

# 1 BACKGROUND INFORMATION

## 1.1 Origin of the Project

The water distribution system in Yatta City was constructed in 1974 and is nearing the end of its service life. In addition to supply and distribution network pipelines, the water system serving Yatta consists of three operational reservoirs: Hureiz Reservoir (4000m<sup>3</sup>), Al 'Arus Reservoir (500 m<sup>3</sup>), Mtaref Reservoir (2000 m<sup>3</sup>). A fourth elevated reservoir, the Garage Elevated Reservoir (220 m<sup>3</sup>) was determined to be structurally unsound and is currently non-operational. In 2018 through fund by USAID PWA implemented a project for the Yatta Rehabilitation and Extension of Yatta water system. The Project consists of the following elements:

- 1) Upgrading and expansion to the existing Yatta transmission mains, to provide water service to seven Palestinian communities in the Hebron Governorate. The seven served communities, Yatta, Beit Amra, Ziff, Al Heila, Wadi As Sada, Khallet Al Maiyya, and Al Karmil. The villages of Hureiz, Biyar Al Arus, Qurnet Ar Aras, Al Muntar, Izeiz and Qinan An Najima are included in the Yatta population projections.
- 2) Upgrading and expansion of the existing Yatta and Beit Amra distribution system.

Yatta City of more than 120,000 capita (distributed in an area of 32 km<sup>2</sup>) is facing severe environmental, social, and health problems due to the lack of **needed wastewater infrastructure and services**, pollution of ground water and **nearby** water networks by infiltrating raw sewage from cesspits. Currently around 20,000 sewage cesspits do exist with a similar number of cisterns allowing wastewater infiltration to cause pollution to water cisterns in addition to posing health and environmental problems. When some cesspits overflow, they are emptied by vacuum trucks that dispose of their loads into Wadi al-Samen.

The topography of the area allows about 32% of the area to drain by gravity towards the Wadi As Samen catchment area where PWA at the final stages of the implementation of the conveyor line with diameter of 1m therefore the consultant shall give priority to the areas that can be served via this line, and he should return to previous studies, especially the Master Plan study prepared by the World Bank.

The proposed project will focus on the necessary consulting engineering services to prepare the full package of the design and tender documents improve the wastewater collection, the sanitary level and treatment services in Yatta.

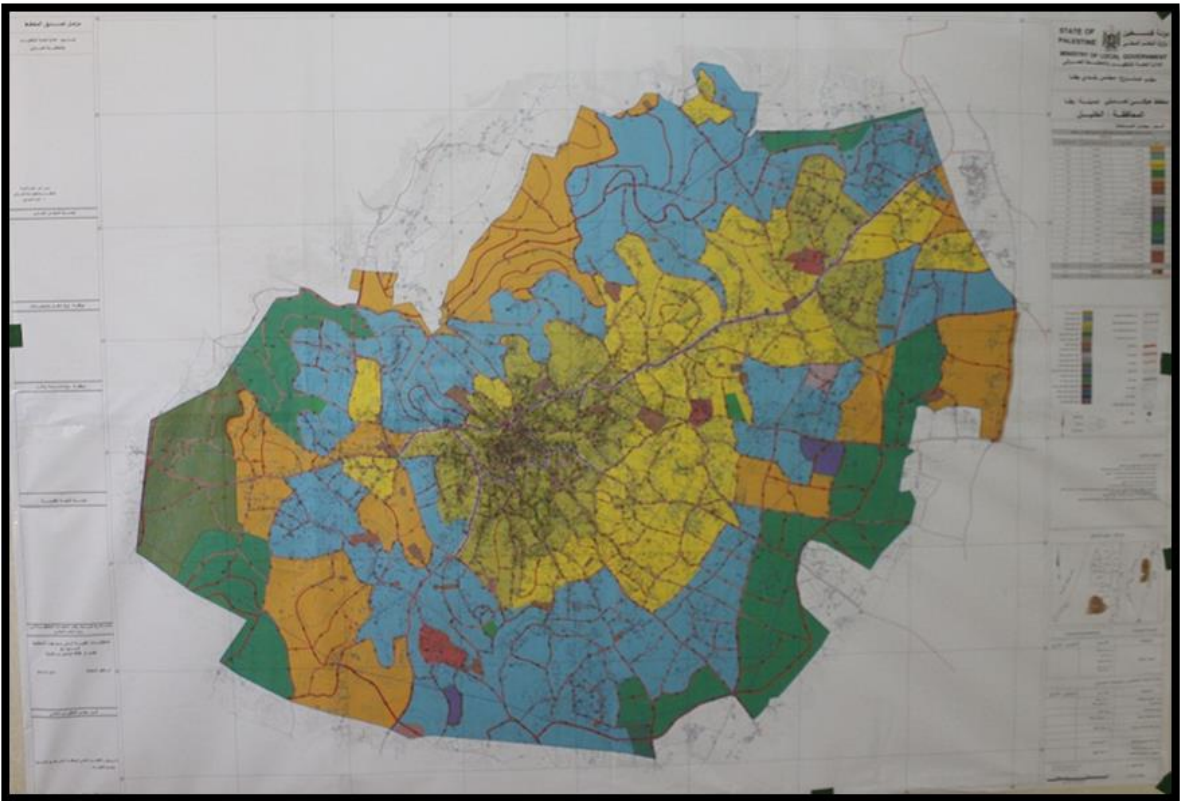
The expected output of the project is detailed design and tender documents of wastewater collection system, networks for Yatta city.

**1.2 Geographical area to be covered**

The project will cover Yatta City located to the south of Hebron City.



**Figure 0-1: Satellite Image of the Project Area**



**Figure 0-2: Yatta Municipality Approved Master Plan-2017.**

## 2 OBJECTIVE, PURPOSE & EXPECTED RESULTS

### 2.1 Overall objective

Improving living conditions for the population of Yatta City, through alignment of wastewater collection in compliance with PWA standards.

### 2.2 Specific Objectives

The objectives of these assignments are to:

- Prepare the detailed design for the wastewater collection networks of around 300 km including the design of lateral connections and house connection ( 300 house connection along the main road), for which complete survey must be performed.
- To prepare the tender documents and detailed design and work packages for construction of networks transmission lines.

## 3. Project description

The Consultant shall prepare detailed design and works/supply tender dossiers for the investment projects Construction of sewerage system project.

- Prepare general layout of the Network
- Conduct topographical proper survey of 300 km length for lateral connections ,collection networks, transmission lines & 300 house connection along the main road.
- Prepare Detailed design of transmission lines sewer network, house & lateral connections
- Prepare Hydraulic Model using Sewer CAD
- Prepare Tender Documents Ready for Construction of the sewer network.
- Prepare full detailed design & Tender Documents for any possible or needed pumping station.

## 4. SCOPE OF THE WORK

### 4.1 Preparation of preliminary design

#### 4.1.1 The Inception stage

The Inception stage will start immediately following the kick-off meeting, which is foreseen to be held within **1 (one) week** after the counter-signature of the Contract. During the inception phase the consultant will review the existing and previous related studies, discuss with relevant stakeholders and acquire all available and appropriate up to date information, all the above data shall be obtained via official written correspondence.

**The Inception report (Report 1)** will be submitted no later than **2 weeks** from the Kick-off meeting.

#### 4.1.2 The preparatory project planning stage

The Consultant shall carry out a preliminary design of wastewater system works. The following steps are recommended:

Task 1: Review of existing situation, studies, reports and validation of design criteria

Task 2. Topographical survey of site for structures and pipeline alignments including lateral lines and house connections.

“Topographic survey and site investigations including definition of location of the pipes along the roads for new installation shall be carried out”.

Task 3: Create and build of the hydraulic model

The consultant shall present the results in a preparatory project planning report in order to work from an agreed reliable design basis. This includes inter alia:

- Verification and completion of the planning basis such as population figures, wastewater production figures, present and future demand, etc. All the relevant figures shall be confirmed with the client,
- Preparation of base maps, and related maps and drawings at appropriate scales; 1:5000
- Conceptual design of system components such as: sewage Networks and main trunk line
- Assessment of the proposed location of the WWTP in terms of space, accessibility, location. Etc..

The Consultant shall present the results of the preparatory project planning stage in the **preparatory planning report**.

In addition to the report, the consultant will present the results and summary of the conceptual design at the meeting of the Technical Committee. The report should be submitted no later than **8 weeks** from the Kick-off meeting.

### 4.2 The detailed design and works tender document preparation stage

The consultant shall prepare detailed design and works tender documents. The requirements for detailed design and works tender documents elaboration should include:

- Detailed design drawings and calculations for all components sufficient for quantities to be taken off and scheduled.
- Detailed bill of quantities will be prepared and unit rates applied to these to derive estimates for the cost of the Works.

The following is a **general description of the work components to be included at the detailed design stage:**

**Wastewater works:**

Wastewater networks, structures, pumping stations:

(a) Final routing of sewers including sitting of manholes and outlet structures, final sitting of the pumping stations and levelling and topographical survey of sites and alignments as required for the detailed design of sewers, outlet structures, pump lifting stations and treatment facilities.

(b) Specific geotechnical investigations as required for the classification of earth works and the foundations of heavy structures.

(c) Hydraulic design of sewers, tender design, explanatory description of works and site conditions, standard drawings for pipe works, manholes and any auxiliary structures.

In more details the detailed design and tender dossier shall include:

**A. Technical Specifications**

Technical specifications comprise two parts:

- General Specification
- Particular Specification
- Specifications must be written in clear and concise English without ambiguities, inconsistencies and repetitions. Specifications should be definitive and explicit when stating the requirements that have to be met by the Contractor in carrying out the Works.
- Specifications that favors a particular manufacturer, without actually naming the manufacturer, or products from a particular country are unacceptable.

**A.1 General Specification**

- The General Specification should cover general requirements in a logical sequence in respect of materials, workmanship and testing:

- Preliminary and General;
- Site clearance;
- Earthworks (pipe trenches, excavations, foundations, bedding, backfill etc);
- Pipework (pipelines, fittings, valves etc);
- Concrete work; Metalwork;
- Road and paving works;
- Mechanical works (e.g. pumps)
- Electrical works (e.g. pump motors, control equipment, transformers etc, and Building works.

## **A.2 Particular Specification**

- Particular Specification should describe and contain the following information and requirements that are specific to the Works:

- Scope of the Works; Nature of the Works;
- Site survey information;
- Ground investigation information;
- Climatic and hydrological data;
- Access to the site(s);
- Particular requirements in respect of any sequencing of the works;
- Features requiring special attention, e.g:
  - interface with other works;
  - dealing with known utility services;
  - dealing with unknown utility services;
  - Proximity of high rise buildings or other structures;
- Specific requirements, e.g:
  - facilities for the Supervisor;
  - electricity supply to pumping stations etc
- Details of the works, if any, that are to be designed by the Contractor (e.g. bar bending schedules; pumps, pipework, and electrical equipment etc) with the Contracting Authority / Beneficiary's exact requirements in this regard;
- Modifications and additions to the General Specification.

## **B. Working Drawings**

- Working drawings must be complete in all respects including as appropriate:
  - Setting-out information;
  - The location of all known existing services in plan and elevation;
  - Details of existing surfaces that are to be disturbed (e.g. grass, concrete, asphalt etc);
  - Dimensions;
  - All essential information (e.g. pipe and bedding details, foundations, concrete class etc);
  - Manhole schedules;
  - Bar bending schedules;
  - Valve and fitting schedules;
- It is essential that the Contractor is able to build the Works from the working drawings.
- All working drawings must be properly verified and signed by the designer, draughtsman and checker.
- By definition all working drawings must be drawn to scale. Drawings "N.T.S" (Not to Scale) are not working drawings.
- Drawings should be prepared to the following scales:
  - Overall site plan scale 1:5000
  - Sewer networks 1:1000;
  - Longitudinal sections of gravity sewers and rising mains 1:1000 horizontals, 1:100 vertical;
  - Construction details of cross-sections, trenches, manholes, pumping stations, etc 1:25.



- Longitudinal sections of gravity sewers should contain the following information at all manhole positions and at 50m intervals, changes in direction etc for rising mains:
  - Interval (manhole) spacing;
  - Cumulative distance;
  - Original ground level;
  - Pipe invert level;
  - Depth to invert level;
  - Pipe slope;
  - Pipe and bedding details;
  - Manhole type.
- Drawings should be printed at original scale on standard ISO sheets, preferably A3 size (42 x 28mm).

### **C. Bill of Quantities**

- The Bill of Quantities must be drawn up in accordance with a standard method of measurement, which recognizes the concept of net measurement.
- The method of measurement may be specified in the General Specification or alternatively a standard method such as CESMM3 (Civil Engineering Standard Method of Measurement, 3rd edition) should be adopted.
- Quantities in the Bill should be measured from the drawings.
- Bills should be prepared in a logical sequence, similar to that listed above for the General Specification or according to the CESMM3 classification system.
- Although Works of a similar nature may be carried out in different locations they may have different risks and therefore different costs, so separate bills should be prepared accordingly, e.g. a DN600 sewer laid in a main road at 4.0m depth will carry different risks to a DN200 sewer laid in a minor road at 1.5m depth.
- For waste water schemes and sewer networks in particular, Bill items should be separated according to location, surface, pipe size and pipe depth.
- The BoQ must be formatted as an excel sheet in the way that the Quantity Cells are locked and each price is rounded to 2 (two) digits after comma.
- The BoQ shall be accompanied with Price Schedules for the items the BoQ which are not measured in accordance with CESMM3.

**Report 3 - Detailed Design for Wastewater System** In addition to the report the Consultant will present the results and summary of the final detailed design to at the meeting of the Technical Committee.

The report should be submitted no later than **17 weeks** from the Kick-off meeting.

### **D: TENDER DOCUMENT**

- The draft tender documents shall be prepared and submitted together with the final design report for comments and approval. The tender documents shall be accompanied by a comprehensive cost estimate which should include capital investment.
- The final design/tender document preparation stage will start as soon as related studies have been completed and approved or have been sufficiently advanced to enable tender documents

to be prepared with little risk of abortive work.

- The consultant shall provide the following components of the tender documents:  
Instructions to tenderers, INFORMATION/DOCUMENTS TO BE SUPPLIED BY THE TENDERER;
  - Special conditions of contract;
  - Design reports for each of the main elements in a project;
  - Drawings at appropriate scales and levels of detail;
  - Technical specifications;
  - Introduction to the Financial Offer, Bills of quantities, Price Schedules.

The consultant shall reconsider the cost estimates prepared during the preparatory project planning stage and advise the contracting authority if there are any changes to the original estimates. The cost estimates shall comprise all physical components as well as necessary environmental mitigation components and contractors' administration and management costs, contingencies shall be added. Taxes, VAT, and any other duty arising from implementation of the project must be clearly specified in the cost estimates.

The detailed design stage will be presented in the following report;

.The tender documents preparation stage will be reported in the following report:

**Report 4 – Works Tender Dossier for wastewater System.** This is to include tender documents.

#### **4.2.6 Requirements for Reports and documents**

The Reports and documents set out in sub-sections 4.2.1.1, 4.2.1.2 and 4.2.1.3 above represent the main output of this assignment and are in addition to the standard reporting requirements foreseen in section 7 below. All such reports and documents will be prepared in four hard copies and four electronic copies. The conceptual and detailed design drawings, all the design reports, technical specifications (works and supply), bill of quantities shall be prepared **in English**.

The consultant shall also prepare **concise monthly progress reports** for monitoring progress on the contract and to bring important matters to the attention of the contracting authority in a timely way.

All work submitted shall be based on an electronic data-base structure to be approved by the contracting authority. Maps and drawings shall be produced by appropriate computer drafting and shall be submitted in the form of required hard copies as well as electronic files, prepared in the Auto-CAD format and word docs and PDF.

Reports shall contain an executive summary of up to three pages. All reports shall be prepared in A4 format, printed double-sided. A separate volume shall be prepared containing all plans, drawings and photographs. The title of the report and identification of the specific volume shall be indicated on the spine of every final version.

**All reports and documents are to be presented first as drafts should be submitted no later than 17 weeks from the Kick-off meeting. For review by the contracting authority, which will provide comments within 2 weeks. The final versions of the reports shall be prepared and presented within the following 2 weeks.**



**Inception report (Report 1)**

This is to be a brief report. The consultant will describe the situation as found at the start of the assignment, discuss key issues and suggest any revisions to the approach presented in his proposal including the schedule of tasks and program , **to be submitted 2 weeks after kick-off meeting.**

**Preparatory planning report (Reports 2 )**

The report will present the design data bases, financial estimates, conceptual designs, and other results as described in the TOR above, to be submitted after **8 weeks** from the Kick-off meeting.

**Detailed design report (Reports 3)**

The report shall include explanatory text describing the design basis, procedures, calculations, and results, cost estimates, implementation schedules, etc, as well as all drawings, maps, charts, to be submitted **in 17 weeks from the Kick-off meeting.**

**Works tender documents report (Report 4)**

The report shall include Tender Documents as described above.

**Concise Monthly Progress Reports (1 to 2 pages maximum)**

These will structure the information according to the tasks in these terms of reference with the aim of disseminating information on the general progress achieved over the reporting period. The reports shall be in English with translation into Arabic language and should draw attention to any problems encountered and proposals for any special actions/decisions. Progress should be plotted on the contract program.

**Ad-hoc Reports**

These should be prepared by the consultant if he needs to inform the contracting authority on a particular issue or if the consultant is asked by the Contracting Authority to analyze a particular matter and issue a report on this.

**Final Report: Design and Tender Documents**

The Report shall include a summary of all stages of the services provided including time tables, main issues, summary of the scope of works of the investment project including, phasing if relevant, time schedule of works/supply execution etc. The format will be proposed by the Consultant and agreed with the Contracting Authority.

**4.3 Project management****4.3.1 Responsible Body**

**The PWA will be responsible for the project management.**

**The Beneficiary of this project is the Yatta City council**

**4.3.2 Management Structure**

**The Contracting Authority responsible for managing of this Contract is PWA represented by Eng. Adel Yasin, the Project Manager in charge for this project.**

#### **4.3.3 Facilities to be provided by the Contracting Authority and/or other parties**

The PWA and the Beneficiary will provide all available information related to the projects as appropriate and will fully cooperate with the Consultant in order to achieve the best results. Technical information and access to the existing records will be provided upon request.

No office space will be made available for the Consultant. Housing accommodation shall be provided by the Consultant.

Any means of transportation shall be provided by the Consultant and the expenses are deemed to be included in the global price.

### **5 LOGISTICS AND TIMING**

#### **5.1 Location**

The project is located in the Yatta City Area.  
The location is indicated on the map enclosed as Annex 1.

#### **5.2 Commencement date & Period of implementation of tasks**

It is estimated that the Service Contract will be signed in early **Nov. 2022**. The indicative period of the Service Contract execution will be **4** months

### **6 REQUIREMENTS**

#### **6.1 Firm Experience**

- The firm/JV shall have at least three similar projects of sewer collection system
- The firm/JV shall have in the experience at least a total length of not less than 120 km for designing sewer system.

#### **6.2 Personnel**

The consulting services are to be provided by an organization which brings together the full range of skills needed to meet the requirements of these TOR.

##### **6.2.1 Key experts**

All experts who have a crucial role in implementing the contract are referred to as key experts.

The Consultant's team shall include the following Key experts and be supported by other experts as considered necessary by the Consultant and as substantiated in his Tender:

- (1) Team Leader
- (2) Wastewater Designer
- (3) Lead Surveyor

First two key experts Team Leader and Designer shall permanently work for the Tenderer.

### **Key expert 1: Team Leader**

A Team Leader shall lead and coordinate the activities of the Consultant's project team. He is expected to be responsible for contractual matters and communication with the Contracting Authority as well as the relevant authorities. The Team is expected to participate to all meetings also in the premises of the Contracting Authority

#### Qualifications and skills

- 1) The Team Leader shall have a University degree in Water Engineering field or equivalent;
- 2) He/ She shall be fluent in English language, both written and oral;
- 3) General professional experience:
  - The Team Leader is expected to have at least 15 (fifteen) years of post-graduate professional experience in preparation and implementation of water or wastewater infrastructure projects.
- 4) Specific professional experience:
  - He/She shall have previous experience as Designer for design of minimum 3 (three) sewerage networks; and minimum of 8 (years) as Project Manager or Team Leader.
  - He/She shall have previous experience as Team Leader for design of minimum 3 (three) sewerage networks;
  - Previous experience in tender dossier preparation for sewerage network works contract under FIDIC Red book will be an asset;

### **Key experts 2: Wastewater Designer**

The Designer will be responsible for detailed design and tender documents preparation.

#### Qualifications and skills

- The Designer shall have a University degree in Water Engineering field or equivalent;
- He/She shall be fluent in English language, both written and oral;

#### General professional experience:

- The Designer is expected to have preferably 12 (twelve) years but not less than 7 (seven) years post graduate professional experience covering design of wastewater infrastructure;
- Specific professional experience:
  - He/She shall have previous experience as Designer of at least 5 (five) sewerage projects.

### **Key experts 3: Surveyor**

The lead surveyor will be responsible for the topographic al survey

#### Qualifications and skills:

- The Surveyor shall have minimum Diploma in Surveying from accredited surveying institute
- the surveyor shall be Certified with survey license in the country of the contracting authority

#### General professional experience:

- The Surveyor is expected to have preferably 7 (seven) year experience but not less than 3 (years) post graduate professional experience covering surveying of wastewater infrastructure;

#### Specific professional experience

- He/She shall have previous experience as license Surveyor of at least 3 (three) years, and has conducted surveying for minimum of three wastewater network projects

### **6.2.2 Other Experts (Non Key Staff)**

CVs for experts other than the key experts will be examined prior to the signature of the contract. They include but not limited to:

- ② Structural engineer at least 6 years' experience in similar projects.
- ② mechanical Engineer at least 10 year's experience in similar projects.
- ② Electrical Engineer at least 10 years' experience in similar projects.

The selection procedures used by the Consultant to select these other experts shall be transparent, and shall be based on pre-defined criteria, including professional qualifications, language skills and work experience.

The Consultant is responsible for other staff for secretarial, administrative and logistic support to the particular project. Cost for backstopping and support staff, as needed, are considered to be included in the global contract price.

The Consultant shall propose a team he considers appropriate for the provision of the required services, and the Consultant shall be fully responsible for the appropriateness of the team selected and its performance and outputs.

Note that civil servants and other staff of the public administration and or affiliated with the government cannot be recruited as experts, unless prior written approval has been obtained from the Contracting Authority.

### **6.3 Office accommodation**

The place of Service is foreseen to be at the Consultant's main Office. The costs of the office accommodation are to be covered by the global contract price including all the travelling costs.

### **6.4 Facilities to be provided by the Consultant**

The Consultant shall ensure that experts are adequately supported and equipped. In particular it shall ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities. The Consultant must also transfer funds as necessary to support its activities under the contract and to ensure that its employees are paid regularly and in a timely fashion.

Any means of transportation shall be provided by the Consultant and the expenses are deemed to be included in the corresponding fee rates.

If the Consultant is a consortium, the arrangements should allow for the maximum flexibility in project implementation. Arrangements offering each consortium partner a fixed percentage of the work to be undertaken under the contract should be avoided.

### **6.5 Equipment**

No equipment is to be purchased on behalf of the Contracting Authority/beneficiary country as part of this service contract or transferred to the Contracting Authority/beneficiary country at the end of this contract. Any equipment related to this contract, which is to be acquired by the beneficiary country, must be purchased by means of a separate supply tender procedure.

## **6.6 Incidental expenditure**

This are combined global price and fee-based services. The services which will be provided under fee-based approach are the following:

- (1) Geological and geotechnical survey;
- (2) Topographical survey;

The Consultant shall meet the full costs for the design teams, which will include all travel, remuneration, insurance, emergency medical aid, accommodation, offices and facilities, communications, printing and copying documents and all else necessary to reach the objectives of this Terms of reference.

## **7 REPORTS**

### **7.1 Reporting requirements**

The Consultant will submit the technical reports as described in the art 4.2, as follow:

- Inception report (Report 1)
- Preparatory planning report (Reports 2)
- Detailed design report/Tender documents for works (Reports 3)
- Tender documents for supply (Report 4)
- Concise Monthly Progress Reports (1 to 2 pages maximum)
- Ad-hoc Reports
- Final report

### **7.2 Submission & approval of reports**

All reports, design, tender documents, minutes, dossiers, etc. as requested under section 4.2 shall be submitted to the Contracting Authority in 4 (four) hard copies and 4 (four) electronic copies on CD ROM, unless otherwise directed.

## **Annex 1: MAP**