
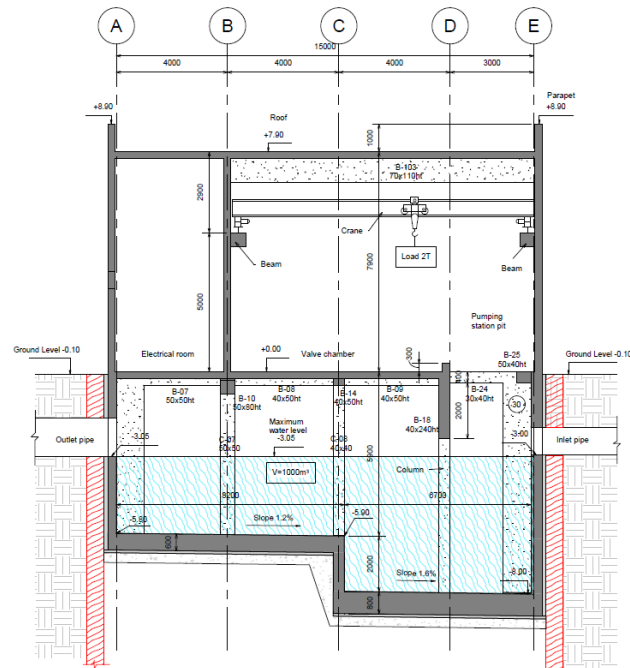


**TERMS OF REFERENCE  
INSTITUTIONAL CONTRACT**

Section:	WASH Section	Date:	June 2023
Title:	Implementation of treated wastewater reuse scheme to irrigate 740 Ha in Haouch el Omara	Duty station:	Beirut, Lebanon
Reporting to:	WASH	Contract type:	Institutional
Duration:	8 months (indicative)	Starting date:	September 2024

Section	Content
Background	<p>UNICEF is a partner in a project managed by UN-HABITAT and funded by the Climate Change Adaptation Fund, entitled "Increasing the resilience of both displaced persons and host communities to climate change-related water challenges in Jordan and Lebanon." This project aims to increase the resilience of both displaced persons and host communities to climate change-related water challenges in Jordan and Lebanon. In Lebanon, UNICEF is responsible for constructing an irrigation system to reuse the treated wastewater produced by the Zahle wastewater treatment plant.</p> <p>The Municipality of Zahle welcomed the project on the condition that the treated water could be reused on their land. After a feasibility study conducted in 2019, several areas were identified for the reuse of treated water. Unfortunately, this assessment focused on discharging the treated water into the Berdawni River and did not consider the water needs of farmers or the possible access to the water for the fields. Another survey was conducted at the end of 2023 to identify several options. This design was chosen as the most sustainable solution to provide 24,000 m<sup>3</sup> of water from Zahle WWTP to the different selected zones, as shown in the satellite image provided.</p> 

	<p>This design is divided into two phases. These Terms of Reference (ToRs) refer to the first phase, targeting Zone 1 in yellow with 12,000 m<sup>3</sup>/d (compulsory) and the refurbishment of the existing 250 KW solar farm (optional). The second phase will be initiated when additional funds are secured to ensure increased water access to Haouch el Omara, with a total volume of up to 16,000 m<sup>3</sup>/d for this zone and 8,000 m<sup>3</sup>/d for Maalaqa Aradi.</p> <p>Phase 1 (related to these ToRs):</p> <p>Compulsory Part:</p> <p>The treated water from the pumping station will be collected in a sump pit/underground reservoir, from which pumps will lift the water to a reservoir located in Haouch el Omara. This reservoir will discharge the treated water by gravity into the existing irrigation channels. Some minor connection works to reach the entire area of Zone 1 are also planned in this contract.</p> <p>Optional Part:</p> <p>To partially compensate for the energy demand of the pumps, UNICEF plans to rehabilitate the existing solar farm of the system.</p>
<b>Objective</b>	UNICEF is looking for a registered construction company to implement compulsory and if funds allows the optional part (i.e rehabilitation of the existing PV farm located at Zahle WWTP).
<b>Purpose</b>	specific activities and technical specifications required to complete Phase 1 of the Zahle WWTP water reuse project. This phase focuses on constructing the necessary infrastructure to transport treated wastewater from the Zahle Wastewater Treatment Plant to the designated agricultural zones and includes the rehabilitation of an existing solar farm.
<b>Methodology</b>	<p>The methodology summarised the specific activities and technical specifications required to complete Phase 1 of the Zahle WWTP water reuse project. This phase focuses on constructing the necessary infrastructure to transport treated wastewater from the Zahle Wastewater Treatment Plant to the designated agricultural zones and includes the rehabilitation of an existing solar farm if funds allows. <b><i>The detailed design General and Particular specifications, BoQ and Drawings are attached to those ToRs.</i></b> The main components of the project are detailed below:</p> <p><u>1. Sump Pit and Pumping Station:</u></p> <p><i>Sump Pit/Equalization Tank:</i></p> <p>-The sump pit will consist of two interconnected rectangular cells, buried underground. The total useful storage capacity of the sump pit will be 1,000 m<sup>3</sup>, providing sufficient storage to manage water flow. The pit will measure 15 meters by 20 meters, with a depth varying between 5.8 and 8 meters.</p> <p><i>Pumping Station:</i></p> <p>The pumping station will be situated above the sump pit/equalization tank. This component will be implemented during Phase 1 and will house the pumps necessary for lifting the water to the Haouch el Oumara water tank.</p>



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## 2. Pumps:

The pumping system will include submersible single-stage pumps. Each pump will have a capacity of 62 liters per second at a head of 70.5 meters. The motors will be rated at 110 kW each. For Phase 1, the system will include 2 duty pumps and 1 standby pump, ensuring reliability and redundancy.

## 3. Underground Armored Low Voltage Cable:

The cable will be a 3 x (3 x 240 + 120) mm<sup>2</sup> armored low voltage cable. The total length of the cable will be 350 meters, providing power to the pumps and other electrical components.

## 4. Solar Variable Frequency Drive (VFD) an additional system:

The VFDs will be rated at 130 kW each. A total of 4 VFD units will be installed to control the speed and torque of the pumps, improving energy efficiency.

Additional Systems:

- Grounding, lightning, and surge protection systems
- Instrumentation and control system
- PLC controller for SCADA system

## 5. Rehabilitation of the Existing PV System (Optional for Phase 1):

The existing system includes IBC Solar Polycrystalline 275 Wp panels. The panels will provide a capacity of 2.75 kWp. The rehabilitation works include the installation of inverters SMA STP Core 1.

Each inverter will have a capacity of 50 kW. A total of 4 inverters will be installed. The contractor will also need to install DC cables, connectors; DC combiner box inspection and fuse replacement; Electric distribution board (DB) and enclosure works; Residual current circuit breakers (RCCBs), electric cable inspection; Surge protection devices (SPD) and earthing system works; Fiber converter repair or replacement.

## 6. Reinforced Concrete Water Tanks:

In Haouch el Oumara only one of the 2 planned reservoirs will be constructed. The water tank will be an above-ground, circular structure. The tank will have a capacity of 500 m<sup>3</sup>, ensuring adequate

	<p>storage for the treated water. The tank will include a valve chamber for controlling water flow and pressure.</p> <p><u>7. Transmission Lines:</u></p> <p>During phase 1, the scope of works will be limited to the Lift Line from the Pumping Station to Haouch el Oumara Water Tank and a gravity line from the reservoir to the discharge point into the existing irrigation channels:</p> <p><i>Pressurized line:</i></p> <p>The lift line will be constructed using ductile iron pipes, known for their durability and resistance to corrosion. The pipes will have a diameter of DN 400, ensuring sufficient capacity for water flow. The total length of the lift line will be 4,250 meters. This line will transport treated water from the pumping station to the water tank in Haouch el Oumara.</p> <p><i>Gravity Line from Haouch el Oumara Water Tank to the existing irrigation channel Point VA8:</i></p> <p>Similar to the lift line, the gravity line will also use ductile iron pipes. The diameter of these pipes will also be DN 400. The gravity line will span 1,400 meters, allowing water to flow by gravity from the Haouch el Oumara water tank to point VA8. A connection to an existing pipe connecting irrigated lands on the south part of the irrigated zone will be installed.</p> <p>In addition, the selected contractor will have to install a culvert to enable the connection of 2 different irrigation canals.</p>
<p><b>Qualifications and Evaluation criteria</b></p>	<p>Profile of the Company:</p> <p>The company must have extensive experience in construction of water and wastewater project. A previous experience in installation of Pressurized pumping line, and large reservoir constructions is an asset.</p> <p><b>Technical Evaluation Criteria:</b>  <b><i>Service Providers are encouraged to ensure they meet the below-requested evaluation and qualification criteria</i></b>  <b><i>Technical evaluation is composed of 70 points</i></b>  <b><i>The minimum successful score for the technical evaluation is 42 points</i></b></p> <ol style="list-style-type: none"> <li>1. Completeness of the response and overall concord between RFP requirements and proposal – <b>5 points.</b> (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 – <b>9 points.</b> (1 point each)</li> <li>4. 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 – <b>6 points</b> (2 points per letter)</li> <li>5. Proof of expertise in water supply systems in zahle area is requested; at least 2 letters of reference other than the ones presented in point 4 within the last 5 years – <b>5 points</b> (2.5 points per letter)</li> <li>6. 10-page method statement showing material specifications (pumps, Solar VFD, pipes, steel bars, cables...) for this project, personnel utilization for every task, and assigned project manager's expertise / resume showing adequate experience in similar projects – <b>15 points</b></li> <li>7. Occupational, Environmental Health &amp; 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 – <b>10 points</b> (1 point each)</li> <li>8. Bank letter stating that the contractor has access to, or has available liquid assets, lines of credit, unencumbered assets and other financial means, net of other commitments, sufficient to meet a project construction cash flow of up to USD 0.2 million for a period of 6 month from the of issuing the certificate</li> </ol>

And certifying that the company is solvent, that the company has not filed for bankruptcy and is not in a process of receivership of liquidation - **10 points**.

9. Timeline for completion: all the work shall be completed 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 120 calendar days will get zero / 10 points while logical and accurate CPN grading will follow the following formula 10 points X lowest duration / assessed duration.

**Financial evaluation** is composed of **30 points**. The maximum score will be assigned to the lowest financial proposal.

All other financial proposals receive scores in inverse proportion according to the following formula:

$$\text{Score for financial proposal X} = \frac{\text{Maximum score for financial proposal} \times \text{Price of lowest financial proposal}}{\text{Price of financial proposal X}}$$

**Timing**

The contract should ideally start in september 2024