



Project Name: Water Banking and Adaptation of Agriculture to Climate Change in Gaza Project

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For

Consultancy Services

Construction Supervision for Irrigation of 1000Ha for Zone A2&B in Beit Hanoun & Gaza

January 2023

Section 5. Terms of Reference

This document sets out the Terms of Reference for Consultancy Services for Construction Supervision of the “Irrigation networks” of Water Banking and Adaptation of Agriculture to Climate Change Project in Gaza. The work to be completed under this assignment is as described hereafter in the Scope of Services. The assignment will be supervised by the Client, Palestinian Water Authority (PWA), and financed through a grant from the AFD.

A. Project Background.

1. The Project is located in the North Gaza Governorate covering the Northern Area of the Gaza Strip, with a total area of about 55 km², and includes the municipalities of Jabalia, Beit Lahya, Beit Hanoun, and Um Al Nasser. The present population in the project area is about 450,000.

The North Gaza Emergency Sewage Treatment (NGEST) Project's main objectives are to mitigate the immediate and gathering health and environmental safety threats to the communities surrounding the sewage lake at the existing BLWWTP, and; to provide a satisfactory long-term solution to the treatment of wastewater for the Northern Governorate in Gaza. The NGEST has been implemented in the following parts:

Part 'A' addressed the immediate health and environmental threats posed by the sewage lake at Beit Lahia. This Part was completed in April 2009 through the implementation of three contracts: the construction of the terminal pumping station at Beit Lahia (TPS), the construction of the Ductile pressure pipeline, and the construction of 9 infiltration basins at the new site of the NGEST.

Part 'B' addressed the medium to long-term needs of northern Gaza for adequate wastewater treatment. It included the construction of NGEST WWTP with 35,600 m³/d capacity and stage-1 of the recovery scheme which included 14 recovery Wells, 1 reservoir 4,000m³, 5 booster pumps, and five Monitoring Wells) and was completed in May 2018 under WB financing.

2. Part A was designed to implement the necessary infrastructure facilities to drain the sewage lake at Beit Lahia and thus alleviate the immediate threats of potential failure of its embankments. The drained effluent was transferred to another site further east, where new infiltration basins were built. This will ensure that the immediate threat of flooding posed to the communities adjacent to the lake and the existing overloaded Beit Lahia Wastewater Treatment Plant (BLWWTP) will be released. Part A included mainly three construction contracts namely:
 - a) Terminal Pumping Station (TPS) located at the BLWWTP, completed and under operation;
 - b) Pressure main, from the TPS to the proposed Northern Gaza Wastewater Treatment Plant (NGWWTP) completed and under operation;
 - c) Infiltration Basins located at the site of the proposed NGWWTP to which treated effluents will be discharged; completed and under operation.
3. Part B was designed and constructed to provide a longer-term solution to the wastewater treatment issue for the whole of northern Gaza. The construction of the NGEST wastewater treatment plant was completed at end of 2017. The wastewater treatment plant

was initially commissioned in March 2018. Since July 2018, the plant has been working under two years operation and maintenance contract to treat the raw sewage collected from North Gaza municipalities (Jabalia, Beit Lahia, Beit Hanoun, and Um-Nasser). Since 1st July 2019, PWA has taken the responsibility to fill the gap after the contractor terminated the contract, and has invested its limited available resources to operate and maintain the NGEST facilities especially, after receiving an emergency grant from AFD to subsidize the operation and Maintenance costs for procuring essential chemicals products, consumables, and salaries for essential operators to run the plant until April 2020.

4. Water Banking and Adaptation of Agriculture to Climate Change (WBAACC), and AFD Funding;
 - The overall cost of the AFD-managed project is 44.7 million Euros, of which 13 million Euros is provided by AFD, 8 million Euros by Irish Aid, and 23.7 million Euros by the Climate Green Fund.
5. The Specific objectives of the WBAACC project are as follows:
 - Reduce the vulnerability of Gaza's coastal aquifer and secure sustainability of access to domestic and agricultural water;
 - Promote climate-resilient and water-efficient agriculture;
 - Enhance the institutional and operational capabilities for integrated and resilient water management.

The Project Components are described as follows:

1- Effluent Recovery Scheme- Stage 1

These Works were completed in 2017.

Construction supervision of these Works is NOT under the scope of this assignment.

This contract included the execution of the following activities:

- Construction of a 4,000 m³ capacity concrete water tank.
- Construction of the booster pumping station building including the installation of 5 pumping units and the installation of their respective control/automation systems.
- Construction of 14 recovery wells, collection pipes from the wells to the pumping station site, and two monitoring wells.

The contract under this stage has been started on 20th November 2016 and completed on 1st May 2018, the Defect Liability Period for the project has been completed on December 2019, and the project was handed over to PWA. The project is not under operation until now; it will be operational after the completion of the installation of the irrigation network. PWA, on regular intervals, operates the recovery scheme to assure that all equipment is working well and the system is maintained and functioning.

2- Remaining Recovery Scheme- RRS Stage 2

These works are NOT under the scope of this supervision assignment.

The construction will be issued for tendering in May 2023.

The works under this contract shall include;

- Construction of 4,000 m³ capacity concrete water tank
- Construction of remaining 13 recovery wells, collection pipes from the wells to the water tanks, and 2 monitoring wells
- Installation of remaining 5 pumping units and installation of control/automation systems

3- Irrigation Network- Stage 1 for 500ha (ZONE A1)

The works have been completed on 31st December 2022

Construction supervision of these Works is NOT under the scope of this assignment.

This contract named (Construction of Irrigation scheme in Northern Gaza Zone A1 -500ha) was awarded to the contractor (JV Masar & El Khaesie). The works have been commenced in January 2021 and will be completed by the end of December 2022. Supervision on this contract is out of the scope of this consultancy assignment as it is under another supervision consultant (Joint Venture Studio Altieri S.P.A. – ENFRA), where the contract with JV has already been signed.

The activities under this contract comprise the following:

Construction of mains and sub-mains of the irrigation network covering about 5,000 donums located northwest of the booster pumping station (ZONE A1) in Jabalia municipality. The networks include all fittings needed to complete the work. The pipes are of various diameters up to 1,000 mm and are either ductile iron (for larger diameters) or HDPE for smaller diameters.

4- Irrigation Network- Stage 2 for 1000ha (ZONES A2 & B) Location Beit Hanoun & Gaza

This Contract has not yet started

These works are under the scope of this Works supervision assignment.

The works activities under this contract are similar to the activities under stage 1 above, however, the area of irrigation will be double by around 1,000 ha. Works include the construction of mains and sub-mains of the irrigation network covering about 10,000 donums located northwest of the booster pumping station (ZONE B) in Gaza and Jabalia municipalities. The water networks include all fittings needed to complete the works. The types of pipes are Ductile Iron and HDPE pipes of various diameters, the ductile iron pipes' diameter varies from 700mm to 900mm with an approximate total length of 9,850 MR, and the HDPE pipes' diameter varies from 63 mm to 500 mm of approximate total length 178,450 MR.

Fig. (1): Location of Irrigation Networks

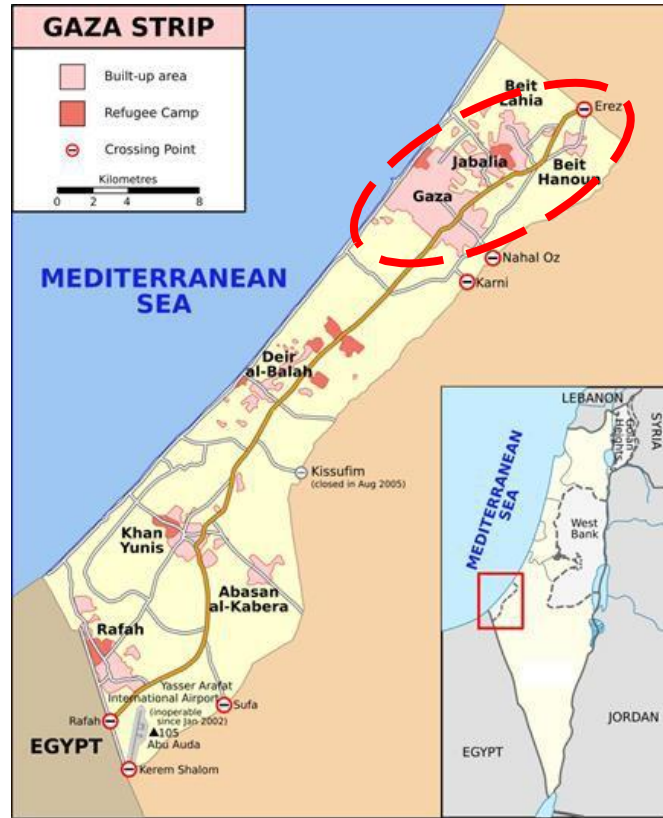
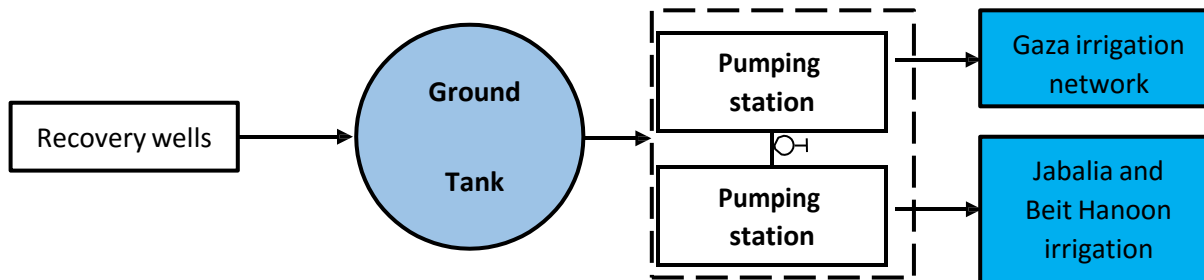


Fig. (2): Component of the irrigation networks

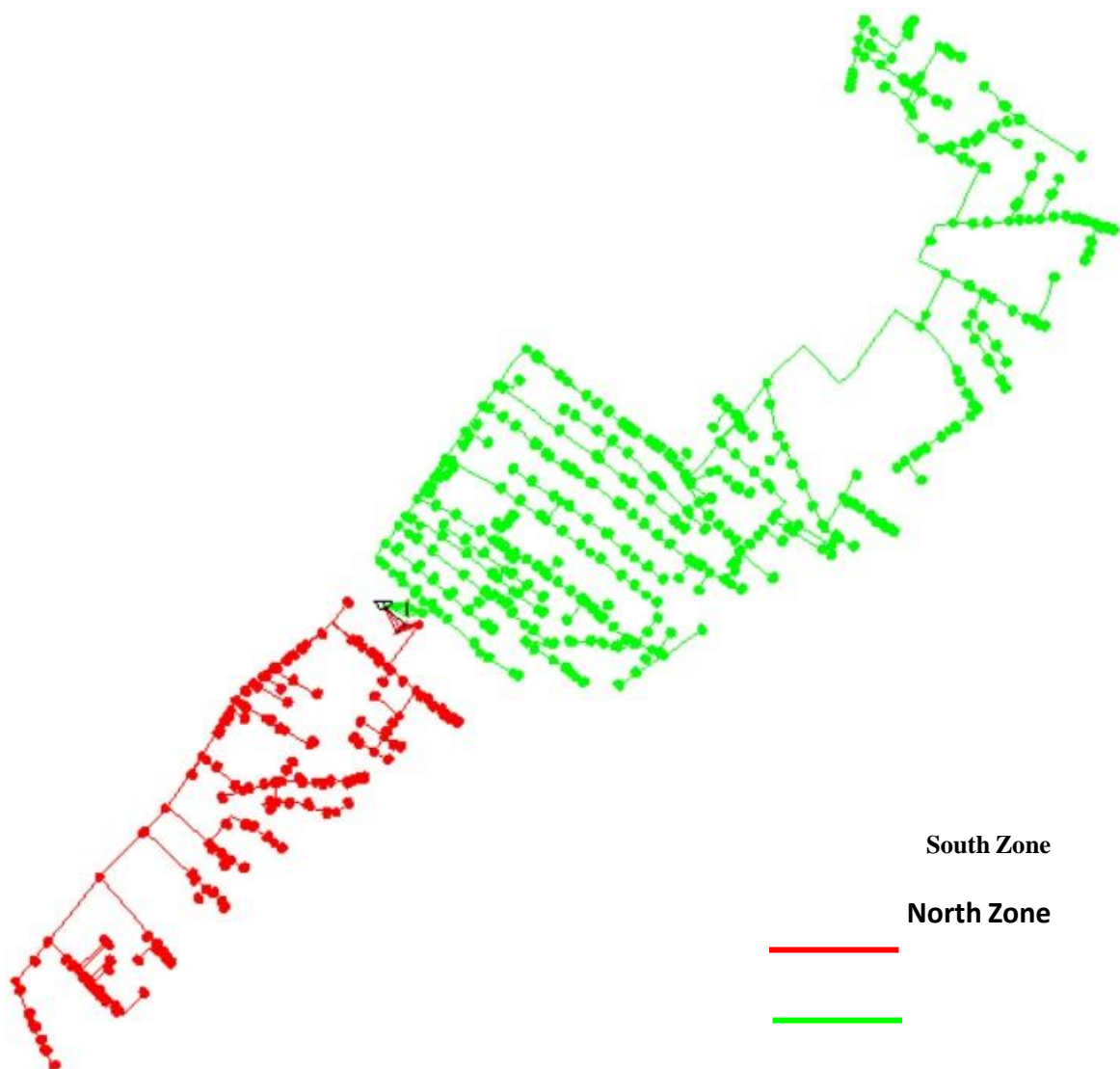


The distribution area was divided into 2 separate distributed zones [Fig. (3)] named:

- **South Zone:** Gaza agriculture area.
- **North Zone:** Jabalia and Beit Hanoon agriculture area.

The two zones will be served simultaneously (12hrs of continuous pumping) by separate pump stations (each contains a number of parallel pumps).

Fig. (3): Distribution zones



C Objective of the Assignment.

6. PWA is seeking to retain an experienced consultant to provide consultancy services with the following objectives:
 - To provide construction supervision services to ensure that the construction activities for all components are carried out including the farm connections promptly and with quality to the client's satisfaction.
 - To update (Optional Task – If needed) the hydraulic design for the distribution network for the 1000ha (incl. number and location of Control Valves, flow meters, gate valves, list of farmers and crops, water demand...)
7. To ensure that all components are constructed by the Construction Contracts and that the work executed conforms to required standards of workmanship and materials, acceptable environmental standards, and approved project budget and schedule.

D Scope of Work of the Assignment.

D1- Scope of Work of Construction Supervision Assignment (General)

8. The consultant shall carry out his duties and responsibilities laid down in this Term of Reference as well as other duties set out in the RFP by the delegation provided to him by the client. The consultant shall produce work plans for the activities to be carried out during the assignment period. The work plans shall be reviewed and approved by the client.
9. The client will manage and supervise the assignment in coordination with the Beneficiaries; Municipalities of northern Gaza and Gaza City, in addition: to FAO and MoA.
10. The selected consultant under this Terms of Reference should perform and provide the following services:

The Construction Supervision contract shall include the following main components;

1. **The Construction Supervision for the contract (Irrigation Network- Stage 2 for 1000ha A2 &B in Beit Hanoun & Gaza). The expected period of completion (is 22 Months). It**
includes the following activities:

- The works activities under this contract are similar to the activities under stage 1 above, however, the area of irrigation will be double by around 1,000 ha. Works include the construction of mains and sub-mains of the irrigation network covering about 10,000 donums located northwest of the booster pumping station (ZONE B) in Gaza and Jabalia municipalities. The water networks include all fittings needed to complete the works. The types of pipes are Ductile Iron and HDPE pipes of various diameters, the ductile iron pipes' diameter varies from 700mm to 900mm with an approximate total length of 9,850 MR, and the HDPE pipes' diameter varies

from 63 mm to 500 mm of approximate total length 178,450 MR.

- All other accessories and miscellaneous activities within the recovery and irrigation area. Farm Connections and Fittings include gate valves, flow meters, check and control valves, manholes, reinstatement, and fencing works.
11. The consultant must familiarize himself with local conditions, including the prevailing security situation in the Palestinian Territories, especially in the Gaza Strip, and the closure of the border crossing points for people, goods, supplies, and materials that could affect the progress rate of the work in the construction packages and could result in working site inaccessibility. Therefore, the consultant shall take into account all possible consequences due to these circumstances and shall in due sufficient time inform the client about the expatriate staff's schedule and their expected arrival in Gaza.
 12. The consultant may be requested to run the hydraulic model of the irrigation scheme, if major changes could take place in the routes of pipes due to difficulties in the implementation phase for unforeseen issues. If so, the consultant hydraulic expert shall provide a design report of the changes needed, design drawings, and any other changes needed for the BoQ, and/or variation orders if needed.

D2- Scope of Work of Construction Supervision Assignment

13. In the construction supervision stage, the consultant shall provide the required professional consultancy services and assist the client during the pre-construction and the construction period, commissioning and defect liability period of irrigation Scheme contracts as defined and required by the pertinent sections of the Terms of reference.
14. The overall duration of the assignment is (22months +12months DLP).
15. Responsibilities of the Consultant are to perform his duties as Client's Representative by the delegation of the Project Manager nominated by the Client, where such delegation is permitted by the general conditions of small work contracts or supply and installation of plant and equipment contracts as defined in AFD's procurement guidelines.
16. The Consultant shall carry out the duties as the Project Manager's Representative on site and shall be responsible for all duties laid down in this section as well as all other duties set out in the General Conditions of Contract and Special Conditions of Contract as described in the AFD's procurement guidelines. The engineering participation required during this phase of the project is for the Construction Supervision of the contract including tendering and commissioning of Effluent Recovery and Reuse Scheme contracts. The consultant shall produce work plans for the activities during all the project periods works. These work plans are to be

reviewed and approved by the PMU.

17. The duties and responsibilities of the Consultant during the different periods of the assignment, procurement of construction contract, construction, commissioning, and defects liability period are but not limited to as follows:

Task 1: Services during the Construction Period

18. The duties of the Consultants during this Task 1 -Services during the Construction Period would include, but are not limited to:
- Prepare a Construction Supervision Plan to cover the construction contracts and the interrelation thereof, describing the administration of the Contract from contract award through to commissioning and handing-over. The plan is expected to cover the chain of command, roles, and responsibilities of the supervision team. It should also define specific procedures for inspection and testing, progress reporting, payment procedures, coordination procedures, program updating, records handling and filing, and other project management activities, the consultant will present the plan in his technical proposal and will discuss this plan with PWA during the inception phase and reach an agreement on a final version.
 - Review the contractor's mobilization plan, plan for temporary works, contractor's program for construction, the program of performance, contractor's site regulation and safety plan, the Contractor Environmental and Social Management Plan (C-ESMP), and any other Environmental, Social, Health and Safety (ESHS) plans per the construction contract, contractor's cash flow, contractor's Quality Control program, contractor's site organization and qualifications of key personal, qualifications of the proposed subcontractors and so forth.
 - At the commencement of the contract, the consultant will arrange for a kick-off meeting with the contractor and the client. The consultant is to make sure that the contractor is aware and will adhere to the procedures mentioned in the Construction Supervision Plan during all phases of implementation.
 - Provide site supervision from the commencement of work to the issue of the Taking-Over Certificate, Operation Certificate, and Statement of Completion, followed by assistance during the Defects Liability Period and Final Statement with Final Payment Certificate;
 - Hand over to the Contractor the construction site of the project according to the approved works program, as well as the topographic benchmarks, and prepare the relevant handing over records.
 - Interpret drawings and specifications and consult with PWA, and the contractor, ensure compliance with contract documents and specifications, and ensure timely progress of construction work.
 - Review the contractor's submittals of materials and issue comments or approval as necessary to the contractor. Advise the client on any change in material specifications, etc.
 - Prepare agenda and conduct monthly progress meetings, to review and discuss

progress, performance, key issues, payments, variations, and other matters as required. Agree with the contractor on remedial actions and advise the client accordingly. Draft minutes of meetings and circulate them to all participants;

- Review and approve all drawings including shop and erection drawings submitted by the contractor.
- Consult, and advise PWA on various alternatives or options available to PWA for resolving construction problems and the contractor claims and prepare the full documents to be submitted for PWA approval before forwarding the solutions to the contractors.
- Inspect, supervise and test works as executed, the construction materials, methods, and all procured plants and equipment to ensure that they comply with the drawings and specifications, or any amendments or variations thereof that the Project Manager may have approved and issued by the consultant.
- Examine and give opinion proposals made by the contractor and give all necessary instructions to the contractor provided that instructions that will increase the cost of the works or contract duration or reduction of the obligations of the contractor will not be given unless PWA has given prior approval.
- Provide an appropriate level of inspection to ensure that specifications, drawings, and general contractual agreements are being met.
- Receive, review and certify the contractor's requests for interim and Final Payments, according to the standards and format acceptable by PWA for procurement and delivery of materials and completed works and assist PWA in arranging payments, as required;
- Maintain a comprehensive record of all works executed, materials, plants, and equipment supplied variations to design or field changes in construction, and Project cost changes;
- Set up and maintain complete and orderly correspondence files. Prepare all correspondence for matters about the contracts;
- Supervise the procurement of civil works, parts, and equipment to be supplied by the Contractor/Suppliers so that deliveries are on schedule and as per agreed specifications and standards;
- Review and certify all laboratories' test reports on the materials and equipment for compliance with specifications. Inspect and verify, when necessary, any alternative construction materials and methods proposed by the Contractor;
- Ensure that appropriate field and laboratory tests and measurements are carried out by the contractor and obtain the Contractor's test certificates, etc., as required by the specifications.
- Maintain comprehensive records of all survey data, inspections, progress reports, and test results. The Consultant will promptly notify the Contractor of any deficiencies.
- Ensure that the Contractor's testing facilities are complete and appropriate for the work and are fully operational in time, to meet the requirements of the materials testing program and, complies with the requirement set forth under the contract;
- Monitor and observe quality control tests for concrete, soils, and aggregates as conducted by the contractor for proper compliance with contract specifications;

- Obtain the necessary certificates of quality and/or origin of materials from the contractor. Expedite procurement, testing, and delivery of materials this is repeated above under a separate bullet point. Make all the arrangements for the need for inspection during manufacture and before shipment of the various materials and equipment to be supplied under the contract and allow for such inspections to be carried out by the relevant consultant staff or a qualified inspection agency. Provision shall be allowed for a representative of PMU to attend and witness the testing of materials and/or equipment;
- Ensure that the Contractor and manufacturer have an acceptable quality assurance program for the Work.
- Carry out sample factory inspections during the course of planning, procurement, manufacture, and testing, to control the quality of equipment, materials, and workmanship.
- Prepare regular inspection reports and provide copies to the Client.
- Secure all specified and required guarantees and certification from the contractor;
- Maintain a file of all guarantees and certifications of materials and equipment, make sure that these are issued in the name of the client and are handed over in original to the client when made available by the Contractor;
- Supervise and certify all hydrostatic and hydraulic tests performed on completed installations of plant/equipment pumps, pipelines before placing into service, and such other tests as are necessary or specified to assure satisfactory operation of all equipment and system components;
- Ensure that the necessary operation and maintenance manuals, drawings, etc., of the equipment, are supplied from the contractor in originals and 3 copies;
- Review all as-built drawings prepared in a computer CAD program complete with license and manuals; all records, documents, manufacturers, and operational manuals of the complete works. All manuals and other applicable documents shall be delivered in widely used software complete with licenses and manuals;
- Review the Contractor's program for the operation and maintenance of the works and on-site training to be provided by the contractor to the operation and maintenance staff appointed by the Client or such other organization appointed for the operation and maintenance. Coordinate and monitor the training of Operation and Maintenance (O&M) personnel and ensure compliance with the program during the training activities;
- Monitoring the progress of work to ensure that the Project is completed as planned and avoid cost overruns.
- As for the contractors' Environmental and Social (ES) performance, the consultant will require all contractors, who will be engaged in the project, to operate in a manner consistent with the World Bank Environmental and Social Operational Policy (OPs) and requirements, including the specific requirements, set out in the Environmental and Social Management Plan (ESMP) and any other ES Management tools. The consultant will manage and supervise the contractors effectively, including:
 - Reviewing and approving the contractors' Environmental and Social Management Plan (C-ESMP), Occupational Health and Safety (OHS)

plan, the Contractor stakeholders/community Engagement plan (C-SEP) as well as any other associated Environmental and Social management tools, such as the Traffic Management Plan, and the Contractors' Labor Management Tools. The final review and approval are to be done in close coordination with the Environmental and Social Safeguard team in PMU. Further, during the execution of the works, instruct the Contractor to update the C-ESMP if it becomes necessary. The revised version shall highlight the new elements incorporated in the document;

- The consultant shall provide Environmental and Social-related training sessions to all the employees of both the Supervision Consultant Team and Contractor (if needed). The trainings to be provided shall cover OHS Specific hazards relevant to the project, Safety protective measures, First Aid training, and the project-related Environmental and Social risks and their mitigation measures.
- Inform the Contractor that relevant sub-works shall not commence prior to the PWA's and Consultant's approval and satisfaction of appropriate measures in place to address ESHS risks and impacts;
- Supervising the contractor's environmental and social performance during their contract period. The consultant shall supervise/oversight the project to make sure that the contractors will carry out the activities by their contractual agreements, including the C-ESMP and any other associated management plans. In case of any ES non-compliance, the consultant shall propose all necessary remedies/actions, to be reviewed and approved in close coordination with the ES safeguard team in PMU. Further, the consultant has to develop and implement punitive measures against the contractor as per the construction contract's clauses for ESHS-non compliance
- Preparing detailed work plans to supervise/monitor the implementation of the C-ESMP and any other management tools defined in the project ESMP. The plans are to be discussed with the ES safeguard team in PMU and agreed upon before the finalization.
- Reviewing and approving contractors' Occupational Health and Safety Plans (OHSP), monitoring compliance on-site, and in case of non-compliance to take all necessary actions.
- Follow up on the results of any inspections or audits by labour, health and safety or environmental regulatory authorities;
- The consultant's Environmental and Social representatives will be part of the process of approving and signing off on all payments to contractors. This is to make sure that the ES risk management and the associated mitigations, under the items of the BOQ to be signed off, are complied with by the contractor.
- Instructing the contractor to keep records and report on ES performance. The contractors' ES reports shall be delivered on at least a monthly basis throughout the construction phase. The ES reports submitted by the contractor is preferably to be a stand-alone. In addition, the consultant will

submit the ES progress reports to the PMU, to be discussed with its safeguard team, and to be verified by the PMU to make sure compliance with the ES requirements.

- Proposing actions and remedies in case of the contractor's non-compliance with the ES requirements. These are to be discussed, reviewed, and approved by the PMU before requesting the contractor to implement them.
- Conducting a monthly progress meeting with the PMU's ES safeguard team and the contractor's ES representative, to review and discuss ES performance progress, the effectiveness of the mitigation measures, any ES non-compliance, and key issues, and agree with the contractor on remedial actions. Draft minutes of the meeting and circulate them to all participants;
- Direct reporting to the PMU on the status of the project's compliance with the ES standards and requirements, particularly the requirements specified in the ESMP related to risk management and the effectiveness of the implementation of mitigation measures. The consultant will deliver ES progress reports to the PMU on at least a quarterly basis, or upon the PMU's request. For that purpose, the consultant will prepare all the necessary monitoring and reporting system and templates complying with the project ESMP, including, among others, a section for the environmental and social indicators to be achieved. In addition, as part of monitoring and reporting requirements, the consultant is required to report to the PMU promptly in case any Incident occurs in the projects' sites, analyze the accident, and take the corrective actions, in collaboration with the ES safeguard team in PMU, deemed necessary to restore and recover.
- Follow-up on the resolution of any complaints or grievances in relation to ESHS. The consultant shall follow up the implementation of grievance redress mechanism for the project workers and project affected people to ensure compliance with national and WB requirements.
- Identify and liaise with all stakeholders involved in social related issues in the project; Coordinate and follow up to ensure the project is implemented in compliance with the SEP and ESMP.
- The Consultant is to envisage the presence of impacts on Livelihood and Resettlement triggering safeguards according to the requirements of OP 4.12. The impacts are to be identified at an early stage during the project implementation.
- **In case** an impact on livelihood and resettlement is identified during the project implementation, the consultant shall:
 - Assist the Contractor and PWA in reviewing the impact on each affected citizen and identifying solution for each case. Whenever, the impact is mandatory as a need to the technical and feasibility of the project, the Individual Consultant is to assist the municipality in

approaching the citizen and properly consulting them in coordination with PWA.

- Identify and recommend the sort of action plan needed, if necessary, in coordination with PWA: abbreviated LALAP, simplified abbreviated LALAP, agreement or signed meeting minutes. For abbreviated LALAP, simplified abbreviated LALAP the Individual Consultant are to refer to the LALPF for outline, or to the sample forms for each other case.
- The Consultant is to ensure, and report that the affected persons are aware of their rights, aware of the presence of GRM procedures, and willing to proceed with the agreement.
- The Consultant is to discuss with the PWA, relevant municipality and the affected persons the proper timing for implementing the agreement. The dates of implementation shall be reported to PWA and shall be in line with the project plan. Moreover, the Consultant is to monitor and report the implementation and the citizen's feedback.



Claims and Variation Orders

19. To manage claims by the Contractor and prepare variation orders for changes to the scope of work, the Consultant will carry out the following activities, by the construction contract:

- Prepare and issue variation orders according to established contract procedures, after having obtained the Client's approval. Issue instructions to the Contractor and prepare Variation Orders, within the framework of powers delegated, as may be required. Request Cost proposals from the contractor for all variation orders. Prepare an independent estimate of the cost for each variation. Negotiate with the contractor to resolve any difference between the contractors' proposed costs and the engineer's estimate. Submit the agreed negotiated cost together with supporting documentation and data to PMU for review and approval. After receiving approval from PMU, direct the contractor to proceed with the variation.
- Receive, review and make recommendations to PWA concerning contractor's claims for extension of time and/or for additional compensation. Any such claims will be promptly reported to the Client. Upon approval of PWA to the recommendation, the consultant will issue the proper instructions to the contractor. The consultant will incorporate such extensions in the Construction Program;
- Provide all the replies and documentation in connection with any disputes or claims arising by the Contractor against the Client regarding procurement, supply, installation, or construction of works;
- Make every attempt to recognize in advance and prevent potentially long-standing disputes; help resolve any disputes that arise, before they become formal claims.

- In cases of dispute, line end all meetings, participate in any negotiations necessary, and propose suitable solutions to settle the dispute.

Cost Control

20. To ensure that all the construction activities are carried out in line with contract costs the consultant shall perform the following:
- The Consultant will be responsible for the monitoring of contract costs relative to the contract budget. To this end, using a computerized budget and cost forecast system, at intervals of not more than 3 months or when major changes occur, the Consultant will prepare an estimate of the cost of the construction contract, incorporating costs of variation orders; potential costs of claims; and projected expenditures for provisional sums, if applicable. The estimated cash flow up to the completion of the contract based on the revised contract costs will also be prepared.
 - The Consultant will ensure that the Client is advised sufficiently in advance of the time when additional funds will be required for the appropriation of the contract budget.
 - The Consultant will verify the Contractor's invoices and issue interim and final certificates for payment and submit these to the Client for approval. Payments to the Contractor will be made according to the progress of construction works measured by the percentage of completion or on a payment schedule based on milestones of construction works accomplished.
 - The Consultant will institute a computerized Project Cost Monitoring System (PCMS). The Consultant will, at the beginning of each month, provide the Client with the following information for each payment item:
 - a) Estimate the cost incurred in the month in the case of a lump-sum or provisional sum.
 - b) Estimated amount to be spent up to the end of the contract.
 - The entire Consultant's work will be executed by the site supervision staff, and if needed, with the support of the home office team.

The Gramm's System

- The Consultant should be aware that the construction materials and the dual-use materials are not allowed to enter Gaza and accordingly a new mechanism has been created for the approval of the entry of these materials to Gaza. This mechanism is known as the Gramm.
- Accordingly, the Consultant will be familiar with the Gramm system, the system for the importation and coordination of the construction materials to Gaza.
- The Consultant should assist the PWA in following and recording all materials entered under the contract.
- The consultant shall appoint a specialized person familiar with the Gramm to follow and use this mechanism when necessary.

Task 2: Services during Commissioning

21. Upon substantial completion of the Project works by the contractor the consultant will conduct the following:

- Review the contractor start-up plan for the testing of the units and associated equipment, including performance test procedures for documentation of compliance with the specification and warrant requirements;
- Supervise the start-up, commissioning, and operation of completed civil and electromechanical works and make sure that all project components are fully operational and functional, not only within the scope of this project but with any other already functioning facilities and with any other planned related facilities and similar works;
- Carry out a thorough inspection of works in the presence of PWA and the contractor's representatives;
- Issue with the prior approval of the Client, Tests on Completion, Taking-Over Certificates, and other documents about the completion of construction including monitoring of inspections and tests required;
- Prepare works substantial completion report incorporating any defects or deficiencies observed in the completed works and determine the period within which the contractor should make, and adjust the same;
- Continue supervising the training of operating and maintenance personnel conducted by the Contractor;
- Secure from the contractor details and manufacturers' manuals as required for the proper operation and maintenance of the installed equipment
- Review and give an opinion on the final as-built drawings and other documentation as well as operating instructions and maintenance manuals which form the basis for the practical training of the staff
- Continue supervising the contractor's environmental and social performance during commissioning to ensure that the project activities are completed and the project will be operational in compliance with the ES standards and requirements.

Task 3: Services during the Defects Liability Period

22. During this period the contractor shall carry out such work or amendments, reconstruction, and remedying defects or faults that may appear in the works. It is also devoted to the preparation of the final accounts of the amounts due to the contractor. The tasks of the Consultant during this period include:

- Review and certify the invoice for the contractor's final payment upon satisfactory completion of all works defects noted during the commissioning and inspection of works, and the discharge of all outstanding obligations by the contractor, including all deliveries of spares and stock level items and transfer to PWA of any excess pipes, fittings spare parts, other material paid for under the contract or issued to the contractor for installation and remaining after all works are completed.
- Prepare and submit a fully recommended maintenance program and the composition of the operation and maintenance organization as well as the estimated costs thereof. Revise and approve tailor-made operation and

maintenance manuals to be submitted by the contractor for all components with indexes to be easily referenced and incorporated therein in the manufacturer's catalogs and necessary system drawings. The manuals will include preventive maintenance of civil works, hydraulic equipment, and electrical and mechanical plants; corrective maintenance, covering tracing of faults, dismantling, repairs assembly, adjusting and testing, spare parts list, etc. in addition to costing and programming of all maintenance activities

- Before the expiry of the Defects Liability period, the Consultant will inspect the works to ensure that any remedial work listed in the Operation Acceptance Certificate is carried out. Such work will be at the expense of the Contractor. In such case, the Consultant will make the necessary arrangements for the repairs to be carried out, and paid for, as may be approved by the Client.
- Shortly before the end of the specified Defects Liability Period, the Consultant will check the completed work and ensure that all noted defects have been corrected by the Contractor to the Consultant's and Client's satisfaction.
- Prepare a comprehensive 'Construction supervision completion report ' as required by PWA and as described hereinafter under Reporting Section.

D2.1 Meetings

- At the **commencement** date of the contract arrange for a kickoff meeting with the client
- Weekly coordination and progress meetings with the client,
- **Coordination meetings with PWA**, municipalities, other authorities, and organizations in all related matters.
- **Monthly Progress Meetings**, the meeting to be attended by the Client and the Consultant on project offices, including the Environmental and Social Safeguard team. The meeting shall be programmed such that the Monthly Progress Reports have been prepared and distributed 3 days before the meeting. The Consultant shall submit the minutes of the meeting within three days after the meeting for the Client to comment on and approve the minutes.
- **Quarterly Progress Meeting**, the consultant will participate, upon the request of the client, in the quarterly progress meeting which might be attended by the project financiers and PWA, to discuss the progress of works; a general progress report will be required. The report content shall be as outlined below in paragraph of the inception report.

D2.2 Reporting Requirements of Construction Supervision

23. The Consultant shall prepare and deliver to PWA several reports, documents, and files covering all the work performed in the execution of the Contract. These shall be submitted in the requisite number of copies to the PWA, according to the schedule of submission of the Work plan. The official date of submission shall be the date on which the reports are received by PWA. The form of, detail content, type of cover, and binding of the reports shall be determined by mutual agreement between the

PMU and Consultant. PMU may direct the Consultant, to dispatch copies of any reports to various foreign or local addresses. The type and contents of the reports to be submitted shall be subject to revisions from time to time as Services progress. Without being limited to, the reports shall be of the following types:

- **Monthly Progress Reports** shall be delivered monthly in 3 copies in hard and electronically to PWA, which include a brief description of the assignment, the progress and the financial status and any obstacles, etc.
- **Quarterly Progress Reports:** These reports shall be submitted every three months following the commencement date. These shall generally summarize and complement the previous monthly reports and incorporate a forecast for the forthcoming period. They shall contain, inter alia, a summary of findings, provisional conclusions and recommendations, and other pertinent information, including important results and findings, attendance sheet of personnel together with the Consultant's program for the forthcoming three months. These reports shall be accompanied by copies of the contractor's revised work plan and Staff, marking the progress made up to the end of the reporting period as compared with the Work plan.
- **Quarterly Environmental and Social (ES) performance Reports:** These reports shall be submitted every three months following the commencement date, to be either a stand-alone report (annexed to the project quarterly report) or integrated into the project Quarterly report. The ES performance report shall show the environmental and social contractors' performance during the reporting period, in particular the level of effectiveness of ES mitigation measures as defined in the ESMP. In addition, it shall include a detailed work plan for monitoring the implementation of the ESMP and any other associated ES management tools for the forthcoming period. the quarterly ES performance report shall also include, among others, information about the ES records gathered and kept by the contractor, safety-related issues, environmental and social incidents, ES non-compliance with national and WB standards, ES inspections by the contractor, consultant, PMU or any other related authority, details of any security threat, workers grievances, major ES changes, and deficiency and performance management (actions are taken in response to previous notices of deficiency or observations regarding the contractors' ES performance.
- **Construction Supervision Completion Report:** this report is to be prepared during the defect's liability period. It shall summarize the major information contained in previous progress reports, including the environmental and social performance reports, in such a way that a clear picture is obtained of the main activities and difficulties encountered during Construction and the solutions to the main problems that arose. It shall also include contract payments charts; a statement of the final cost of the project showing appropriate details, preferably in the form of asset groups suitable for accounting system entry, as compared to the original estimate showing local and foreign currency amounts; description of equipment installed; records of manpower utilized as a function of time; testing

and commissioning reports and list of defects outstanding at the commencement of the defects liability period.

- **In addition**, submit draft manuals for PMU comment and approval, after incorporating the comments; submit final manuals to PMU, 1 original and 3 copies.
 - **Ad Hoc Reports:** These are special reports which are not scheduled in the Work plan but which may be called for in response to unforeseen circumstances which may arise during the implementation of the Services and which may require immediate action by PWA, or third parties, on important technical findings or the future of the project. The Consultant shall prepare such reports on his initiative or at the request of PMU. Such reports shall be deemed to be parts of subsequent quarterly or other reports and shall be included therein.

Additional Reporting Requirements.

24. In addition, the followings documents are to be submitted to the client:

- A Project Construction file, for the contract including inter alia certified As-Built drawings of all Works components with technical submissions, catalogs test certificates, and guarantees of materials and equipment.
- Quantity Surveyor's Notes corresponding to the assessment of the Works forming the basis of the final payment certificate.

D2.3 Consultant's Staff,

25. The consultant shall submit only one CV for each position. All the staff has to be approved by the client. The client has the right to withdraw, at any time, any approval for such staff if found unsuitable to perform the designated duties, the consultant shall make an adequate substitute for the client's approval.

26. The purpose of the consultancy services is to ensure the presence of the Consultant's full-time representative on site to inspect coordinate and monitor all aspects of the work during the construction of the works, and liaise with the contractor, PMU, and other agencies as appropriate to the work. To provide these services, the Consultant will, for the duration of the entire assignment activities, assemble a team of construction engineers and specialists who are experienced in the supervision and operation of similar projects in the field of Effluent Recovery and Reuse schemes.

27. The Consultant shall make available personnel to carry out the work.

28. **The following required Professional Staff needed as specified below:**

- a) **Construction supervision Team leader**, Civil Engineer, or relevant equivalent diploma with 15 years of experience in construction supervision of similar infrastructure with at least 2 assignments completed as a (PM or Engineer as FIDIC) for similar projects.

- b) **Mechanical Engineer;** Mechanical Engineer with 15 years experience in construction

supervision of similar process mechanical installations with at least 2 assignments completed as a Process mechanical Engineer for similar projects.

- c) **Two Site Managers;** Civil Engineer, or relevant equivalent diploma with 10 years experience in construction supervision of similar infrastructure with at least 1 assignment completed as a Resident Engineer for similar projects.
- d) **Three Inspectors** , Civil Engineer, or relevant equivalent diploma or Construction Supervisor with 6 years experience in construction supervision of similar infrastructure with at least 1 assignment completed as a site engineer for similar projects.
- e) **Hydraulics and Water Engineer**, Civil/Mechanical engineer with 6 years experience in Hydraulic engineering with at least 1 assignment completed.
- f) **Health and Safety Engineer**, a Safety Engineer, or relevant equivalent diploma, with 7 years experience in similar infrastructure with at least 1 assignment completed as a safety Engineer for similar projects.
- g) **Environmental and Social Expert/Engineer**, 7 years experience in similar infrastructure with at least 1 assignment completed as an environmental and social engineer for similar projects.
- h) **Quantity Surveyor**, a certified quantity surveyor from recognized international or regional institutes with 5 years experience in similar infrastructure with at least 1 assignment completed as Quantity Surveyor.
- i) **Two Surveyors**, a certified surveyor from recognized international or regional institutes with 5 years experience in similar infrastructure with at least 1 assignment completed as Surveyor.

Table 1: The proposed total indicative man-month for KEY and Non-Key staff

A. Remuneration			
N°	Position	Location	Time input in person/month
KEY EXPERTS			
1	Construction Supervision Team Leader	Field	24
2	Mechanical Engineer	Field	6
3	Hydraulics and Water Engineer	Field	2
4	Site Manager 1	Field	20

5	Site Manager 2	Field	20
6	Inspector Civil Engineer 1	Field	20
7	Inspector Civil Engineer 2	Field	20
8	Inspector Civil Engineer 3	Field	20
9	Health and Safety Engineer	Field	15
10	Environmental and Social Expert	Field	6
11	Quantity Surveyor	Field	10
12	Surveyor 1	Field	10
13	Surveyor 2	Field	10
Total			183

D2.4 Consultant's office and equipment Requirements

29. NA

E. Services and facilities provided by the Client

30. During the Construction supervision services the Client will provide and facilitate the Consultant with the followings:

- Detailed engineering design, drawings, and tender documents.
- Reports, files, and documents relevant to the assignment.
- Access to all sites relevant to the assignment.
- Coordination with other relevant institutions.
- An office located in the site equipped with all necessary furniture which shall be provided by the contractor during the construction phase. This office shall be fully equipped e.g., include access to a telephone, fax, internet server, photocopies computers, printers.

F Quality

31. The Construction Supervision Team Leader shall give priority to producing work and services of the highest quality. This is to be accomplished by a commitment to excellence in a quality management system, involving all levels of management staff. The quality management system should include formal monitoring systems to ensure that the quality management process is continuous. The quality management processes shall contain at least the following features:

- Commitment by senior of the Consultant firm in a demonstrative way.

- Client focus.
- Total involvement of the firm in a quality control system.
- Continuous monitoring of quality.
- Strong support for continuous training of employees.

Documentation guidelines for quality management policies, procedures, and practices are outlined in the ISO 9000 standards. It is expected that the consultant has a well-established QM system in conformity with international norms.

G. The Project Management Unit (PMU)

32. The PMU will have the responsibility and authority to direct the execution of the project. The unit is headed by the PMU Director General and staffed with technical, administrative, and financial specialists as required overall managing and overseeing the Project implementation.

33. The tasks of the PMU include, but are not limited to, the following:
 - Participate, approve bid Evaluation, and appoint contractors and consultants.
 - Carry out periodic quality checks to ensure the construction of the infrastructure is to acceptable standards.
 - Managing the disbursements of the project based on claims for payments certified by the Construction Supervision Consultant.
 - Liaise with all relevant ministries, authorities, and institutions which include the MoA/FAO
 - Liaise with Coastal Municipalities Water Utility (CMWU), the relevant municipalities, the North Gaza Governorate, and the ministry of local government to ensure proper operational management for the water and wastewater facilities located in North Gaza.
 - Monitor the progress of the project against the objectively measurable indicators as illustrated in the LFA.
 - Provide regular reports to Donors as set out in the fund agreements.
 - PWA/PMU will be having the overall responsibility for monitoring the implementation of the ESMP and other related Environmental and social safeguard plans. For that purpose, the PMU will carry out the following activities:
 - Conduct site visits on regular basis to confirm the reports that the PMU receives about the implementation of the ESMP measures by the construction contractor and consultant.
 - PMU, with the TA's assistance, Identify and liaise with all stakeholders involved in environment-related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. In addition, PMU will make, alongside the TA to PMU, regular consultations with stakeholders, including the FAO/MoA, CMWU, Municipalities, EQA, MoH, etc..., and ensure a high level of their participation with regards to monitoring the implementation of the ESMP.
 - PMU, through the TA's social expert, will Establish dialogue with project-

affected groups, including local communities in the project sites, during the construction phase, and ensure the project is implemented in socially sensitive manners that consider the interests of these groups.

- PMU, through the TA's social expert, Analyze potential community/individual sub-projects and their environmental and social impacts;
- Based on the monitoring/inspections to be conducted by the PWA/PMU's Environmental and Social officers to ensure that the ESMP is implemented by the contractor in compliance with, reporting outcomes of both the Consultant and contractor, the PMU will report to the AFD (Donor), on a semi-annual basis, on the ESHS project performance.
- In case of Environmental and Social non-compliance, the PMU, with the TA's assistance, and the Supervision Consultant's E&S expert will discuss and take the necessary actions/remedies. The PMU, with the TA's assistance, will also make efficient coordination with any relevant stakeholder, such as the FAO/MoA, to ensure appropriate participation during the recovery/restoration. In addition, the final proposed actions, to be reported by the consultant, will be reviewed/approved by the PMU and TA.

H. The Consultant should consider the following important points:

1. Regarding the registration of the JV, PWA confirm that the consultant must register their JV Company in Palestine by the applicable laws, and advise the JV to approach the ministry of the national economy.
2. Regarding the VAT taxes, PWA confirms that this contract is a Zero VAT, which is not required the consultant to pay VAT under this contract. For the income taxes, PWA clarifies that this issue is to the government's applicable regulations and procedures. According to the income tax regulation, a non-Palestinian person who continuously or with interruptions resided in Palestine for a period not less than (183) days during the year is entitled to pay the income tax. Regarding the local Palestinian staff, they shall be entitled to pay their income tax.