

LRPS#9159504

## Annex 1 - TERMS OF REFERENCE

Title:	<b>Set up of Omni Processor: Turning Sewage into Drinking Water and Electricity</b>	Duty station:	Beirut
Reporting to:	Emergency WASH Specialist	Contract type:	Institutional Contract
Duration:	8 months	Start date:	August 2020

Section	Content
<b>Background</b>	<p>UNICEF WASH Program has scaled up its response to the Syria crisis and provides support and services to both refugees and host Lebanese communities and to the Ministry of Energy and Water (MoEW) and its regional Water Establishments (Wes) bearing the greatest burden resulting from the impact of the Syria Crisis on the water and sanitation sector in Lebanon.</p> <p>The Syrian refugee crisis has a severe impact on water and wastewater infrastructures in the Bekaa valley where water consumption has increased considerably, and the sewage disposal had worsened and exponentially increased the load of BOD &amp; COD of the already polluted Litani river waters.</p> <p>The condition in the Informal Tended Settlements (ITS) camps has reached a critical level in terms of general hygiene for the refugees, as well as for the load of pollution generated by the cesspools (black water).</p> <p>On another hand, all ITS camps in Qab Elias have diverted their grey water into open channels. These channels are mostly diverted to storm waters systems within the area, and grey water is sometimes disposed off into open ponds. This is resulting into grey water infiltration into the underground or stagnancy in the open, which leads to heavy concentration of mosquitos and other related waterborne diseases.</p> <p>The Litani River is one of the major water resources in Lebanon. The river rises in the fertile Bekaa valley, west to the Baalbek city, and drops into the Mediterranean Sea North of Tyr city.</p> <p>It has a total length of 140 Km and have an average annual flow of 900 million m3 according to the Litani River Authority.</p> <p>In the mid 50's a large project was implemented on the Litani River where the Qaraoun Dam with a capacity of 220 Mm3, was constructed to provide a major support for irrigation (South Lebanon) and hydroelectric power production.</p> <p>The civil war in Lebanon that lasted for 15 years had a severe impact on the infrastructural installations all over the country and especially on the overall environment status of the water resources in Lebanon.</p> <p>Between 1975 &amp; 2012 all villages located within the Litani watershed basin have been dropping their sewers within the Litani River Bed.</p> <p>The increasing number of industries within the Bekaa area had also a negative effect on the surface waters of the Litani River.</p>

	<p>Starting 2017 the condition within the river reached an alarming pollution level, the Flora &amp; Fauna within the Qaraoun Dam vanished completely, and the contamination by heavy wells was also noticed (high level of Cadmium 2016).</p> <p>A clear example for such degradation is the increasing level of BOD pollution where in 2005 BOD was measured to be maximum 624 mg/L (BAMAS 2005) and reached 2530 mg/L in 2010 (USAID EPP 100-400024-00 Feb. 2011). This also include the TDS that reached 1979 mg/L in 2010 up from 706 mg/L in 2005.</p> <p>Starting 2012 and following the huge influx of Syrian refugees into the Bekaa valley the load of pollution increased considerably since most ITS within the Litani river watershed had their grey water diverted to the surface waters of the Litani, in addition to pollution made by solid waste disposal and latrines &amp; Cess Pools leakages</p> <p>The pollution has also reached most of the springs that are within the river watershed, underground water was also infected by fecal coliform.</p> <p>The main wastewater treatment plant (WWTP) for Baalbeck city and its adjacent localities is located in laa village. The CDR has completed in 2008 the construction of a main WWTP in laa with a daily capacity of 24,000 m<sup>3</sup>/day of influent sewer water serving a population of 167,000 inhabitants. Starting 2018, the laa Wastewater Treatment Plant is a secondary treatment plant which became un-operational due to several unknown factors and effluent water were highly contaminated, threatening the whole area and raising up the population against the Local authorities and in particularly the CDR, the MoEW and the Bekaa Water Establishment.</p> <p>The village of laa had a total of 23 km of sewer lines diverted to the WWTP and the city of Baalbeck is also diverted to laa via a main trunk line of 18 km and a total existing network in the city of 160 km, the other villages connected to laa WWTP (or planned to be) are Haouch Tell Safiye, Aaddous, Douris, Ain Bourdai, Aamichk.</p> <p>It is feared that the incoming flow to the WWTP have reach a saturation point where the incoming influent are currently estimated to be 22,000 cubic meters per day in addition to a high probability that storm water is also being conveyed to the WWTP, it is expected that the laa WWTP will not be able to treat all the influent generated from the area, due to the high growth (1.75%) and small treatment capacity of the WWTP.</p> <p>Initially the station was designed to serve a population 167,000 inhabitants and a daily influent flow of 24,000 m<sup>3</sup>/day with a possible extension to reach 29,000 m<sup>3</sup>/day. Such design was made to cover needs up to year 2022 and it is obvious that laa is reaching its maximum design capacity and must be urgently expanded.</p> <p>Many other extensions are needed in the surrounding villages and in Baalbeck city itself, both sewer lines extensions and WWTP extension must be implement simultaneously to reach an acceptable and sustainable operation of the sewer systems of laa.</p>
<p><b>Purpose and Objectives</b></p>	<p>The main purpose of this project is production and installation of a “mobile” Omni-Processor (OP) to treat 15,000 Litters/day.</p> <p>The proposed Omni-Processor must be compact type, easy to transport and install, and must be dismantlable and carried in containerized units (<b>mandatory</b>). Quick setup time, modular and scalable.</p> <p>Treated water must meet the Lebanon’s Ministry of Environment (MoE) effluent criteria for safe disposal in surface water and/or to drinking water levels.</p> <p>While treating sludge the omni-processor recovers its energy in terms of distilled water and energy generation. Sludge treated is 100% pathogen free and heavy metals concentration as per</p>

	<p>MoE/MoEW. Processed waste will be converted into products, forms of energy, or fertilizers and other soil amendments.</p> <p>Such modular system, must be ready to be installed in support to a WWTP, or as a standalone fecal sludge treatment unit.</p>
<b>Scope of work</b>	<p>Specific objectives behind the development of the project are:</p> <ol style="list-style-type: none"> <li>1. Provide support/information to perform an Environmental Impact Assessment;</li> <li>2. Provide guidelines for the necessary civil works to be done to adapt laot WWTP to receive the OP;</li> <li>3. Develop an OP management plan - Management guidance from operation and maintenance of the technology to sale and distribution of the by-products, so the OP is fully sustainable;</li> <li>4. Production and installation of OP in the WWTP, and testing of works;</li> <li>5. Support and train OP operation and management teams;</li> <li>6. 24 months post installation warranty and technical support (extendible up to 48 months).</li> </ol> <p>The Project should provide guidance and tools to relevant stakeholders for the planning, implementation, monitoring, and evaluation of the OP.</p>
<b>Considerations</b>	<ul style="list-style-type: none"> <li>• The Contractor shall inspect the site prior to commencing works in order to determine the specifics of works required as described in the tender, and also throughout the works construction. Any issues will be raised by Contractor at time of notice and resolved with Client prior to any change in agreed works.</li> <li>• The Contractor shall ensure that all required equipment and materials will fit into the existing system (networks, station, etc) and that the work can be successfully undertaken in a timely manner.</li> <li>• The Contractor shall ensure the supply and installation of all materials, including all associated tradesmen and labor, according to the agreed design specifications and agreed schedule of works.</li> <li>• The Constructor shall ensure all works are undertaken in a manner to ensure the safety of contracted staff and approved site visitors. Any health and safety issues observed onsite must be raised immediately by the Consultant to UNICEF and agreed action taken to resolve the issue. The safety of the general public, pedestrians and vehicles shall be ensured at all times with the provision of all necessary cautionary signage, barricades and lighting. The safety of workmen, Consultants, and visitors shall be ensured at all times, including the provision of all necessary safety gears, access scaffold and stairs. Inadequate site safe access for installation of the works and inspections will result instructions to cease works and rectification notices being issued by UNICEF and or Consultants.</li> <li>• Installation and testing of all equipment according to Contract requirements. The results of all tests should be provided to UNICEF at completion of work.</li> <li>• The contractor shall ensure supply and install all required visibility panels with all necessary arrangement and accessories.</li> <li>• Handover to government bodies (Municipality / Water Establishment / Ministry) after successful testing including the preparation and submission of all necessary manuals, and as built documentation.</li> <li>• All warranty and technical guidance documents related to the installed equipment must be provided to the relevant Municipality / Water Establishment / Ministry.</li> </ul> <p>Methodology:</p> <ol style="list-style-type: none"> <li>1. Mobilization plan (workforce, resources and equipment) for the implementation of the project taking into consideration the region's infrastructure and resources must be submitted by the contractor. This will be updated if any changes in works are agreed with Client. The Contractor</li> </ol>

must liaise with the Clients Consultant throughout the works phase and raise any issues that impede agreed delivery of works.

Special attention must be given to the kind of machineries to be used, i.e. in narrow streets and pathways the use of heavy equipment will not be allowed to prevent damages to the houses within such alleys, also in steep area the use of heavy equipment might not be possible.

2. Contractor shall provide a secure a locked parking yard for all his equipment plant and machinery. Plant, machinery, materials and equipment shall not be left unattended on any workface for any period outside of normal working.

3. No excavations shall be undertaken before written approval (permit) from the relevant Municipality (inside villages) or from Ministry of Public works (main roads and highways). All written approval will be provided to the Client prior to works commencement. All excavations will be filled with agreed materials to a quality agreed by the Client. The Contractor shall be responsible for the provision of all necessary permits and approval required by all relevant Authorities.

4. Contractor will secure a 'dumping site' that is approved by relevant Municipality and by the Ministry of Environment. This approval should be provided to the client prior to any dumping of materials and a record of 'dumping' must also be provided. No hazardous material are to be disposed of unless approved by the MoEW.

5. The Contractor must provide an all risk insurance, workman compensation insurance and third party liability insurance. A copy of the insurance policies shall be provided to the client along with a list of crew and equipment allocated for each project.

6. All material to be supplied by the Contractor shall be inspected by the Client's Consultant within the Contractor's warehouse for approval, and only after written approval on proposed material has been provided, the Contractor will transport all required items as per the contract to the nominated site. All materials will be stored in an appropriate way as recommended by the manufacturer and the Contractor shall be responsible for such until handing over of works to the relative WE and/or MoEW on the completion date.

7. During all work on site, the Contractor shall not disrupt traffic, traffic control systems, signage, barricades and lighting shall be provided for works in public thoroughfares. The Contractor shall ensure that any and all existing utility services and infrastructure (including potable water supply, sewer lines, telephone cables, electrical supply etc.) are maintained and protected during the installation of the Works. No interruption to existing services will be permitted without prior approval from the relevant Authorities.

8. Installation of materials (pumps, pipes, cables etc.) shall be made according to required contract specifications and as instructed by the Client's consultant. No changes will be permitted to specified works or materials unless by prior agreement of the Client.

9. Testing on site shall be made according to a preset schedule and in presence of designated Municipality / Water Establishment / Ministry staff and a UNICEF representative.

10. All civil works must be completed within approved schedule based on design specifications, and at the end of the works contractor shall restore the site to a similar condition as prior to works and process the official handing over documentation. Any changes must be agreed upon with UNICEF and the relative Municipality / Water Establishment / Ministry.

#### Responsibilities

- When working on site, the Contractor is responsible for the occupational health and safety of his crew, and ensure the safety of approved site visitors including, UNICEF, its Consultant/contractors and Water Establishment/Ministry employees.
- The Contractor shall coordinate with the UoM/WE/MoEW appointed staff to ensure handover takes place according to agreed schedule and there are no issues after the work is completed.
- When working on site, the Contractor is responsible for the provision of traffic control, safety equipment, signs, diversions, control systems including liaison with third parties for work in public roads and streets and shall include but not limited to:

	<ul style="list-style-type: none"> <li>• Erecting, maintaining, moving and removal of safety barriers, signs, and traffic control equipment.</li> <li>• Establishing and managing road diversions.</li> <li>• Watching and lighting</li> <li>• Maintaining roads and streets clean and free from construction debris.</li> <li>• The Contractor will be responsible for the purchase of specified materials and safeguarding of the purchased materials and equipment during the construction, installation and completion phase until handover is complete.</li> <li>• Upon the completion and handing over of works, the Contractor will have a 2 years defects liability period. The Contractor will be responsible for resolution (cost of replacement and repair) to the satisfaction of the Client of any issues that may arise within the liability period.</li> <li>• The Contractor will abide by all security directives provided by the client.</li> </ul>																																																															
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<b>Deliverables and Schedules</b>	<table border="1"> <thead> <tr> <th data-bbox="312 696 627 824" rowspan="2">Task(s)</th> <th data-bbox="627 752 718 824">Aug. 2020</th> <th data-bbox="718 752 809 824">Sept. 2020</th> <th data-bbox="809 752 900 824">Oct. 2020</th> <th data-bbox="900 752 991 824">Nov. 2020</th> <th data-bbox="991 752 1082 824">Dec. 2020</th> <th data-bbox="1082 752 1173 824">Jan. 2021</th> <th data-bbox="1173 752 1264 824">Feb. 2021</th> <th data-bbox="1264 752 1370 824">March 2021</th> </tr> </thead> <tbody> <tr> <td data-bbox="312 824 627 1005">Provide support/information to perform an Environmental Impact Assessment;</td> <td data-bbox="627 824 718 1005">x</td> <td data-bbox="718 824 809 1005"></td> <td data-bbox="809 824 900 1005"></td> <td data-bbox="900 824 991 1005"></td> <td data-bbox="991 824 1082 1005"></td> <td data-bbox="1082 824 1173 1005"></td> <td data-bbox="1173 824 1264 1005"></td> <td data-bbox="1264 824 1370 1005"></td> </tr> <tr> <td data-bbox="312 1005 627 1187">Provide guidelines for the necessary civil works to be done to adapt laa WWTP to receive the OP;</td> <td data-bbox="627 1005 718 1187">x</td> <td data-bbox="718 1005 809 1187">x</td> <td data-bbox="809 1005 900 1187"></td> <td data-bbox="900 1005 991 1187"></td> <td data-bbox="991 1005 1082 1187"></td> <td data-bbox="1082 1005 1173 1187"></td> <td data-bbox="1173 1005 1264 1187"></td> <td data-bbox="1264 1005 1370 1187"></td> </tr> <tr> <td data-bbox="312 1187 627 1507">Develop an OP management plan - Management guidance from operation and maintenance of the technology to sale and distribution of the by-products, so the OP is fully sustainable;</td> <td data-bbox="627 1187 718 1507">x</td> <td data-bbox="718 1187 809 1507">x</td> <td data-bbox="809 1187 900 1507">x</td> <td data-bbox="900 1187 991 1507">x</td> <td data-bbox="991 1187 1082 1507">x</td> <td data-bbox="1082 1187 1173 1507">x</td> <td data-bbox="1173 1187 1264 1507">x</td> <td data-bbox="1264 1187 1370 1507">x</td> </tr> <tr> <td data-bbox="312 1507 627 1653">Production and installation of OP in the WWTP, and testing of works</td> <td data-bbox="627 1507 718 1653"></td> <td data-bbox="718 1507 809 1653"></td> <td data-bbox="809 1507 900 1653">x</td> <td data-bbox="900 1507 991 1653">x</td> <td data-bbox="991 1507 1082 1653">x</td> <td data-bbox="1082 1507 1173 1653"></td> <td data-bbox="1173 1507 1264 1653"></td> <td data-bbox="1264 1507 1370 1653"></td> </tr> <tr> <td data-bbox="312 1653 627 1765">Support and train OP operation and management teams;</td> <td data-bbox="627 1653 718 1765"></td> <td data-bbox="718 1653 809 1765"></td> <td data-bbox="809 1653 900 1765"></td> <td data-bbox="900 1653 991 1765"></td> <td data-bbox="991 1653 1082 1765"></td> <td data-bbox="1082 1653 1173 1765">x</td> <td data-bbox="1173 1653 1264 1765">x</td> <td data-bbox="1264 1653 1370 1765">x</td> </tr> <tr> <td data-bbox="312 1765 627 1944">24 months post installation warranty and technical support (extendible up to 48 months).</td> <td data-bbox="627 1765 718 1944"></td> <td data-bbox="718 1765 809 1944"></td> <td data-bbox="809 1765 900 1944"></td> <td data-bbox="900 1765 991 1944"></td> <td data-bbox="991 1765 1082 1944"></td> <td data-bbox="1082 1765 1173 1944"></td> <td data-bbox="1173 1765 1264 1944"></td> <td data-bbox="1264 1765 1370 1944"></td> </tr> </tbody> </table>	Task(s)	Aug. 2020	Sept. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021	March 2021	Provide support/information to perform an Environmental Impact Assessment;	x								Provide guidelines for the necessary civil works to be done to adapt laa WWTP to receive the OP;	x	x							Develop an OP management plan - Management guidance from operation and maintenance of the technology to sale and distribution of the by-products, so the OP is fully sustainable;	x	x	x	x	x	x	x	x	Production and installation of OP in the WWTP, and testing of works			x	x	x				Support and train OP operation and management teams;						x	x	x	24 months post installation warranty and technical support (extendible up to 48 months).								
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<b>Timing</b>	Duration of assignment: 8 months with defect liability period of two years. The Contractor shall provide a construction Programme, including a critical path network.																																																															

	Start date: August 2020
<b>Reporting Requirements</b>	The assigned consultancy firm will be reporting on the progress of works done by the contractor on a weekly basis and shall submit a final report upon handing over of works.
<b>Profile Requirements</b>	Companies and contractors with proven expertise in the construction and implementation of Omni-Processors projects.
<b>Evaluation Process and Method</b>	<p><b>1. Methodology for response:</b></p> <ul style="list-style-type: none"> <li>• <i>A request for proposal will be processed, requiring a technical proposal and financial proposal per project package.</i></li> <li>• <i>A pre-bid meeting will be held on (07 July 2020 at 11:00 AM Lebanon time) for potential bidders to address their enquiries, and discuss the details of the proposal;</i></li> <li>• <i>Bidders are requested to submit the following:</i></li> <li>• <i>electronic copies (of the technical proposal.</i></li> <li>• <i>electronic copy containing a scan of a signed and stamped print out of the financial offer and 1 excel copy of the financial offer; handwritten offers will be disqualified.</i></li> <li>• <i>Bidders must not submit any material except for the above mentioned.</i></li> <li>• <i>The technical proposal must follow the same sequence detailed under below point 2. Technical Evaluation of the proposals; that is Points 1, 2, till the end.</i></li> <li>• <b><i>Failure to abide by any of the above requirements will render the offer as disqualified.</i></b></li> </ul> <p><b>2. Technical Evaluation of the proposals</b></p> <p>The Technical Proposal should address all aspects and criteria outlined in the Request for Proposal, especially in the Terms of Reference detailed in Technical Specification document of the Request for Proposal. UNICEF welcomes new ideas and innovative approaches. Technical Proposals must be completed and provided with all relevant support documentation to enable the RFP Evaluation Team to adequately assess and evaluate the Proposal. The grading guideline is as follows:</p> <p>Grading for the implementation of the OP:</p> <ol style="list-style-type: none"> <li>1. Completeness of the response and overall concord between RFP requirements and proposal – 5 points. (2.5 points each)</li> <li>2. Technical Company profile showing owned equipment, total staffing, listing of currently running projects, company's presence (offices, facilities, etc) showing the companies capacity to cope with the running project and this potential project and a list of all concluded project over the last 5 years – 5 points. (1 point each)</li> <li>3. Proof of expertise in similar projects; at least 3 letters of reference from government bodies or international organizations within the last 5 years are required – 10 points (3.3 points per letter)</li> <li>5. Technical specifications for implementing OP including technical specification – 30 points – Note that if the OP is not in container system it will be declassified. <ul style="list-style-type: none"> <li>• The proposed Omni-Processor must be <u>compact type</u>, easy to <u>transport</u> and <u>install</u>, and must be <u>dismantlable</u> and <u>carried in containerized units</u> (mandatory). 10 points - 2 points for each</li> <li>• Treated water must meet the Lebanon's Ministry of Environment (MoE) effluent criteria for safe disposal in surface water and/or to drinking water levels. 5 points for safe disposal in surface water; 5 points to drinking water levels</li> <li>• Processed waste will be converted into products, forms of <u>energy</u>, or <u>fertilizers and/or soil amendments</u> and <u>water</u>. 10 points – 3.3 points each</li> </ul> </li> </ol>

6. 2-page method statement showing adequate equipment assigned for this project, personnel utilization for every task, and assigned project manager’s expertise / resume showing adequate experience in similar projects – 5 points (2.5 points each)

7. Occupational, Environmental Health & Safety Plans (OEHS), including Safe Work Method Statement (SWMS) addressing site safety, access, scaffolding, trenching, works at depth, works at height; risk assessment and mitigation strategy to complete the works, traffic control and management, site specific Occupational Health and Safety Plan – 5 points (1 point each)

8. Timeline for completion of all the work within the shortest possible period including submission of a critical path plan (10 points) Note that the shortest reasonable duration, based on a logical and accurate critical path network will receive maximum 10 points. Programmes submitted lacking a logical and accurate CPN and or durations exceeding 8 months will get zero / 10 points while logical and accurate CPN grading will follow the following formula 10 points X lowest duration / assessed duration.

TOTAL 70 Points for the technical evaluation and 30 points for the financial.

**3. Financial offer**

Financial offers will be evaluated out of 30 points

Financial evaluation Criteria:

*Only bidders obtaining the minimum pass mark in the technical evaluation (50 points) will be considered for the financial evaluation;*

*Financial evaluation is composed of 30 points. The lowest financial offer will obtain 30 points.*

**4. Bidders are requested to submit the following**

- All the technical specifications of the proposed items under “point 5” of the technical evaluation
- Work plan proposed to carry out the work in calendar days and not in working day. Bidders must take into consideration the nature and accessibility of the terrain and possible holidays.

**5. Terms of Payment**

5% upon Providing support/information to perform an Environmental Impact Assessment, and Providing guidelines for the necessary civil works to be done to adapt laa WWTP to receive the OP;

5% upon Developing an OP management plan - Management guidance from operation and maintenance of the technology to sale and distribution of the by-products, so the OP is fully sustainable;

25% upon installation of OP in the WWTP, and testing of works;

40% upon OP’s positive testing results;

25% upon Supporting and training OP operation and management teams;

**Administrative Issues & Logistical Activity**

Administrative issues:

UNICEF Emergency WASH Specialist at Beirut office to supervise the contracts with the support from UNICEF WASH officers at Zonal offices and UNICEF approved engineering consultancy firms.

Conditions:



Bidders must take into consideration the nature and accessibility of the terrain, weather conditions and possible holidays. Failure to complete the project within the allocated timeframe in calendar days will be regulated in the contract signed with the recommended company. No Advance payment will be done.

Awarded contractors must submit upon signing the contract:

1. 5% Performance Bond which will be released upon completion and acceptance of works and another.
2. 5% Defect Liability guarantee which will be release after 2 year from completion and acceptance of works.
3. Work plan to carry out the work within 8 months maximum.

Awarded contracts will be based on the attached Annex XI of the “manual of construction contracts” titled “Form of Contract for Works Contractor and General Conditions of Contract”