



# Terms of Reference



## Selection of Consultants

# Terms of Reference

for

Consulting Services and Construction Supervision for the  
Rehabilitation of Tanta WWTP and Mit Bader Halawa  
WWTP

<b>Ref. No./ Contract No.</b>	<b>1/GH/KP/Con/2022</b>
<b>Implementing Entity</b>	<b>Gharbia Company for Water and Wastewater</b>
<b>Loan Operation No.</b>	<b>No FI 87454 Serapis No 2017/0090</b>
<b>Issue Date</b>	<b>April 2023</b>



## List of Abbreviations

ADB	Asian Development Bank
Consultant	Detailed Design and Construction Supervision Consultant (The Consultant)
DLP	Defects Liability Period
DEIA	Detailed Environmental Impact Assessment
EBRD	European Bank for Reconstruction and Development
EEAA	Egyptian Environmental Affairs Agency
EIB	European Investment Bank
E&S	Environmental and Social
ESIA	Environmental and Social Impact Assessment
EU	European Union
EUR / €	Euro
FIDIC	International Federation of Consulting Engineers
GIS	Geographical Information System
Gharbia WSC	Gharbia Company for Water and Wastewater
H&S	Health and Safety
HCWW	Holding Company for Water & Wastewater
ICB	International Competitive Bidding
IFI	International Financial Institutions
ISSIP	Integrated Sanitation and Sewerage Infrastructure Project
IWSP I	Improved Water and Wastewater Programme – Phase I
IWSP II	Improved Water and Wastewater Programme – Phase II
KE	Key Expert
MHUUC	Ministry of Housing, Utilities and Urban Communities
NIP	Neighbourhood Investment Platform
NKE	Non-key Expert
NOPWASD	National Organization for Potable Water and Sanitary Drainage
NSRP	The National Rural Sanitation Programme
O&M	Operation and Maintenance
PIC	Project Implementation Consultant
PPMS	Project Performance Management System
RB / Red Book	FIDIC Conditions of Contract 1999 For Building and Engineering Works designed by the Employer
SRSSP	Sustainable Rural Sanitation Services Program
TEC	Technical Evaluation Committee
TOR	Terms of Reference
TSPA	Travel Safe Plan of Action
WSC	Water and Sanitation Company
WSRP	Water Sector Reform Programme
WSRP-II	Water Sector Reform Programme – Phase II
WWTP	Wastewater Treatment Plant
YB / Yellow Book	FIDIC Conditions of Contract 1999 For Electrical & Mech. Plant & For Building & Engineering Works Designed by the Contractor



# Terms of Reference (TOR)

Consulting Services and Construction Supervision for the Rehabilitation of Tanta WWTP and Mit Bader Halawa WWTP of Kitchener Drain Projects in Gharbia Governorate, implemented by Gharbia Company for Water and Wastewater (Gharbia WSC)

## 1. Implementing Entity

The Implementing Entity for this assignment is Gharbia Company for Water and Wastewater (Gharbia WSC)

## 2. Relevant Country Background

### General Background

Egypt's population is increasing by about 2 million individuals per year and stood at 96.3 million in 2018. The rapid increase in population is straining the country's infrastructure endowment and public service delivery.

Egypt is an arid country covering an area of approximately 1 million km<sup>2</sup>. It is also the most populous country in the Middle East / North Africa (MENA) with 55% of the total population living in rural areas. In addition, the vast majority of the country's residents live on the narrow strip of arable land along the Nile Valley. Therefore, rapid population growth results in higher population density in both urban and rural environments as well as competition for water resources that are becoming scarcer. Moreover, high population density, population growth and inadequate solid waste services and infrastructure lead to significant pollution through solid wastes both in urban and rural contexts.

## 3. Background on Project

### Description of the Kitchener Drain Project Scope

The Kitchener Drain project is the first phase of a larger investment programme aiming at the integrated depollution of the Kitchener Drain through three investment Components in:

- (i) wastewater and sanitation,
- (ii) solid waste, and
- (iii) drain infrastructure rehabilitation.

A pre-feasibility study, funded by the EU and executed under the supervision of the EU Mediterranean Hot Spots Investment Programme (MeHSIP II), was undertaken in 2017 to prepare the project. The pre-feasibility study intended to increase sanitation coverage in the



rural areas of the Kitchener Drain catchment by 25.4% (either through connection to a centralised sewage network or by providing improved on-site sanitation facilities) and provide an additional 122,000 m<sup>3</sup>/d of wastewater treatment capacity along with the rehabilitation of up to 5 existing WWTPs in the catchment area. In addition, the project would provide solid waste facilities (in the form of a collection system, transfer stations, separation facilities and sanitary landfills) for 4,800 tonnes/day of solid waste from both urban and rural areas of the catchment area. Finally, the Kitchener Drain itself and its subsidiary drains would be restored by removing accumulated waste and debris and rehabilitating auxiliary facilities such as pumping stations and bridges.

The first phase, comprising the most urgent investments, will be co-financed by the EU (grant from the NIP), EIB and EBRD. EIB financing will focus on the wastewater and sanitation project components and EBRD financing will focus on the solid waste and drain rehabilitation project components. Correspondingly, EIB will act as Lead Finance Institution in respect to the portion of the EU NIP Grant dedicated to wastewater and sanitation while EBRD will act as Lead Finance Institution in respect to the portion of the EU NIP Grant dedicated to solid waste and drain rehabilitation.

The overall objectives of the project are to support the depollution of the Kitchener Drain and the Mediterranean Sea as well as to improve the health and environmental situation of the people living in the project's catchment area.

## **Project Stakeholders**

The key Egyptian stakeholders for Component 1 of the project (and therefore the key counterparts under this assignment) are:

### Ministry of Housing, Utilities and Urban Communities (MHUUC)

The MHUUC is responsible for the provision of water supply and sanitation services to the municipal and industrial subsectors. Under the MHUUC (i) the National Organization for Potable Water and Sanitary Drainage (NOPWASD), (ii) Construction Authority for Potable Water and Wastewater (CAPW), (iii) New Urban Communities Authority (NUCA), and (iv) the Egyptian Water and Wastewater Regulatory Agency (EWRA) along with their respective affiliated agencies, are responsible for planning, design, construction supervision, operation and maintenance of the municipal drinking water treatment plants, water supply distribution systems, sewage collection systems, and municipal WWTPs.

A Programme Management Unit (PMU) has been established in the office of the MHUUC with a mandate to take the National Rural Sanitation Programme forward while reporting directly to the Office of the Minister.

### Holding Company for Water and Wastewater (HCWW)

In 2004, the HCWW was created under the public business sector and the remit of the Minister of Housing, Utilities and Urban Communities as the Government embarked on a reform of the wastewater sector in the country. A key element of this reform was the issuance of Presidential



Decree 135, establishing HCWW and transforming the 14 largest water and wastewater utilities into its subsidiaries. HCWW has since then added and/or created an additional 11 utilities under its umbrella, resulting in 25 companies directly reporting to it. HCWW at the parent level is responsible for managing the operational, administrative, financial and commercial performance of its water / wastewater subsidiaries.

### The Gharbia Company for Water and Wastewater

The Gharbia Company for Water and Wastewater (Gharbia WSC) is one of HCWW's affiliated companies and serves the population of the Gharbia Governorate (total of around 5.4 million inhabitants) in the northern Nile delta. The total length of the potable water network operated by Gharbia WSC is 3,850 km. In total, the company operates 44 water treatment plants and 33 WWTPs. Gharbia WSC is also one of the final beneficiaries of the IWSP I project and SRSSP. The company's equity capital is EGP 2.16 billion (EUR 103 million) as of 2017. It currently employs 6,009 staff

### Project Implementation Consultant (PIC)

The PIC has been employed by the EIB to support the MHUUC, HCWW and Gharbia WSC for the completion of Component 1 of the Kitchener Drain Project.

The mandate for the PIC is multi-fold and includes supporting the MHUUC/HCWW and the implementing entities in the following:

- (i) Planning and managing the completion of Component 1 of the Kitchener Drain Project,
- (ii) Preparing the ground for a successful transition into the operation phase, and
- (iii) Creating capacities among their personnel for managing sanitation projects.

The PIC will support the MHUUC/HCWW and the implementing entities in ensuring that the Consultant perform their quality control and supervisory role effectively so that the Works Contracts are implemented in accordance with the requirements of the specifications and performance criteria.

The PIC will support the MHUUC/HCWW and implementing entities in establishing a monitoring system to facilitate regular feedback on the Contractors' compliance with the specifications. Audit and review of environmental, social and health and safety performance of Contractors and construction works will be an integral aspect of this task.

The PIC will support the implementing entities in administering all the contracts (both Service and Works contracts), which will involve inter alia the following:

- Monitoring the progress of all the contracts under the project, identifying reasons for any delays and recommending mitigating measures.
- Receiving and resolving any queries raised regarding design issues or changes that may need to be made.



- Considering variation orders requests and coordinating with the implementing entities and the EIB and issuing variation orders once agreed.
- Monitoring the budget and cash flow of all the contracts.
- Planning and implementing monthly site reports from the Consultant.
- High-level contract management using the advice and expertise from the Consultant, in particular making timely decisions on variations and claims and handling and resolving any claims submitted to the Consultant from the Contractors.
- Approving and processing payments to Consultant and Contractors and suppliers.
- Implementing the payment procedures and processing the payments to the Consultant and Contractors.
- Obtaining permits expeditiously.
- Review, , a monthly programme monitoring system prepared by the Consultant included:
  - Identify actual progress against planned progress,
  - Identify issues and / or reasons causing any delays,
  - Flag any issue that may have a cost impact,
  - Monitor and manage environmental, social and health and safety risks, and
  - Discuss the environmental mitigating measures proposed by the Consultant and to be implemented by the Contractor.

## 4. Objectives of the Assignment

The Gharbia WSC wishes to engage the services of one Consulting firm to perform the role of the Detailed Design Consultant (Consultant), including the role of construction supervision Engineer.

The Consultant will be contracted to the Gharbia WSC but will liaise extensively with the PIC in order for the PIC to fulfil their duties as described above.

The objective of the Consultant assignment is to provide consulting services to achieve the following:-

- 1- Provide design review of Contractor's submissions and supervise the demolition of the existing Tanta WWTP (streams 1 and 2) and construction, in its location, of a new wastewater treatment plant with an average capacity of 100,000 m<sup>3</sup>/d to meet the requirements of target year 2037, while the layout shall be furnished to meet the requirements of target year 2057 with an average flow of 150,000 m<sup>3</sup>/d. The contract with the Contractor shall be under the FIDIC Conditions of Contract Yellow Book 1999 "FIDIC Conditions of Contract for Plant & Design-Build (1999) for Electrical & Mech. Plant & For Building & Engineering Works Designed by the Contractor".
- 2- The design and supervision of the rehabilitation of Mit Badr Halawa WWTP with existing average capacity of 5,000 m<sup>3</sup>/d under the FIDIC Conditions of Contract for Construction (1999) for Building and Engineering Works designed by the Employer. ..





(The intention is to procure one Consultant to undertake the work at both Tanta and Mit Badr Halawa).

#### 4.1 Background for Tanta WWTP

- Tanta WWTP is located about 1 km from Tanta on the main road between Tanta and Al Mahalla cities.
- The existing wastewater treatment plants consists of three streams (Tanta 1, 2, and 3) All the three streams are consist of a conventional activated sludge process with the following designed capacity
  - Tanta 1 = 60,000 m<sup>3</sup>/d
  - Tanta 2 = 30,000 m<sup>3</sup>/d
  - Tanta 3 = 60,000 m<sup>3</sup>/d
- Tanta WWTP is discharging its treated effluent into the Sibrbay drain by gravity with an effluent pipe of 1500mm diameter.
- Tanta WWTP 1&2 has not been operational for a considerable time and the main structural and mechanical components of the WWTP are beyond economic repairs.
- Tanta 1 WWTP consisted of the following main units
  - Inlet deceleration chamber
  - (3) coarse mechanical screens
  - (3) medium mechanical screen
  - (2) manual screens
  - (4) aerated grit removal chambers
  - (6) rectangular primary sedimentation tanks
  - (4) rectangular aeration tanks
  - (8) circular final sedimentation tanks
  - (2) circular sludge thickener tanks
  - (124) rectangular drying beds
  - (4) screw return activated sludge pumps
  - (2) excess activated sludge submersible pumps
  - (2) primary sludge submersible pumps
  - (4) supernatant submersible pumps
  - (2) rectangular chlorine contact tanks
  - (1) chlorine house building with 9 chlorine cylinder and chlorination dosing system
  - Electrical building including substations and transformer and generator buildings and control panels
- Tanta 2 WWTP consisted of the following main units
  - Inlet deceleration chamber (common with Tanta 1)
  - Coarse mechanical screens (common with Tanta 1)
  - Medium mechanical screen (common with Tanta 1)
  - Manual screens (common with Tanta 1)





- (2) aerated grit removal chambers
  - (2) rectangular primary sedimentation tanks
  - (2) rectangular aeration tanks
  - (4) circular final sedimentation tanks
  - (1) circular sludge thickener tanks
  - (152) rectangular drying beds
  - (2) screw return activated sludge pumps
  - (2) excess activated sludge submersible pumps
  - (1) primary sludge submersible pumps
  - (2) supernatant submersible pumps
  - (1) rectangular chlorine contact tanks
  - (1) chlorine house building with 5 chlorine cylinder and chlorination dosing system
  - Electrical building including substations and transformer and generator buildings and control panels (common with Tanta 1)
- In parallel with this Service Contract, the PIC shall issue the Works Contract tender documents for the construction works for the new Tanta streams 1 and 2 based on FIDIC Conditions of Contract for Plant & Design-Build (1999) for Electrical & Mech. Plant & For Building & Engineering Works Designed by the Contractor. (The PIC shall provide the Tanta 1 and 2 stream outline design for this purpose with an average design capacity of 100,000 m<sup>3</sup>/d for target year and 150,000 m<sup>3</sup>/d for target year 2057).
  - The Consultant shall conduct and support Gharbia WSC during the technical and financial evaluation of the bids received, awarding process. Performing the role of the Engineer, the Consultant shall review and approve the detailed design submitted by the Contractor, and supervise the construction, operation and maintenance of the plant and support the Gharbia WSC during the handover procedure from the Contractor.
  - The Consultant shall support WSC during the operation and maintenance year and the training period for one year.

#### 4.2 Background for Mit Badr Halawa WWTP:

- The Mit Badr Halawa WWTP is in a poor condition with the working load below capacity and not meeting the environmental requirements.
- To bring the WWTP back to optimum operating conditions the WWTP needs to be rehabilitated which will involve structural, mechanical, and electrical rehabilitation works.
- Mit Badr Halawa WWTP consisted of the main following units
  - (1) Main inlet reception tank
  - (1) Mechanical Bar Screen
  - (1) Grit removal with three channels
  - (1) Aeration tank with 2 surface aerators
  - (1) Secondary settling Tank
  - (2) Sludge Thickeners



- (1) Chlorine contact tank
  - (1) Chlorination system
  - Recycle activated sludge pump station
  - Waste Activated Sludge (excess Sludge) pump station
  - (19) Sludge drying beds
- The Consultant shall review the status assessment report issued by PIC, conduct technical site visits to evaluate the technical status and performance of all civil and electromechanical components of the plant (this might entail temporary draw down of levels in the plant to survey the concrete condition), conduct a detailed assessment of the plant, specify all rehabilitation works needed for the plant, prepare the rehabilitation works design report, issue the tender documents (10 hard copies and 3 CDs) for rehabilitation works using the FIDIC Conditions of Contract Red Book 1999 “FIDIC Conditions of Contract for Construction (1999) for Building and Engineering Works designed by the Employer”, support the Gharbia WSC in the technical and financial evaluation of the bids received, assist in the awarding process. Performing the role of the Engineer, the Consultant shall review and approve the works methodology and workshop drawings submitted by the Contractor, and supervise the rehabilitation works, operation and maintenance of the plant and support the Gharbia WSC during the handover procedure from the Contractor.
  - The Consultant shall support WSC during the operation and maintenance year and the training period for one year

## 5. Scope of Work

### Package 1

#### 5.1 Tanta WWTP

- The consultant shall review all the tender documents submitted by the PIC for Tanta WWTP design and build system, including all the functional designs of treatment plant and equipment prepared by the Project Implementation Consultant (PIC) for Tanta WWTP, and according to the standard model of the tender documents approved and in accordance with the guide of procurement procedures and contracts applied to the project
- The Consultant shall support Gharbia WSC during the technical and financial evaluation of the bids received.
- The Consultant shall provide technical assistance to the Gharbia WSC and prepare all necessary reports for approval from the Gharbia WSC and PIC during all stages of bidding for the award of design and build contracts in accordance with the instructions of the "Procurement procedures and contracts manual" PPM<sup>1</sup>. These include but not limited to participating in the opening of bids, organize the meeting with TEC and

<sup>1</sup> A copy from the PPM will be provided to the DDC consultant upon contract signature.



meeting with bidders and prepare the minutes of meeting, assisting the PIC in answering all questions and inquiries of bidders or supply companies involved in tenders for the scope of its work, conduct the technical and financial evaluation of the received bids, give the proper advise to the bidding evaluation committee, prepare the combined technical and financial evaluation report, support Gharbia WSC in awarding procedure to the Contractor, in accordance with the EIB requirements as set out in the EIB Guide to Procurement, as well as preparing the notification of awarding and draft of the contract agreement to the Contractor

- Following award of the Works Contract, the Consultant will review and seek approval from the PIC for the detailed design submitted by the Contractor.
- The Consultant shall perform the role of the Engineer in accordance with the “FIDIC Conditions of Contract for Plant & Design-Build (1999) for Electrical & Mech. Plant & For Building & Engineering Works Designed by the Contractor”..
- The Consultant shall supervise the defects liability period (DLP), the operation and maintenance of the plant and support the Gharbia WSC during the handover procedure from the Contractor.
- The Consultant shall supervise the training carried out by the Contractor to a Gharbia WSC operation staff on the operation and maintenance of the treatment plant.

## **Package 2**

### **5.2 Mit Badr Halawa WWTP**

- The Consultant shall review the preliminary assessment report (prepared by the PIC) for the required rehabilitation works for the treatment plant for all civil and electromechanical works.
- The Consultant shall conduct several technical site visits with the purpose of evaluating and assessment the technical status of all civil and electromechanical works required for the rehabilitation of the treatment plant.
- The Consultant shall submit the assessment report of the works required to the Gharbia WSC and PIC for approval.
- The Consultant shall prepare the tender documents (based on the FIDIC Conditions of Contract for Construction (1999) for Building and Engineering Works designed by the Employer for the rehabilitation works. Submit 10 hard copies and 3 CDs of the approved tender documents.
- The Consultant shall provide technical assistance to the Gharbia WSC and prepare all necessary reports for approval from the Gharbia WSC and PIC during all stages of



bidding for the award of Building and Engineering contracts in accordance with the instructions of the "Procurement procedures and contracts manual". These include but not limited to participating in the opening of bids, organize the meeting of TEC and meeting with bidders and prepare the minutes of meeting, answering all questions and inquiries of bidders or supply companies involved in tenders for the scope of its work, conduct the technical and financial evaluation of the received bids, give the proper advise to the bidding evaluation committee, prepare the combined technical and financial evaluation report support Gharbia WSC in awarding procedure to the Contractor, in accordance with the EIB requirements as set out in the EIB Guide to Procurement, as well as preparing the notification of awarding and draft of the contract agreement to the Contractor.

- Following award of the Works Contract, the Consultant will review and seek approval from the PIC for the workshop drawings submitted by the Contractor.
- The Consultant shall perform the role of the Engineer in accordance with the FIDIC Conditions of Contract for Construction (1999) for Building and Engineering Works designed by the Employer for rehabilitation works.
- The Consultant shall supervise the operation and maintenance of the plant and during the defects liability period DLP, and support the Gharbia WSC during the handover procedure from the Contractor.
- The Consultant shall supervise the training carried out by the Contractor to a Gharbia WSC operation staff on the operation and maintenance of the treatment plant.

## 6. Consultant Duties and Methodology

In addition to the general requirement above, the tasks of the consultant shall comprise the following duties related to the project components described above.

- Design review of Contractor's design submissions in accordance with the FIDIC Conditions of Contract 1999 For Electrical & Mech. Plant & For Building & Engineering Works Designed by the Contractor.
- Preparation of detailed design of rehabilitation works and Tender Documents for Mit Badr Halawa WWTP
- Assistance to the PIU for tendering and contracting for both WWTP
- Supervision of construction and project management for both WWTP
- Assistance to the PIU during the operation and maintenance period and during the defects liability period for both WWTP



- Assistance to the PIU during the training period for both WWTP

## 6.1 Tanta WWTP

### 6.1.1 Assistance to the PIU in Tendering and Contracting (Tanta WWTP)

- The Consultant shall carefully review the tender documents for design and build treatment plants, including all functional designs of treatment plants and equipment issued by PIC and raise his concerns, if any to the PIU/PIC.
- The Consultant shall coordinate with PIC to respond to all inquiries raised by the bidders during bidding period after the approval of PIC.
- With regard to Tendering and Contracting, the Consultant shall assist the PIU in organising the whole tendering process for supply and construction services (civil works / mechanical / electrical equipment, pipes and other supplies, installation, pipe laying and other construction services). The Tanta WWTP contract shall be tendered as a design/build contract (FIDIC Yellow Book). Works and Supplies will in general be tendered internationally, through ICB, where Supply contracts are > € 150,000 and Works contracts are > € 5.0 million. Chances of employment shall be given to regional companies as subcontractors and the local population shall have a sufficient chance of employment. The individual tasks in this section shall include, but not be limited to, the following:
  - Providing assistance in implementing the tendering procedures and performing the tender evaluation, preparing the required tender evaluation reports, and providing recommendations for contract award; and
  - Providing assistance in contract negotiations and preparation of contract documents.
  - The following output is required from the Consultant
    - Minutes of Meeting for Pre-bid meeting
    - Clarification response for inquiries raised by the bidders
    - Minutes of meeting with TEC
    - Clarification raised by the TEC to bidders
    - Technical evaluation report
    - Combined technical and financial tender evaluation reports and obtain EIB no objection
    - Minutes of Meetings of Negotiations Meetings
    - Letter of intent of the award
    - Notification of the losing Bidders if required
    - Prepare Contract Documents





- Ensure E&S compliance and achievement the required outcomes of the CESMP/OESMP, through:
  - • Ensure that resources needed for the implementation of the ESMS are available
  - • Communicate the importance of effective environmental & social management for all those involved in the day-to-day management of the Project and ensure appropriate lines of communication on environmental and social issues,
  - • Ensure regular updates to the ESMS are undertaken to ensure that it remains appropriate to the purpose and context of the project, and that any change of direct and indirect impacts are identified and managed accordingly
  - To ensure proper implementation and operation of all activities of the Project in conformance with the environmental and social covenants which include the ESMP, national and EIB laws, regulations and standards, and internationally recognized best practices requirements through appropriate monitoring Programme.
  - To prepare the "Environmental Register" and frequently complete it, in accordance with EEA regulations and receive EEA inspection missions in this regard.
  - To prepare necessary reports related to the assessment of environmental conditions and data review, and to assess the impacts of the project requested by the donor or any pertained governmental authority and prepare or coordinate the preparation of monthly E&S reports and E&S compliance Audit reports in a timely manner using performance indicators and benchmarks.

## 6.2 Mit Badr Halawa WWTP

### 6.2.1 Preliminary Design Phase of Rehabilitation Works (Mit Badr Halawa WWTP)

The scope of works at Mit Badr Halawa WWTP are not just a like for like refurbishment but require additional units such as grit channels.

The tasks to be performed during the Preliminary Design phase of the Consultant Services shall include, but not necessarily be limited to, the following:

1. Collect and assess available data, reports, existing drawings and plans relating to Mit Badr Halawa WWTP, as well as consult with authorities and individuals affected by the execution of the Project;
2. Assess available influent and effluent analyses and organise additional analyses, as needed.





3. Update or create drawings of the existing WWTP layouts, process units, pipework, structures, buildings and other existing installations through extensive and comprehensive field inspections and topographic surveying and assess the quality (structural integrity and treatment effectiveness) of the existing installations.
4. Verify and evaluate the design capacities of the existing WWTP with regard to influent loads, treatment, chlorination, sludge handling and effluent disposal facilities.
  - Perform an Option Analysis for optimal choice of works for process improvement, rehabilitation, taking into account land availability and environmental constraints. For the general process design of the WWTP, as well as for certain design features, such as the aeration system, sludge dewatering system, etc., there are various alternatives, and the selection of an alternative will have a major impact on the future O&M costs of the plant. The Consultant shall conduct an Option Analysis whenever there is more than one alternative. The option analysis shall cover the design considerations described in Subsection 6.2.2 and any alternatives which the Consultant considers appropriate.

Each option analysis shall include the following components:

- Definition of appropriate alternatives for the issue to be analyzed. (Those contained in Subsection 6.2.2 “Design Concerns and Alternatives to be considered” herein under and any alternatives which the Consultant considers appropriate). Alternatives shall be grouped into:
  1. Facilities that can be constructed on the existing WWTP site owned by the WSC.
  2. Facilities that require the WSC to acquire additional land for the WWTP Extension.
- Presentation of the alternatives by means of meaningful sketches, e.g. site layout plans and basic flow diagrams, etc.
- Preliminary Design of each alternative option in sufficient detail to obtain reliable estimates of the capital and operational costs associated with each option.
- Calculation of the required investment costs for each alternative, itemized into civil works and mechanical-electrical equipment.
- Calculation of the corresponding O&M costs for each alternative (running costs which are the same for each alternative need not be considered in order to highlight the differences between the alternatives).
- Calculation of the Net Present Value (NPV) of each alternative. Prior to making the calculation, the Consultant shall agree with Gharbia Company for Water and Wastewater on the values to be used for the main parameters, such as useful life for civil works and mechanical-electrical equipment, the discount rate, the cost of electricity, etc.)
- Consideration of non-monetary decision criteria, e.g. complexity of operation.



- Final recommendation based on the Net Present Value comparison and non-monetary criteria.
5. Establish appropriate design criteria for the works. All design criteria shall be in accordance with International/Egyptian standards and regulations and shall be discussed and agreed with the PIU.
  6. Determine required topographical surveys (reference to the national grid), analyses, required geotechnical investigations, or other research required for the design of the works. Where possible, commence these surveys and investigations.
  7. For the recommended design, the Consultant shall develop a Plan for the construction of new facilities and the renovation of existing facilities which keep the existing WWTP treating the incoming wastewater. The number of units of each type removed from service at any one time shall be minimized.

The principal results from this Preliminary Design phase of the Services shall be presented in a Preliminary Design Report to be submitted in English within four months from the start of the Consulting Services.

#### **6.2.2 Design Concerns and Alternatives to be Considered (Mit Badr Halawa WWTP):**

- This plant was originally designed only to treat the wastewater with low BOD coming from Trenches, so grit removal channels are not included.
- The situation has been changed, the plant has to treat WW comes from houses not from trenches, consequently it has huge amounts of grits and high concentration of BOD.
- The WW influent chamber has to be cleaned very often meanwhile there is no pipe and valve to facilitate this mission.
- The grit goes to settle in every aeration tanks and secondary clarifiers, so the plant looks hydraulically overloaded in spite of the current capacity is only 70 % of the design capacity.
- The screens are not adequate, so the screenings go to the aeration tanks and gathered around the aerators.
- The secondary clarifiers are rectangular meanwhile the scrapers are of circular type, so denitrification always happens at the tanks corners causing low WW treatment efficiency.
- The sludge thickener is very deep, has no scraper, the operator de-sludge it once a week (about 60 m<sup>3</sup>/week).
- Only one wet well to gather the activated sludge from the secondary clarifier, the sludge drying beds drainage water, and the plant raw wastewater, this means very diluted return activated sludge which negatively affects the biological treatment.
- There are no meters for WW flow, DO, pH.
- Chlorination system using powder does not look effective with the effluent in the chlorine contact tank looking very bad.



- WW and Sludge treatment process is out of control.

#### Recommended Solutions

- Regular and continuous raw WW should be maintained. This may need addition of Equalization or Balance tank.
- This plant needs all the necessary modification to cope with the recent situation such as:
  - Pretreatment facilities consist of bigger inlet room, mechanical screens, and grit removal channels with scrapers and sand pumps.
  - New more efficient Aerators.
  - Additional construction to prevent denitrification in the secondary clarifiers.
  - Another sludge thickener with scraper.
  - One wet well specified only for the activated sludge.
  - Another wet well for drainage water.
  - New chlorination system using gas.
  - Meters for WW flow, DO, and pH.
  - Supply the plant with new more efficient pumps for the activated sludge and the drainage water.
  - Supply the existing WW analysis lab with more effective equipment and devices.

#### 6.2.3 Preparation of Final Design and Tender Documents (Mit Badr Halawa WWTP)

The detailed design and the tender documents shall be prepared in English and Arabic, where any conflict the English version shall prevail except the technical specification and drawings to be submitted in English only, The tender documents shall be prepared in such detail that there will be no additional detailed engineering necessary on the part of the respective suppliers and Contractors. Suppliers and Contractors should be in the position to offer and supply the required goods and construction services based on the documents prepared by the Consultant. The individual tasks that the Consultant shall carry out are:

1. Topographical survey of all sites and alignments as required for the final design of the planned WWTP improvements.
2. Execution of other surveys, in particular geotechnical surveys, including field and laboratory testing, evaluation of test results and preparing geotechnical reports, as required for the final design of the proposed works. Adequate information shall be provided for the structural engineer to produce the foundation design and recommended methods shall be included for the implementation of dewatering systems and the shoring of excavations.
3. Process, hydraulic design, and detailed design of the WWTPs for new facilities and rehabilitation/ extension of existing units, as required. The Final Design shall include:
  - A. Process design calculations for:



- a. Design of the screening station including an estimation of the daily/annual amounts of screenings.
  - b. Design of the grit and grease removal tanks (if applicable) including an estimation of the daily/annual amounts of grit.
  - c. Design of the aeration tanks showing the design basis (sludge age, F/M-ratio, volume required, tank depth, etc.)
  - d. Design of the aeration system showing the design basis (oxygen demand, size and number of aeration equipment required)
  - e. Design of the secondary clarification tankage showing the design basis (surface and solids loadings, and tank depth) including a calculation of the daily amounts of secondary sludge produced
  - f. Design of the RAS / WAS pumping station
  - g. Design of the disinfection facilities
  - h. Design of the sludge thickener(s) showing the design basis (surface and solids loadings, and tank depth)
  - i. Design of the sludge dewatering units (sludge drying beds) showing the design basis including filtrate pumping station, if required
  - j. Design of the WWTP internal service water supply system
  - k. Design of the WWTP internal wastewater and storm drainage systems
- B. Hydraulic calculation of all treatment stages for a) minimum flow, b) average flow and c) maximum flow. The results shall be presented in the form of hydraulic calculations and as a hydraulic profile of the plant (see list of required drawings given below)
- C. List of all equipment consuming electrical power, such as pumps, blowers, scrapers, lightning, air conditioning, etc.
- D. List of the required instrumentation and types of devices to be used for each.
- E. Design Report summarizing the main design parameters, the general process design scheme adopted, and describing each treatment stage, including main dimensions (volume, length, width, height), selected mechanical equipment (main characteristics, particularities, number of units).
- F. Required drawings:
- a. Site layout plan showing all structures, connecting pipelines, gravity sewers, electrical cables.
  - b. Site layout plan showing access roads and paths, including levels and slopes.
  - c. Site layout plan showing the green areas.
  - d. Hydraulic profile of the plant (Horizontal Scale 1:100; Vertical Scale 1:20 or similar).
  - e. Detailed drawings for each structure including a plan view, cross sections, elevations, etc. Scale 1:50 for smaller structures, such as pumping stations and distribution chambers and Scale 1:100 for larger structures such as aeration tanks and clarifiers.



- f. Longitudinal section (profile) of the gravity effluent pipeline, including details of the discharge point, showing the intended method of protecting the embankment
  - g. Drawings for all temporary structures or installations, which are required to allow the construction and installation work while the plant is in operation (bypasses, overflow chambers, etc.)
  - h. Process and Instrumentation (P&I) Diagram
4. Specifications for all machinery, equipment and tools required for operation and maintenance of the WWTPs;
  5. Elaboration and definition of appropriate lots for supplies and construction works (contract packaging);
  6. Preparation of all documents necessary to enable tendering of supplies and construction services according to FIDIC Conditions of Contract for Construction (1999) for Building and Engineering Works designed by the Employer for ICB contracts. Note that templates for sets of standard tender and contract documents have been prepared by the PIC for use on the Kitchener Project. The Consultant shall use these wherever applicable. The Consultant shall submit 10 hard copies and 3 CD of the tender documents.
  7. Detailed confidential cost estimates of supplies and construction works. This activity shall be carried out with special care in order to avoid financial difficulties during the tender process.

### 6.3.5 Assistance to The PIU In Tendering and Contracting (Mit Badr Halawa WWTP)

- With regard to Tendering and Contracting, the Consultant shall assist the PIU in organising the whole tendering process for supply and construction services (civil works / mechanical / electrical equipment, pipes and other supplies, installation, pipe laying and other construction services). Mit Badr Halawa WWTP contract shall be tendered as detailed design construction contract (FIDIC Red Book – FIDIC Conditions of Contract for Construction (1999) for Building and Engineering Works designed by the Employer). Works and Supplies will in general be tendered internationally, through ICB, where Supply contracts are > € 150,000 and Works contracts are > € 5.0 million. Chances of employment shall be given to regional companies as Subcontractors and the local population shall have a sufficient chance of employment. The individual tasks in this section shall include, but not be limited to, the following:
  - Providing assistance in implementing the tendering procedures and performing the tender evaluation, preparing the required tender evaluation reports, and providing recommendations for contract award; and
  - Providing assistance in contract negotiations and preparation of contract documents.





- The following output is required from the Consultant
  - Minutes of Meeting for Pre-bid meeting
  - Clarification response for inquires raised by the bidders
  - Minutes of meeting with EC
  - Clarification raised by the TEC to bidders
  - Technical evaluation report
  - Combined technical and financial tender evaluation reports and obtain EIB no objection
  - Minutes of Meetings of Negotiations Meetings
  - Letter of intent of the award
  - Notification of the losing Bidders if required
  - Prepare Contract Documents
- Ensure E&S compliance and achievement the required outcomes of the CESMP/OESMP, through:
  - • Ensure that resources needed for the implementation of the ESMS are available
  - • Communicate the importance of effective environmental & social management for all those involved in the day-to-day management of the Project and ensure appropriate lines of communication on environmental and social issues,
  - • Ensure regular updates to the ESMS are undertaken to ensure that it remains appropriate to the purpose and context of the project, and that any change of direct and indirect impacts are identified and managed accordingly
  - To ensure proper implementation and operation of all activities of the Project in conformance with the environmental and social covenants which include the ESMP, national and EIB laws, regulations and standards, and internationally recognized best practices requirements through appropriate monitoring programme.
  - To prepare the "Environmental Register" and frequently complete it, in accordance with EEAA regulations and receive EEAA inspection missions in this regard.
  - To prepare necessary reports related to the assessment of environmental conditions and data review, and to assess the impacts of the project requested by the donor or any pertained governmental authority and prepare or coordinate the preparation of monthly E&S reports and E&S compliance Audit reports in a timely manner using performance indicators and benchmarks.





## 6.3 Supervising the Construction and Implementation of the Works Contracts (Tanta and Mit Badr Halawa WWTP)

### 6.3.1 Specific Activities During Implementation (Tanta and Mit Badr Halawa WWTP)

The scope of work of the Consultant during the Implementation Phase is to perform the role of the Engineer including the oversight of the Contractor's activities in the execution of the Works Contracts. The Consultant will interface with the Contractor and be responsible on behalf of Gharbia WSC for the inspection and supervision of the entire works. In supervising the construction works the Consultant will perform the duties of "the Engineer," as defined in the relevant FIDIC Conditions of Contract for Construction in all matters concerning the Works Contracts and as modified by the particular conditions of contract.

The Engineer will supervise the execution by the Contractor of all construction works related to the Contract, verifying that the Contractor executes the works according to the plans and specifications, project schedule and budget and provide support to the PIC and Gharbia WSC at all stages of project implementation. The duties and responsibilities of the Engineer shall include but will not be limited to the following:

- Review of all engineering documents, designs and Contract documents to familiarize itself with the scope, quality and budget prior to construction works
- Conduct site visits with Gharbia WSC / PIC to familiarize itself with the project areas
- Review and study all contract documents (contract conditions, technical specifications, bill of quantities, time schedule. etc.) before the actual implementation of the site and make sure that the Contractor performs all the tasks stipulated in the contract of the works and provide all the required insurance forms according to the contract.
- Review Contractor's construction schedules, cash flows, human resources and equipment submitted by the Contractor and ensured adherence to the schedule as well as recommend changes where necessary. The consultant shall request the Contractor to provide an updated schedule with new dates when progress is not according to the construction schedules and report deviations from the schedule that may delay project's completion.
- Arrange and conduct Pre-construction Kick-off meetings with the PIC and Gharbia WSC, and the Contractor to review scope of works, project management, project schedule and project procedures, methodology, method statement, timing of deliverables.
- Develop and implement procedure for processing and approving designs and as-built drawings, Product data, samples and other submittals from the Contractors.
- Review and approve the organizational structure of the Contractor's staff dedicated to the implementation of the project (main Contractor – subcontractors).
- Supervise and inspect Contractor's construction activities as specified in the Contract and in accordance with the project objectives.



- Review and adopt methodology of construction for all works, especially manoeuvring, modifications, transfers, etc., and all works that require certain operational steps before starting implementation.
- Set-out benchmarks and hand-over complete information to the Contractors to enable them to proceed with the detailed setting out of works
- Verify the location and marking of the primary survey control points that Contractors propose to establish survey control systems for the works
- Review the topographical survey, soil investigation and boreholes, and workshop drawings submitted by the Contractor and match them with the tender documents and then approve them for construction.
- Review and supervision of site enablement plan prepared by the Contractor including all site constraints that may have an impact on the project design and all site preparation works that might take place prior the constructions for the works. This task will allow to identify all the site specificities so as to clearly define in the Tender Documents the enabling works that the Contractor will have to wastewater treatment project facilities perform.
- Review and approve the plan to apply quality standards on the site as well as the quality assurance plan submitted by the Contractor.
- Review and approve the Health and Safety Management Plans (HSMP) developed by Contractors and provide comments/ recommendations within 10 calendar days of receipt of the HSMP.
- Review and approve the Environmental and Social Construction Management Plans (ESCMP), including the relevant gender components, developed by the Contractors and provide comments/ recommendations within 10 calendar days of receipt of ESCMP.
- Follow up and audit the Environmental and Social Construction Management Plans (ESCMP), including the relevant gender components, developed by the Contractors and provide a monthly and quarter progress reports
- Administer construction contracts and Contractor's compliance to the terms thereof;
- Receive and check for compliance with contract requirements, all performance bonds, insurance certificates and policies and guarantees relating to the works contracts, before submitting to Gharbia WSC / PIC for acceptance and approval and follow up on their validity during the duration of the project.
- Monitor Contractors timely compliance with the EIB Corporate Marking and Branding and Visibility Standards.
- In consultation with the PIC and Gharbia WSC, develop a detailed Construction Close-Out Programme of activities to include construction close-out schedule, inspections, testing, start-up procedures, training, processing of warranty, and handing-over of complete assets.
- Supervising the Contractor in the preparation of a report (security, and safety of building) accompanied by photographs of the state of facilities in the plant expected to cause



damage during the works construction and the Contractor's plan to maintain the safety of the existing facilities from construction activities and follow up methodology.

- Review and approve the project's electromechanical equipment according to the required technical specification and technical proposal submitted by the Contractor.
- Review and approve periodic construction reports and cash flow reports submitted by the Contractor.
- Review and approve the modification of the designs provided by the Contractor and necessary to carry out the work.
- Assign the required supervision staff as per the proposed experience during the project construction period until final completion of the project.
- Manage the contract very carefully and be familiar with technical and financial information to avoid exposing the Gharbia WSC to variation orders as per contract conditions.
- Issuing approved forms to follow up the inspection and approval of the works to facilitate the procedures for fulfilling and approval of the change orders requests for extension of the duration requests etc.
- Review and approve ground water dewatering reports, pipe trenches support and follow-up work to determine the groundwater level during construction and dewatering.
- Record, report and recommend actions the Contractor should implement in order to redress any poor workmanship and defects in executed works and in materials
- Make technical recommendations on the construction of new works issued by the Contractor and indicated on workshop drawings for the benefit of the Gharbia WSC and the project.
- Inspect all works in progress to ensure the quality of works and compliance with the contract documents. The Consultant will document and report deficiencies and make recommendations for corrective actions
- Assist and follow-up coordination with all relevant entities and authorities to the project and follow-up the Contractor in the procedures of obtaining the permits required to construction works in coordination with the Gharbia WSC.
- Follow-up of the Contractor's construction time schedule using the critical path method (CPM) and the consultant is obliged to review it and provide appropriate comments and request a corrective action plan from the Contractor in case the Contractor schedule does not allow the construction of the work within the target completion date, as well as request a modified time schedule in the event of modifying the value of the contract as a result of increasing quantities or modifying the duration of the contract.
- Prepare periodic progress technical reports on the construction workflow and its compatibility to the approved time schedule provided by the Contractor. These reports shall be submitted to the Gharbia WSC on time in accordance with the time schedule, in addition to monitoring operational constraints, major delays and proposed corrective actions.



- Study and assess change order requests submitted by the Contractor technically, financially with the submission of all documents supporting it and submit a report to the Gharbia WSC for discussion and when approved by the Gharbia WSC the consultant and the Gharbia WSC issue the change order related to it and become part of the contract.
- Review and approve the quantity and quality of all materials the Contractor will incorporate into the works including the source, method of packaging, transportation, storage method of distribution and handling on site in accordance with technical specifications, code of practice and Egyptian code.
- Follow-up and support the Gharbia WSC in handing over the site to the Contractor and reviewing its dimensions and limits and identifying the available work sites to the Contractor on the field, including the temporary workplaces of the Contractor needed for preparation and construction purposes such as place of material storage, workshops and temporary offices.
- Monitoring the coordination of the Contractor for the project site (and temporary work area of the Contractor) in each site before, during, and after construction and ensure the efficiency of workflow and traffic at the implementation sites on an ongoing basis.
- Follow-up the availability of equipment, tools and instruments for construction regarding quantity, quality and type provided by the Contractor and in accordance with his technical offer in order to allow the work to be carried out within the prescribed completion period.
- Follow-up the Contractor' staff and the staff of the subcontractors and verify their coverage of the mandatory insurances required in the Arab Republic of Egypt and ensure their presence on an ongoing basis in accordance with the timetable for the implementation of the works.
- Monitoring the supply of materials and equipment required for the works and ensuring that they conform to technical specifications and ensure good implementation and conduct the necessary tests before and after installation.
- Conduct all necessary tests to accept machinery/equipment (involved in the works) either through the manufacturers of the equipment or suppliers before accepting to supply them at the project sites with all necessary tests to verify their efficiency after installation work and start procedures for operational tests and start the service.
- Review and approve the materials testing laboratory and equipment and ensure that the testing equipment remains in good order and that the Contractor properly calibrates the equipment on a regular basis in accordance with the approved standards for testing materials
- Follow-up sampling and testing of materials on the site and the approval of inspection and test reports and ensure that all test activities should be under his direct supervision and responsibility.
- Verify that the Contractor uses the testing equipment in accordance with the approved standards and international best practice as stipulated in the respective technical specifications.



- Inspect and record the Contractor's plant and equipment for undertaking the works and report any plant and equipment thought to be inadequate in this regard and advise the Contractor to remove/replace any defective equipment from the works site
- Attend and witness fields and Factory Acceptance Test (FAT) as specified in the contract documents as per standard engineering requirements for the various project components.
- Verify that all laboratory and field tests are carried out as required and that the Contractor maintains records thereof. The Consultant shall provide a verification form in triplicate (a copy to Gharbia WSC, Consultant and Contractor), that shall be signed by both parties (Consultant and Contractor) after every verification exercise and the results of the tests attached.
- Coordinate tests and inspections of work, materials and equipment for projects for both on and off-site facilities, factories and suppliers as specified and mutually agreed with Gharbia WSC / PIC
- Review and verify inspection and testing reports of executed works and materials and document findings in the monthly and quarterly reports. In consultations with the Gharbia WSC/PIC, coordinate the selection of independent laboratories to carry out testing of questionable results and make recommendations on the course of action to redress any concerns.
- Review and verify qualifications of the proposed key personnel of the Contractor and make appropriate recommendations to Gharbia WSC / PIC.
- Prepare and maintain a daily site diary to record events on site which will include among others weather conditions, manpower on site, plant and equipment in use, Contractor's activities and special occurrences.
- Issue the daily monitoring report of the works on the site and ensure the presence of the technical staff appointed by the Contractor and monitor the constructions work as required and the consultant prepares and follows up the site log and monitor all the work and activities that are going on the site with this log book (including taking interim photographs) so that it is seen and presented during all meetings that take place on the site or during the visits of officials to the site.
- Monitoring the ongoing construction works in terms of matching the construction documents and workshop drawings with theoretical and practical methods and keeping at the project site a full copy of all documents, drawings, contracts, specifications, programs, supplements, changes, modifications, proposals and requests of the Contractor and the consultant decision about them and other correspondence, reports and minutes of meetings.
- Oversee the Quality Assurance/Quality Control (QA/QC) system proposed by the Contractor, ensuring that the quality assurance and control documentation is available for use by all the Consultant's staff and for inspection and auditing by Gharbia WSC and its delegated Implementing Entities





- Prepare and distribute a monthly report to Gharbia WSC including information on schedule, budget, quality, environmental, social and gender considerations, health and safety, logistics and general project information. As the Consultant will be supervising more than one Works Contracts the Consultant is required to compile the information for all the Works Contracts into one report per month by uploading the information into the Project Performance Management System (PPMS).
- Ensure construction' Contractor is committed to the OHS requirements (supplies, works, training) based on coordination of the Gharbia WSC and its relevant safety officer.
- Ensure that constructed works comply with safety requirements to eliminate and/or reduce risks.
- Ensure that construction' Contractor supplies required personal safety and safety equipment to the Gharbia WSC after consultation with them based on potential risks.
- Coordinate with the Gharbia WSC for training of relevant staff to join the training on supplied safety equipment.
- Identifying implementation/completion risks, Programme budget risks, and developing risk management tools to avoid, mitigate, and manage such risks.
- Provide solutions to emergency problems during implementation in accordance with technical code of practice and Gharbia WSC approval.
- Identifying implementation/completion risks, Programme budget risks, and developing risk management tools to avoid, mitigate, and manage such risks.
- Supervising the implementation of the work within the limits of the contractual budgets and without any additions to the project may represent financial burdens on the Gharbia WSC (except in the event that these additions are in the interest of the Gharbia WSC or for the purpose of improving the performance of the project or in case of necessity required for works) in which cases a detailed offer is made to the Gharbia WSC with a price study of the work to be added and take the consent of the Gharbia WSC.
- Review and validate application for payment submitted by the Contractor and/or advise them of any adjustments, corrections and/or additions to the content or supporting documentation that must be made before submitting the interim (or final) payment certificate to Gharbia WSC / PIC
- Review and validate invoices for payment submitted by the Contractor after adjustments, corrections and/or additions to the interim (or final) payment certificate before submitting to Gharbia WSC / PIC.
- Evaluate work in progress and recommend in consultation with the Gharbia WSC / PIC changes in the works based on field conditions, improved quality, cost or time savings
- Monitor construction costs and prepare monthly construction cost reports, including at least projected cash flows for the project, project expenses, and payments, outstanding payments due under the contract and adjustments to the Contract Sum due to variations etc. including Earned Value Management.





- Review and assess any changes resulting from a change in terms, quantities or specifications from the contract and according to the contract conditions related to the increase in quantities.
- Review and evaluate the claims and variations and other submittals from the Contractor prior to making a recommendation to Gharbia WSC / PIC.
- Managing requests for information and Change Order requests, reviewing requests for payments, providing full time Resident Engineers to be deployed at Project Sites, monitoring progress and scheduling of works, and providing technical advice to Gharbia WSC / PIC.
- Assist Gharbia WSC / PIC to resolve disputes as they arise and, should a dispute not be resolved amicably, assist Gharbia WSC / PIC to compile all necessary reports, documents, and evidence needed for presenting any claim to the Dispute Adjudication Board (DAB) and subsequently to arbitration should this be required.
- The correct application of the price adjustment equation stipulated in the contract and limited to the items and materials specified by the Gharbia WSC.
- Hold meetings that take place on the site, especially those related to implementation work, as well as meetings with the relevant agencies and authorities of the governorate with the preparation of meeting agenda and minutes of meetings, including meetings held with the community such as meetings before, during and after implementation or meetings related to problems in implementation and community complaints.
- Hold regular progress meetings with the Contractor and Gharbia WSC / PIC to discuss project progress and specific issues arising from construction activities, prepare and distribute accurate meeting minutes in a timely manner
- Preparing the project file and the necessary records from invoices, follow-up reports, acceptance reports, minutes of meetings, official correspondence, etc.
- Commitment to the continued presence of the staff appointed by the consultant in accordance with the number, specialization, experience and duration determined by the conditions of the implementation work and in accordance with the Gharbia WSC's approval on staff in the technical proposal submitted by the consultant and the submission of staff time sheet and working hours schedules – on a weekly basis and seek signature of the contract manager appointed by the Gharbia WSC.
- Ensure the completion and quality of the works and document the works acceptance with photographs at the site.
- Supervising the processing and approval of final construction documents and drawings (As Built Drawings) for the project, including pipe paths, depths and cable paths. Etc
- Participation in the primary acceptance of the project and the audit of the final invoice provided by the Contractor .
- Follow-up and guidance of the Gharbia WSC in acceptance all the work.



- The consultant is obliged to have the project manager present at the final acceptance of the project and to check the final invoice of the contract (upon final receipt) after the period of guarantee as indicated by the contract of the works.
- Review and approve the operation and maintenance manual of the project work provided by the Contractor.
- Review the Contractor(s) Covid mitigation measures and report on any non-compliance.
- Review and monitor the health and safety programme developed by the Contractor(s), record any safety violations, make recommendations for improving safety conditions and verify whether any instances of non-compliance have been remedied. Monitor the Contractor's operations and verify that the Contractor(s) complies with the requirements of laws and regulations governing construction of works in Egypt, as well as IFC Performance Standards 2 and 4 and IFC General Environmental Health and Safety Guidelines and recommend actions the Contractor should implement in order to redress any non-compliance in respect to issues concerning both occupational health and safety (including workers' compensation), and community health and safety.
- Monitor the Contractor's operations and verify that the Contractor(s) complies with the approved ESCMP, requirements of laws and regulations governing construction of works in Egypt, including environmental laws and regulations and also the EIB Environmental and Social Principles and Standards 2
- Monitor and audit that the Contractor(s) complies with the specifications in the Contract documents (Egyptian Law 4/1994 and its executive regulations as amended by Law 9/2009, Decree 1095/2011 and all relevant updated laws and EIB E&S standards)<sup>3</sup> and complies with the ESIA's, ESAP, ESCMP as required by the EEAA 2009 EIA Guidelines for the classification of projects. And recommend actions that the Contractor should implement in order to redress any non-compliance in respect to issues such as Compensation for damages to property, Environmental protection measures for construction activities, Protection of flora and fauna, temporary traffic management and signage
- Review and monitor implementation of a plan that will be developed by the Contractor in accordance with EIB's Gender policy and Gharbia WSC's Social and Gender Integration Plan to ensure construction related opportunities for the participation and benefits of women and vulnerable groups (such as employment, as specified in the generic ESIA's and ESMP), as well as ensuring that construction activities do not cause significant negative social and gender inequalities.
- Review, monitor and report implementation of staff and labour related aspects such as prohibition of forced or compulsory labour, harmful child labour, combating trafficking in persons (TIP), prohibition of sexual harassment and ensure that employment records of workers include names, ages, genders, hours worked, and wages paid.

<sup>2</sup> <https://www.eib.org/en/publications/environmental-and-social-principles-and-standards.htm>

<sup>3</sup> [https://www.eib.org/attachments/publications/eib\\_environmental\\_and\\_social\\_standards\\_en.pdf](https://www.eib.org/attachments/publications/eib_environmental_and_social_standards_en.pdf)



- Notify Gharbia WSC / PIC and other relevant parties of any unresolved or unanticipated land acquisition and right-of-way issues that may impede Contractor progress or access to site.
- Monitor Contractor's compliance with the Gharbia WSC Grievance mechanism in that any grievance raised by the Contractor's staff or members of the community are recorded and followed through to the satisfaction of the Engineer.
- In coordination with the main construction Contractor will implement an appropriate system to allow external parties to raise grievances in regard to the project construction phase. The Grievance Mechanism will be designed to allow engagement of applicable project stakeholders. The mechanism will be clearly defined, transparent and accessible to identify stakeholders

### **Construction Close-Out**

- Develop in consultation with Gharbia WSC / PIC a detailed construction close-out Programme of activities to include a close-out schedule, inspections, testing, start-up procedures, warranty processing and hand-over of assets.
- Coordinate, monitor and document for testing, calibration and start-up of all equipment and building systems in accordance with the contract document.
- Collect, catalogue and submit all certified operating instruction and maintenance manuals for the completed works in accordance with the Contract requirements.
- Coordinates and assist in the training of Gharbia WSC's personnel on the operation and maintenance of building systems and equipment.
- Schedule and coordinate substantial and final inspections and compile punch list, snag list and coordinate all corrective actions by the Contractor(s).
- Verify that the Contractor prepares and submits certified work as executed, with records and plans of the completed works in accordance with the Contract requirements.
- Prepare a register of assets the Contractor will hand over to Gharbia WSC for incorporation into their working assets.
- Issue a Certificate of Taking Over to the Contractor(s), verifying outstanding defects and environmental restoration works the Contractor must correct in accordance with the terms of the Defects Liability clauses.
- Arrange the Performance Certificate and handover of completed works from the Contractor to Gharbia WSC upon completion of deficiencies, submittal of close-out documents and recommendation for release/hold back retention.
- Submit all project documentation including files, records, drawings, submittals, samples and any other relevant information to the Gharbia WSC in an acceptable format as agreed upon by Gharbia WSC and the PIC.
- Certify to the best of his professional knowledge that the constructed works conforms to the approved plans, specifications and shop drawings



## **Construction Site Records**

- Maintain current and orderly records of all construction documents including contracts, drawings, specifications, submittals, samples, correspondence, meeting minutes, catalogue data, directives, change orders etc.
- Maintain a project/contract document control and filing system, making the system accessible to Gharbia WSC and the PIC and/or its delegated Implementing Entities staff to enable them to inspect and audit the document system.
- Verify and maintain a set of As-Built Drawings submitted by the Contractor(s) progressively as works are completed and approved. The drawings will be prepared using the current version of AutoCAD (or approved equivalent software) and stored in both hard copy formats, using ISO A1 paper size, as well as in digital format. The details on the title block will be as specified in the contract documents.
- Ensure that the Contractor(s) clearly certifies the executed works with As-built drawings compiled by a registered professional engineer or surveyor, is a true and fair representation of the works as constructed and that the works shown on the As- built drawings conform to the designs, specifications, directions and approval of the Team Leader.

### **6.3.2 Assistance to the PIU during the Defects Liability Period (Tanta and Mit Badr Halawa WWTP)**

- The supervision services during the defects liability period shall consist of all post-construction activities until the final acceptance of the construction works and the completion of the Defects Liability Period Report for each WWTP. The services to be performed during the defects liability period shall comprise, but not necessarily be limited to, the following:
  - Notification to the Contractor of any WWTP completion requirements and supervision of any corrective measures required, final inspection of the Works and assistance in the final acceptance and taking over of the Works.
  - Verification of the Project completion, recommendations on future operations management and final reporting on the Project close-out activities.

## **7. Reports and Schedule of Deliverables**

The Consultant shall prepare and submit the following reports to Gharbia WSC / PIC.

Description	Target
Inception Report	Within four weeks of Contract signature.



Description	Target
Monthly progress reports	Five (5) working days after the end of each month (save for the monthly report coinciding with a quarterly report when it will be appropriately included within Quarterly progress report)
Report of review and approval of “As-built” plans and documentation	As and when the contract works are completed
Minutes of regular Progress Meetings and Site inspection meetings with the Contractor	Five (5) working days after each meeting
Inspection Reports of the Contractor’s plant and equipment consistent with the requirements to keep relevant and operational equipment and plant on site	As may be required from time to time
Practical completion & outstanding defects	Five (5) working days after the practical completion
Operations and maintenance manuals	Three (3) months after practical completion of each contract package
Final Inspection Report and construction completion & handover Report	As and when construction works for the Contract Packages are successful completed and commissioned and/or the defects notification period
Contract Close-Out Report	After completion of each Works contract.
E&S compliance & Audit reports	Preparation of monthly E&S reports and E&S compliance Audit reports in a timely manner using performance indicators and benchmarks.

All reports shall be submitted in both hard copy and a digital copy. The digital copy shall be submitted on suitable long-term storage media such as a flash drive or CD in a format of (Microsoft Office and/or AutoCAD) . Electronic files should be made available in the original editable file format as well as in PDF format. Each final hard copy submitted shall be accompanied with a digital copy suitably bound to the inside cover of the hard copy. All documents with pictures or coloured drawings shall be printed in colour print outs (pictures with titles and index).

Five (5) hard copies are required for each deliverable. However, Gharbia WSC / PIC may reduce the number of hard copies by advance notice to the Consultant on a case-by-case basis.





The Consultant shall prepare a draft of each report (excluding progress reports) and submit these to Gharbia WSC / PIC for comment. Gharbia WSC / PIC shall review the draft report and provide comments within ten (10) working days of receiving the draft report. The Consultant shall incorporate the comments where appropriate and submit the final report within five (5) working days of receiving the comments from Gharbia WSC / PIC.

### **Progress Reporting**

The consultant is obliged to provide 5 copies +CDs in an editable format documents and electronic copies are provided to the Gharbia WSC and the PIC for outputs and subsequent reports

#### **The proposed time schedule for tasks**

Three copies of the proposed time schedule must be submitted explaining the tasks and distributing the consultant personnel to the actual duration of the contract within 15 days of the date of the contract signature for approval by the Gharbia WSC and to be updated each month according to the variables and working conditions after approval by the Gharbia WSC and also presented in three copies each month.

### **Inception Report**

The Consultant shall prepare an inception report, which shall discuss at least the following:

- Background, objectives, and scope of the assignment
- Outline of conditions at the start of the assignment
- Constraints and issues and suggested adjustments to the scope and methodology
- Schedule of key activities

The Inception Report shall be kept as brief as possible and shall be limited to highlighting key issues and tasks and any significant proposed modifications to the original proposal.

### **Final Design Report:**

A separate report shall be submitted for Mit Badr Halawa WWTP rehabilitation works with 3 paper copies and 3 CDs of electronic copies.

### **Detailed Design and Tender Documents**

3 paper copies + 3 CDs are provided, including all project documents in an editable version of Word, Excel, AutoCAD etc.. ) for review

Software files used in design as well as design and operational studies and special graphics as described in the scope of work stages.

Number (10) copies + CD of tender documents in preparation for submission to Contractors. The consultant shall be paid against any requested additional copies with the market prices.

### **Bid Evaluation Reports**



The consultant is obliged to assist the Bidding Committee (in his advisory capacity and not as a member of the committee) to provide the following:

The consultant shall submit one (1) hard copy and 3 CDs of electronic copies to the Gharbia WSC and the PIC of the final evaluation report prepared by the bidding committee for each tender after review and comment by the consultant and consists of the following documents:

- Report of the tender opening session.
- Technical evaluation report for submitted tender bids.
- Joint tender evaluation report (technical and financial) with the nomination of the Committee for the decision of awarding.
- Report of the responses to questions for the inquiries session.
- Report of the negotiating session, if any.

### **Monthly Progress Reports**

The progress report covering the work in progress shall discuss at least the following items:

- Background, objectives, and scope of work.
- A brief description of actual versus planned progress on the works for both the design review of the Tanta WWTP works and also the design by the Consultant of the Mit Badr Halawa WWTP rehabilitation works.
- During the construction period: -
  - Comments on the quality of work, details of all claims, extension of time, variation orders.
  - Plant and equipment availability
  - Graphs or charts showing physical progress of the construction and data regarding the current financial status of the Construction Contract and Consultancy Services including a comparison of the contract amount and the estimated total cost of completion based on up-to-date appraisal of actual versus estimated quantities and unit prices as amended including Earned Value Management
  - Colour photographs showing completed work and construction activities undertaken during the relevant reporting period
  - A schedule of inspections, tests, and site meetings undertaken during the period. Copies of minutes of meetings shall be included in the appendices.
  - A schedule of site instructions issued.
  - Problems encountered and actions undertaken to rectify variance from required quality and progress of works.
  - Compliance and noncompliance of environmental protection requirements highlighting actions taken to remediate/rectify such non compliances.
  - Compliance and noncompliance of worker health and safety requirements highlighting actions taken to remediate/rectify such non compliances.
  - Tests and inspections to be undertaken by the Consultant in the next period.

Program of work to be undertaken during the next period including projected cash flow/payments.



The monthly report will contain a section devoted entirely to an assessment of the impact of accumulated delays, if any, and a projected date for completion of the project. In the event that the projected date is later than a revised date which will result from approved time extensions, the report should include an evaluation of a Contractor-proposed plan for corrective measures to be implemented to increase the rate of progress and complete the project on time. In addition, the effect of delays on the cost and timing of the Consultant's activities should also be assessed.

The monthly report shall also contain a section devoted to reporting the status of all claims notified by the Contractor, detailing the dates of notification and subsequent actions and time and cost effects claimed and assessed, where appropriate.

The Progress Reports shall be kept as brief as possible and shall be limited to highlighting progress, key issues and constraints encountered during the reporting period. The Consultant shall submit the Progress Report to Gharbia WSC / PIC within five (5) working days of the end of the reporting period.

### **The Report of Continuous Daily Monitoring (Daily Log)**

Report the work on the site and ensure the presence of the technical team appointed by the Contractor and his work as required. The consultant prepares and follows up the site book and monitor all the work and activities that take place on the site with this book (including taking the photography progress) and recording the daily instructions of the consultant to the Contractor and at the end of the day. Report any important events that occur on that day are register the visitors to the site. Both the consultant and the Contractor must sign on this daily report.

### **Monthly Deliverables**

Three hard copies and 3 CDs of electronic copies of the following outputs are provided monthly, with a copy provided to the PIC

- Monthly invoices for the works contracts are certified by the consultant and supported by all documents.
- Monthly updates to the Contractor's updated time schedule using the Primavera program, loaded with human resources, materials, tasks and equipment for each activity and committed to the order of construction and the criteria for the works progress included in the works contract documents.
- Monthly updates to cash flow projection for the works items.
- Monthly Business Plan for Contractors (Activity Plan).
- Contractors' performance assessment reports
- Periodic reports for the works progress (monthly, quarterly, and annual),
- Bi-weekly HSE Report.



- Environmental measurement monitoring report submitted by Contractor as per the monitoring plan of the ESIA Environmental and Community Impact Report and environmental and community management plans.
- E&S compliance & Audit reports submitted by the Consultant in a monthly (brief) and quarter bases (detailed).
- Staff time sheets certified by the Gharbia WSC's representative with a brief daily description of what has been accomplished for each key member of the team.
- Report any damage to the site and the actions taken in this regard.

### **Accident Reports**

The Consultant shall inform immediately the Gharbia WSC and PIC by telephone of any significant accident.

A written report of the circumstances of any significant accidents occurring on the site shall be forwarded to the Gharbia WSC and PIC with all due dispatch within five (5) days of occurrence of the accident.

### **Construction, Completion & Outstanding Defects**

A construction practical completion and outstanding defects report shall be compiled upon completion of work. The report shall cover at least the following items:

- Background, objectives, and scope of the work.
- The quality, conformity, consistency of construction practices.
- The fitness for purpose, utility, and quality of constructed assets.
- The outstanding defects that the Contractor must rectify, including environmental liabilities, if any, before operational acceptance and handover of completed works.
- A schedule of defects and maintenance criteria to guide assignment of liability for defects arising during the Defects Notification Period.
- A schedule of inspections and testing that the Consultant will carry out during the Defects Notification Period to identify other defects that might arise during the period.
- A schedule of recommended routine maintenance for the various components of the works needed to keep them in good working order, detailing at least:
  - The maintenance methods to be used
  - The maintenance equipment required
  - The timing of maintenance activities
  - The recommended spare parts and fittings and expected usage rates

### **Final Construction Completion & Handover (after Defects Liability Period)**

A final completion and handover report shall be prepared upon completion of the Defects Notification Period and partial completion reports for Contract Packages with DNPs beyond compact period. The report shall cover at least the following items:



- Background, objectives, and scope of the construction work.
- The quality, conformity, consistency of construction practices.
- The fitness for purpose, utility, and quality of constructed assets.
- Issues raised by the Contractor regarding supervision, site conditions, liaison and coordination with relevant government authorities, payments, etc.
- Assessment of claims submitted by the Contractor and their impact on construction progress and costs.
- Assessment and audit of the Contractor's compliance with the requirements of plans, laws and regulations especially those governing: Compensation for damages to property, Occupational Health and Safety including workers compensation, Environmental protection measures for construction activities, Protection of services such as telephone, electricity, and etc.
- Actions the Contractor implemented in order to redress critical / major non-compliance with the laws and regulations of Egypt.
- Major technical problems encountered, and the actions taken to resolve such problems together with an assessment of the impact on the progress and cost of the project.
- A schedule of the final construction costs itemising at least: Construction costs for various components of the works, Local and Foreign Costs, Additional Costs for extensions, variations, delays, etc.
- Final construction documents including:
  - Work as Executed Records and Drawings
  - Photo album with titles and index showing progress/stages of all major components/events from start of the project to final handing over.
  - Operations and maintenance manual that can be used by a competent operator / maintainer to operate and keep the constructed assets in good working order, detailing at least:
    - Description of operational methods, concerns, and rules / principles for the various components of the works.
    - A schedule of routine maintenance activities detailing; the maintenance methods to be used, the maintenance equipment and tools required, the timing of maintenance activities, the recommended spare parts and fittings and expected usage rates; where appropriate, the Consultant shall specify environmentally-sound methods for the performance of maintenance activities (e.g., removal and disposal of sludge, treated effluents and other residuals; sanitary and solid waste disposal).
- vi) Suggested methods, equipment, tools and materials for common types of emergency breakdowns and failures.
- vii) The suggested competencies and experience level required to undertake the operation and maintenance activities.

## **Contract Close-Out Report**

The final close-out report shall be prepared upon handover of all facilities and assets. The close-out report will describe the sequence of steps undertaken for accepting completed work and for closing out the construction contracts. The report shall cover at least the following items:





- The Consultant's' de-mobilization plan.
- Closure of site offices.
- Archiving of construction records; and
- Formally capturing lessons learned during the delivery of the construction program.

A draft of this report shall be submitted to KSWSSC / PIC for review and comment. Upon the receipt of written comments, the report will be finalized.

## 8. Consultant's Qualifications and Experience

### Organisational Experience of the Consultant

- Evidence of organizational capability and relevant experience in the execution of projects of a similar nature, including the nature and value of relevant contracts, as well as works in hand and contractually committed provided in Form TECH-4.
- The Gharbia WSC reserves the right to contact the references provided in Forms TECH-4 as well as other sources to check references and past performance.

### Specific Experience of the Consultant<sup>4</sup>

- Evidence of previous WWTP design and rehabilitation work.
- Experience in the supervision of similar construction works within the last five years.

### Key Personnel

All senior experts proposed by the Consultant shall have experience of urban water supply and sanitation projects in Egypt and preferably also on projects funded by international lending/donor agencies. Special expertise is required in the following fields:

- Backstopping and quality control,
- Design, tendering and site supervision (construction management) expertise,
- Wastewater engineering,
- Civil, electrical, mechanical, structural and hydraulics engineering,

The project team leader and the deputy team leader both shall have design and supervision experience with procedures of international lending/donor agencies,

Availability of additional staff requirements include: a topographic survey team, a geotechnical expert, a construction manager, contract manager, planner, NKE of operational and maintenance stage (Process Engineer & lab Engineer), draftsmen and other support staff.

It is required that the Project Team Leader and the deputy team leader both shall be permanently located in the Consultant's local project office during Project activities. It is also expected that both of them be fluent in English and that other senior team members have a working knowledge of English. The Consultant shall assess the final staffing requirements

<sup>4</sup> In case of any differences in the selection criteria stated on the RFP and TOR, the one stated in RFP will prevail.



according to his proposed work programme and time schedule. Experts covering more than one field of expertise are acceptable. For all experts Curriculum Vitae shall be submitted, documenting the capabilities of the expert for the present project and for their specific task.

The Consultant's team will include, but not be limited to the following profiles:

#### **Team Leader**

- (i) Bachelor's degree in either Civil Engineering or Construction Management.
- (ii) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their country of origin.
- (iii) A minimum of twenty-five years of relevant experience in the water and wastewater sector including experience managing the detailed design of at least three (3) WWTP in the last ten years, all demonstrated in Form TECH-10.
- (iv) A minimum of ten years of relevant experience in the water and wastewater sector including experience managing the construction supervision of wastewater treatment plants especially those financed by donors in the last ten years, all demonstrated in Form TECH-10.
- (v) Fluency in English.

#### **Deputy Team Leader**

- (i) Bachelor's degree in either Civil Engineering or Construction Management.
- (ii) Qualified Chartered/Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their country of origin.
- (iii) A minimum of twenty years of relevant experience in the water and wastewater sector including experience managing similar project of the same nature and complexity, all demonstrated in Form TECH-10.
- (iv) A minimum of ten years of relevant experience in the water and wastewater sector including experience in supervision of wastewater treatment plants especially those financed by donors in the last ten years; all demonstrated in Form TECH-10
- (v) Fluency in English.

#### **Civil Engineer WWTP / Process Engineer (Design)**

- (i) At least Master of science (M.Sc.) degree in Civil Engineering
- (ii) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their country of origin
- (iii) A minimum of fifteen years of relevant experience in the detailed design of wastewater treatment plants of capacity greater than 20,000 m<sup>3</sup>/d; all demonstrated in Form TECH-10.

#### **Civil Engineer WWTP / Structural /Geotechnical Engineer (Design)**

- (i) At least Master of science (MSc.) degree in Civil Engineering
- (ii) Qualified/Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their country of origin
- (iii) A minimum of fifteen years of relevant experience in the detailed design of wastewater treatment plants of capacity greater than 20,000 m<sup>3</sup>/d; all demonstrated in Form TECH-10.



### **Mechanical Engineer (Design)**

- (i) At least Master of science (M.Sc.) degree in Mechanical Engineering
- (ii) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their country of origin
- (iii) A minimum of fifteen years of relevant experience in the design of at least three WWTP of capacity greater than 20,000m<sup>3</sup>/day; all demonstrated in Form TECH-10.

### **Electrical Engineer (Design)**

- (i) At least Master of science (M.Sc.) degree in Electrical Engineering
- (ii) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their country of origin
- (iii) A minimum of fifteen years of relevant experience in the design of at least three WWTP of capacity greater than 20,000m<sup>3</sup>/day; all demonstrated in Form TECH-10.

### **Health and Safety Expert (Site)**

- (i) Bachelor's degree in Construction Management, Engineering, or related discipline
- (ii) OSHA Certificate (or equivalent)
- (iii) A minimum of fifteen years working experience of which 5 years must be in the management of health and safety risk for major construction projects financed by donors / IFIs, all demonstrated in Form TECH-10.

### **Environmental Impact Assessment Specialist (Design and Site)**

- (i) University degree in the Environmental field
- (ii) Must have knowledge and experience conducting ESIA and baseline assessment in both international and local level in accordance with IFC Performance Standards or similar international environmental and social safeguard requirements (e.g., World Bank, ADB, EBRD)
- (iii) At least 10 years of professional experience.
- (iv) Must be registered in EEAA

### **Procurement Specialist (Design)**

- (i) University degree in construction management, engineering, law, economics, or related discipline;
- (ii) 10 years' experience in the management of the entire procurement cycle for infrastructure projects (incl. preparation of TORs and tender documents, tender evaluation, contract documentation for construction works
- (iii) Fluency in English and Arabic language

### **Resident Engineer (Site)**

- (i) Bachelor's degree in either Civil Engineering or Construction Management
- (ii) Qualified /Registered Professional Engineer or approved equivalent in their country of origin.
- (iii) A minimum of fifteen years of relevant experience in the water and wastewater sector including experience managing the detailed design of at least three WWTP in the last ten years all demonstrated in Form TECH-10.



- (iv) A minimum of ten years of relevant experience in the supervision and contract management of water and wastewater sector, infrastructure project using the FIDIC Conditions of contract, has a proper professional certificate in management; all demonstrated in Form TECH-10.
- (v) Fluency in English

#### **Assistant Resident Engineer No.1 (Site)**

- (i) Bachelor's degree in either Civil Engineering or Construction Management
- (ii) A minimum of ten years of relevant experience in the water and wastewater sector including experience supervising the construction of at least two WWTP

#### **Assistant Resident Engineer No.2 (Site)**

- (i) Bachelor's degree in either Civil Engineering or Construction Management
- (ii) A minimum of ten years of relevant experience in the water and wastewater sector including experience supervising the construction of at least two WWTP

#### **Electrical Engineer (Site)**

- (i) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their citizenship country.
- (ii) A minimum of ten years of relevant experience in the water and wastewater sector including experience supervising the construction of at least two WWTP.

#### **Mechanical Engineer (Site)**

- (i) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their citizenship country.
- (ii) A minimum of ten years of relevant experience in the water and wastewater sector including experience supervising the construction of at least two WWTP.

#### **Operations and Maintenance Specialist (Site)**

- (i) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their citizenship country.
- (ii) A minimum of ten years of relevant experience in the water and wastewater sector including experience supervising the operation and maintenance of at least two WWTP.

#### **Contracts Manager (Site)**

- (i) Qualified /Registered Professional Engineer or approved equivalent in their citizenship country.
- (ii) A minimum of ten years of relevant experience in the management of claims and contractual matters.
- (iii) Fluency in English

#### **Planner (Site)**

- (i) Qualified /Registered Professional Engineer at Egyptian Engineers Syndicate or approved equivalent in their country of origin.



- (ii) A minimum of eight years of in the water and wastewater sector including experience in prepare, review, and follow up of projects time schedule using professional software (Primavera or equal) in the construction of at least two WWTP.

The anticipated time inputs for each position are given below for **Tanta WWTP** Project.

Title <sup>5</sup>	Man Month Input
Team Leader	36
Deputy Team Leader	36
Health and Safety Expert (Site)	30
Environmental Impact Assessment Specialist (Site)	12
Resident Engineer	36
Assistant Resident Engineer No.1 (Site)	35
Assistant Resident Engineer No.2 (Site)	35
Electrical Engineer (Site)	20
Mechanical Engineer (Site)	20
Operations and Maintenance Specialist (Site)	11
Contracts Manager (Site)	7
Planner	12
<b>Total</b>	<b>290</b>

N.B. The indicated man month are dedicated to the construction supervision period. The Consultant shall estimate the required input during design period and include it within his lumpsum price for design activities

The anticipated time inputs for each position are given below for **Mit Badr Halawa** WWTP Project.

Title <sup>6</sup>	Man Month Input
Team Leader <sup>7</sup>	-
Health and Safety Expert (Site)	3
Environmental Impact Assessment Specialist (Site)	3
Resident Engineer	19
Electrical Engineer (Site)	15
Mechanical Engineer (Site)	15
Operations and Maintenance Specialist (Site)	6
Contracts Manager (Site)	4
Planner	5
<b>Total</b>	<b>70</b>

<sup>5</sup> The indicated man month are dedicated to the construction supervision period. The DDC shall estimate the required input during design period and include it within his lumpsum price for design activities.

<sup>6</sup> The indicated man month are dedicated to the construction supervision period. The DDC shall estimate the required input during design period and include it within his lumpsum price for design activities

<sup>7</sup> The team leader in Tanta WWTP Project shall act as a team leader for Mit Badr Halawa Project

Section VI. Terms of Reference

Selection of consulting firm to perform detailed designs and construction supervision – Gharbia WSC





N.B. The indicated man month are dedicated to the construction supervision period. The Consultant shall estimate the required input during design period and include it within his lumpsum price for design activities.

All members of the supporting advisory staff such as (couriers, secretaries, drivers) are not mentioned in the tables above and their salaries are loaded with the salaries of the basic specialties mentioned in the tables.

In some cases, there shall be meeting in Cairo with HCWW, or the MHUCC, the consultant shall bear all costs of transportation and/or accommodation of his staff to attend these meetings.

- Bidders must commit to submitting biographies to the members of the regional office’s consultant staff (using the CV form attached to the RFP and it will not pay attention to the CVs presented in other than the models referred to).
- All members of the detailed design team will be considered by the Gharbia WSC to be key experts and the consultant must submit CV to all of them (using the CV form attached to the RFP and it will not pay attention to the CVs presented other than the models referred to).
- The construction supervision team at the sites must not exceed 60 years old because they should fit for the task in rural areas.

#### Non-technically evaluated staff members

- The consultant is obliged to provide the Gharbia WSC CV to any member of the team and others subject to technical evaluation (the main experts of the site supervision team – non-key experts) in accordance with the expected timing of the technical offer submitted by the consultant and in accordance with the actual need of work to fill the job or within 5 days of the Gharbia WSC’s request in writing.

The following staff is the minimum required non-key experts to be submitted

Implementation period	Staff
Design Stage	Architect Instrumentation Engineer HSE Engineer Quality Control Assurance Specialist
Supervision Stage	Quality Control Assurance Specialist
Operation and maintenance stage (DLP) and close-out	Process Engineer Lab Specialist
Supportive staff in the different stages	Technicians Surveyors Secretary Draftsman



## 9. Working Language

The selected Consultant will demonstrate the capacity to function efficiently and to produce the tender documents and reports documentation in a timely manner in both English and Arabic languages.

## 10. The Timing of the Assignment

The assignment of the Consultant is anticipated to start on 1<sup>st</sup> May 2023 and end on 31<sup>st</sup> December 2026. The final year will require limited input from the Consultant to supervise and support Gharbia WSC during the operations and maintenance period, and the defect's liability period. In addition, the Consultant shall support Gharbia WSC in the final acceptance process. Any extension of time will be with the same contract rates



## 11. Location

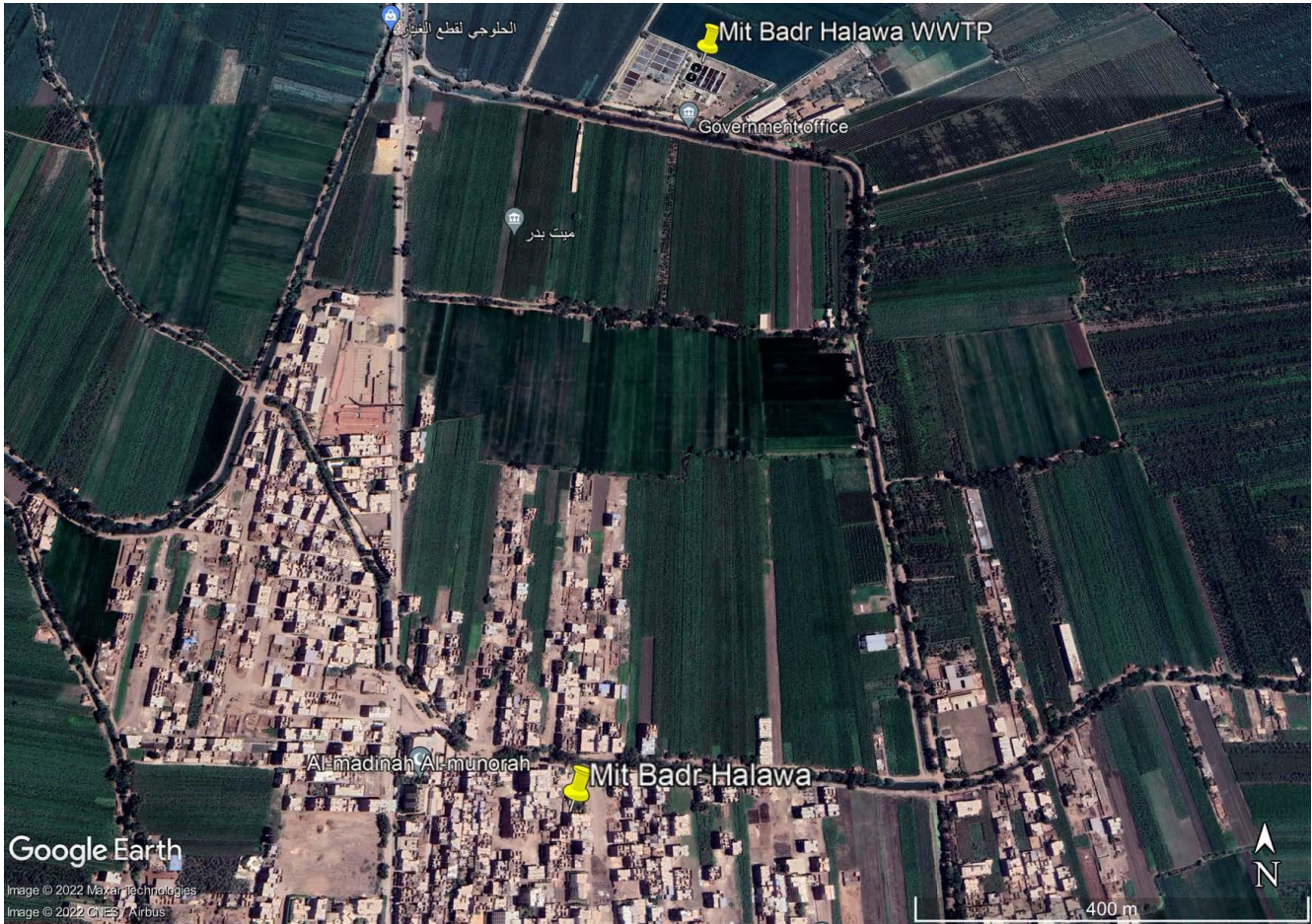
The location of the Tanta WWTP is shown below:-  
30° 48' 08.09" N, 31° 01' 18.50" E.







The location of Mit Badr Halawa WWTP is given below  
30° 51.617'N , 31° 14.191'E



## 12. Project Coordination

The Contract for the assignment will be signed by the Gharbia Company for Water and Wastewater and the Consultant. However, the Consultant will also be required to coordinate with the PIC and HCWW PMU to enable the PIC and HCWW to perform their duties as described in this Terms of Reference.

## 13. Services and Facilities to be Provided by Gharbia WSC

The Gharbia WSC will provide the following facilities and services to the consultant as outlined below:

- At the commencement of the assignment the Gharbia WSC will make available to the Consultant all available data, information, and reports deemed necessary for the



assignment. The Consultant shall treat these documents with care and confidentiality and return them in good order to the Gharbia WSC at the end of the assignment.

- Liaison and assistance for any information or documents required from other Government Agencies and which the Gharbia WSC's Representative considers essential for the proper conduct and execution of this assignment.
- Customs and tax exemptions details shall be stipulated in the Special Conditions of Contract

## 14. Services and Facilities to be Provided by the Consultant

The Gharbia WSC will not provide the consultant with any office supplies or any other equipment and the consultant should estimate the cost of renting and operating the regional office at a location close to the headquarters of the Gharbia Company for Water and Wastewater with an area of 200 m<sup>2</sup> (for the full duration of services) so that the project's work and tasks can be managed at various implementation sites, and the office must be equipped with equipment, facilities and furnishings (furniture, computers, printer and scanner, data show, Telephone, fax, camera, projector and internet service etc.) and equipped with the appropriate means of subsistence and hospitality to work on the project. The office shall be furnished with a meeting room suitable to accommodate at least twenty (20) persons.

The Consultant is expected to provide the following facilities:

- Home office space at least 200 m<sup>2</sup> and equipped with all equipment and facilities, with a meeting room able to have not less 20 persons,
- (6) Laptops and IT equipment for Consultant team,
- 5 new sedan vehicles model 2021 or later 1600 CC for the transportation of the Consultant team.
- Stationary
- Survey equipment
- Any other facilities that might be needed to carry out the assignment.

The ownership of all the equipment shall not be transferred to Gharbia Company for Water and Wastewater at the end of the project.

During the implementation phase of the project the Contractor will supply suitable office accommodation at both the Tanta WWTP and Mit Badr Halawa WWTP for the Engineer and staff. This accommodation will be supplied with suitable furniture and services for the day-to-day operation of the Engineer's staff. The Consultant will be required to provide all IT infrastructure to perform their duties.