP will reflect the mitigation hierarchy and, where technically and financially feasible, favour the avoidance and prevention of impacts over minimization, mitigation, or compensation, and ensure that all relevant stages of the project are structured to meet applicable laws and regulatory requirements. The Consultant shall elaborate focused plans as needed for each phase of the Project such as air emissions and dust management plan; traffic and transportation management plan; noise and vibration management plan; soil and groundwater management plan; waste management plan (for hazardous and non-hazardous waste); oil and chemical spill contingency management plan; emergency preparedness and response plan for construction phase; community health management plan and procurement plan; dredging management plan; cultural heritage chance find procedure; security plan; etc.,..

Environmental and Social Monitoring Plan

The consultant shall develop a set of environmental and social indicators for monitoring the implementation of mitigating measures and the project impacts during construction and operation. The monitoring plan shall include an estimate of capital and operating costs and a description of other inputs (such as institutional changes and staff resources) needed to carry it out. In regard to the landfill site, the environmental monitoring should include landfill gas monitoring and ground water monitoring wells and a regular schedule of monitoring for key indicators of contamination. Furthermore, the social monitoring parameters should be taken into consideration.

The parameters and frequency for each indicator measurement, minimum detection limits, acceptable numerical monitoring levels, quality assurance and quality control procedures and other technical data should be fully described and presented in a matrix format. This information should be

developed on an annual basis, and it should include full breakdowns of costs, staff qualifications, equipment or services to be purchased and other details required for monitoring implementation.

The monitoring responsibilities of the contractors for construction and for operation of the new facilities should be clearly identified, and the responsibilities of monitoring supervision by the oversight regulatory agencies should also be clearly identified. This should be presented in the form of directives.

Capacity Development, Training and Cost Estimate

The Consultant shall also review the authority and capability of institutions at local, regional, and national levels and recommend steps to strengthen or expand them so that the ESMP can be supervised and enforced. The recommendations may extend to inter-sector arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support. The Consultant will present a cost estimate for the implementation of the ESMP. Such cost should be an integral part of the ESMP and should reflect all associated cost related to human and other resources needed to monitor the plan, needed capacity building and training, and/or any consultancy assignments which may be required to assist in the performance of specific and highly technical duties over the life of the proposed facilities.

(i) Stakeholder and Public Participation and Grievance Mechanism

The Consultant will assist the Government in coordinating the ESIA with relevant agencies and following the requirements of the ESS10 and in line with the cleared and disclosed project Stakeholder Engagement Plan (SEP). The Government will lead the consultations with the relevant identified stakeholders including surrounding affected communities and vulnerable groups, in addition to local NGOs on the environmental and social aspects of the proposed project. The Consultant will participate in those consultations and prepare records. The Consultant may also hold his own consultations, in coordination and agreement with the Government. The affected groups will be consulted twice: in meetings held during preparation, before the TORs for the ESIA are finalized and when a draft ESIA is available (a summary of the ESIA will be available prior to the meeting). The draft ESIA should also be available in a public place accessible to affected groups and local NGOs. Relevant materials will be provided to affected groups in a timely manner prior to consultations and in a form and language that is understandable and accessible to the groups being consulted. The Consultant would maintain records of the public consultation and the records should indicate: means other than consultations (e.g. surveys) used to seek the views of affected stakeholders; the date and location of the consultation meetings, a list of the attendees that is gender disaggregated and their affiliation and contact address; and, summary minutes.

The project grievance mechanism (GM) should also be clearly outlined in the ESIA and should be communicated and disseminated to all project stakeholders. The GM information should include inter alia: the various reporting channels, the timeline for closure of complaints, the appeals process, the responsible persons, and the referral pathways for SEA/SH related complaints. The Consultant shall review the GM section of the disclosed SEP to ensure consistency.

Annex 3. Conceptual Design

Info will be provided in the RFP

Annex 4. Transportation services of Rubble from Municipal Collection Points to Central Processing and disposal Facilities

1. Background

The Ministry of Environment (MoE) identified quarry sites in the various governorates affected by the conflict, that could serve as treatment and final disposal sites for the rubble that cannot be reused/recycled. Several sites were retained in quarry sites where central treatment facilities and sanitary landfills (SLF) will be built specifically for rubble management.

In the meantime, municipalities have begun clearing rubble and debris from affected neighborhoods. Cleared rubble is being temporarily stored at designated municipal collection points. Collection points are currently being used to temporarily store rubble in the affected governorates. It is now essential to transfer rubble to up to 3 central processing facilities where rubble will be sorted, crushed, and reused, when possible, with residuals safely disposed of in SLFs specifically designed for the containment of rejects from rubble.

The transport operations must be conducted efficiently and in compliance with national environmental, occupational health, and safety community health and safety regulations with the World Bank Environmental and Social Standards and Industry EHS Guidelines. Moreover, the transport operations shall take into consideration all the steps, methods and safeguards indicated in MoE-UNDP SOPs (2025) and particularly SOPs 1 (Debris Pre-Processing Measures) and 2 (Debris Processing). This TOR outlines the requirements for recruiting contractors responsible for transporting rubble from collection points to central facilities.

2. Objective

- Collect and transport rubble from identified municipal collection points.
- Deliver rubble to assigned central rubble processing and crushing facilities.
- Operate under strict environmental, technical, health and safety and social performance criteria to minimize harm and ensure compliance with national standards and good industry practice.
- Rubble which has not been cleared by the Lebanese Army for explosive remnants of war (ERW) or have unmanaged human remains will not be eligible for transportation.

3. Scope of Work

- Mobilize the necessary number of trucks and equipment suitable for transporting rubble.
- Collect rubble from multiple municipal collection points identified.
- Transport rubble to one or more of the six designated central processing facilities. Travel distances are not expected to exceed 40 km for a one way trip.
- Prepare and implement the sites-specific Environmental and Social Management Plan (C-ESMP), consistent with the relevant ESSs prior to start of activities and implement the ESMP throughout Project implementation.
- Ensure occupational, traffic and community safety and environmental protection during loading, transport, and unloading.
- Report daily on operations, including volume transported and incidents, if any.
- Report monthly on E&S performance
- Comply with relevant aspects of the ESCP including, inter alia, C-ESMP, the Labor Management Procedures and require subcontractors to comply with the E&S specifications of their respective contracts.
- Coordinate with local authorities and facility operators to ensure smooth logistics.

5. Technical Requirements

5.1 Fleet Requirements

- The contractor shall provide a list of dedicated trucks including:
 - Type (e.g., dump truck, tipper, loader,).
 - Capacity (minimum 20 m³ for trucks).
 - Age (preferably less than 10 years or well-maintained).
 - Vehicle maintenance log
- All vehicles must:
 - Be mechanically sound and roadworthy.
 - Be covered/sealed to prevent dust and spillage.
 - Be suitable for transporting heavy, coarse materials like bricks, concrete, and mixed debris.

5.2 Loading and Unloading

- Loading must use appropriate mechanical equipment (e.g., excavators, loaders).
- No manual handling of rubble is permitted unless approved and properly managed.
- Unloading must be conducted only at the designated central processing facilities, in coordination with the contracting authority.
- Overloading of trucks is strictly prohibited.

5.3 Routing and Scheduling

- Submit a detailed logistics plan, including:
 - Routes from each collection point to the designated facility.
 - Timetables aligned with operational hours of all sites.
- Routes must avoid sensitive locations (e.g., water bodies, protected habitats, densely populated areas, hospitals, schools) and comply with any municipal restrictions.
- Schedule the transport during off-peak hours to reduce traffic congestion and air pollution.
- Maintain a contingency plan with backup trucks and machinery.
- Preventive maintenance must be conducted regularly.

5.4 Tracking and Reporting

- All vehicles must be GPS-enabled for real-time tracking.
- Contractors should maintain accurate trip logs capturing:
 - Departure and arrival times.
 - Origin and destination.
 - Vehicle ID, driver name, estimated and verified tonnage.
- Submit daily and weekly reports summarizing trips, volume, and any incidents.

5.5 Spill Control and Incident Management

- Equip trucks with spill kits and clean-up tools.
- In case of spillage or accidents, the contractor must:
 - Clean the affected area immediately.
 - Notify relevant authorities and the client.
 - Submit a written incident report within 24 hours.

5.6 Health and Safety

- Train the workers on occupational health and safety, and community health and safety issues associated with rubble management
- Provide all drivers and workers with proper Personal Protective Equipment (PPE), including helmets, gloves, safety boots, reflective vests, and dust masks
- All vehicles must carry a first aid kit.
- Conduct routine safety briefings and toolbox talks for staff.
- Provide training for drivers and labourers involved in dealing with rubble on proper rubble handling techniques, identification of hazardous materials, potential contamination routes, and emergency handling procedures, including reporting protocols.

- Implement dust control measures, including the use of water sprays, to minimize airborne particulate matter during loading, unloading, and transport.
- All rubble transported by trucks must be securely covered with tarpaulins or equivalent materials to prevent spillage and dust generation.
- Ensure transport vehicles are maintained to prevent leaks of fuel, oil, or other hazardous substances.

5.7 Quality Control and Penalties

- Contractors are responsible for:
 - Ensuring clean and efficient transport.
 - Avoiding route violations, delays, or public nuisance.
- Repeated non-compliance will result in financial penalties or termination.

6. Environmental and Social Requirements

6.1 Environmental & Social Standards Compliance

Contractors shall:

- Develop a comprehensive environmental and social management plan (ESMP) tailored to the project's scope.
- Conduct bi-monthly training sessions for sub-contractors on adhering to environmental, health, safety, and social standards .
- Ensure that all transport and disposal operations comply with MoE-approved standards including Memo 1/1 dated 3 January 2025 and include measures to mitigate dust, noise, and traffic disruptions.
- Ensure the workers fitness to the Job including *inter alia* conducting medical exams
- Ensure Prevent dispersion of dust and particles using covers or wetting systems where applicable.
- Ensure no dumping or leakage of rubble occurs along the transport route.
- Clean vehicle exteriors and tires regularly to prevent contamination of roads and neighborhoods.
- Employ local labor wherever possible and promote fair labor conditions in line with Labor Code and OHS regulations.
- Provide a grievance mechanism for workers and local residents to report concerns.
- Train staff on respectful behavior, cultural sensitivity, and communication with affected communities.
- Avoid high-traffic and residential zones unless necessary and authorized.
- Use signage and escorts where needed to warn pedestrians or manage congested areas.
- Minimize noise during early morning or late-night operations.

Additional requirements for contractors dealing with Asbestos:

- Follow the International Guidelines such as those from the World Health Organization (WHO) or the Occupational Safety and Health Administration (OSHA) in handling the asbestos-contaminated rubble.
- Ensure that workers are trained to handle Asbestos contaminated rubble including Implementing awareness programs to educate them about the risks associated with asbestos.
- Follow Safety Protocols: Use specific types of PPE that must be used by workers handling asbestos, such as respirators, protective clothing, and gloves and Outline procedures for decontaminating equipment and personnel after handling asbestos.
- In the C-ESMP conduct a risk assessment to identify potential hazards and outline measures to mitigate them and an emergency response plan for dealing with accidental releases or exposure incidents.
-

7. Monitoring and Reporting

Contractors must submit:

- **Daily trip logs** with GPS data, volume, and time stamps.
- **Weekly summaries** detailing:
 - Volumes transported.
 - Operational issues or delays.
 - Safety or environmental incidents.
- Notify the Contracting agency of any incident or accident relating to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers. Incident reports must be submitted within 24 hours
- The client reserves the right to conduct random inspections and performance reviews.