Terms of Reference

For the Supply and Installation of a Filter Backwash Water Recirculation and Reuse System at the Water Treatment Plant of Schimatari, Municipality of Tanagra.

In the framework of
the "ZERO DROP MORNOS" project

Funded by
The Coca-Cola Foundation
Coca-Cola 3E and Coca-Cola Hellas

1. Background

1.1. The "ZERO DROP MORNOS" Project

The catchment (river basin) of Mornos has a surface of 560 km^2 and is located in the western part of Central Greece and belongs to the county of Fokida. The average annual rainfall and streamflow are 950 mm and the average annual water inlet is 235 mil. cubic meters. The storage capacity of the lake of Mornos is 780 mil. cubic meters. The Mornos System (Channel / Reservoir) is one of the two most significant water bodies in Greece in terms of water supply. The average annual outlet of 200 mil. cubic meters of water from Mornos, along with the average annual outlet of 110 mil. cubic meters of water from the Lake of Yliki, cover the needs of almost 40% (approx. 4 mil. people) of the country's population (either through national water operator of the National Water Authority or through municipal infrastructure or direct abstractions for irrigation). The channel that transfers water to Athens is 188 km long and the majority of its length is an open channel.

By relying on only two main surface (and rainfed) water bodies, a significant portion of the country's population is vulnerable to multiple risks and threats, both natural and manmade. Indicatively, in 2011, a small part of the channel that transfers water to Athens was damaged due to soil erosion, leaving Athens depending on the reservoirs of Yliki and Marathon reservoirs for several days.

Building on global and Mediterranean best practices and responding to national political priorities and local operational plans, including as they emerge from the EU Water Framework Directive requirements, the proposed "Zero Drop Mornos" Project aims to increase water efficiency and provide replenished water in support of local needs in the wider area of the Region of Central Greece, contributing to water security and climate change adaptation. Specifically, the project proposal aims to demonstrate a perceptible paradigm shift towards efficient water use and the use of Non-Conventional Water resources. Along with its twin ZERO DROP SCHIMATARI project, it will serve a pilot paving the way for a scaling-up of related projects in other locations in Greece and the Mediterranean region.

Opportunities to communicate project results and achievements to local, national and international audiences / communities will be further explored while the end of the program will be marked by a public event that will showcase the completed works and will discuss follow-up steps, including towards engaging project partners to follow up activities.

2. Description of the Assignment

2.1. Objective

The objective of the assignment is the "Supply and Installation of a Filter Backwash Water Recirculation and Reuse System at the Water Treatment Plant of Schimatari, Municipality of Tanagra", based on the information presented in Technical Specifications Chapter of the present document.

2.2. Requested Services

The tasks envisaged to be undertaken as part of this work package consist of:

- Supply and installation of a Filter Backwash Water Recirculation and Reuse System at the Water Treatment Plant of Schimatari, Municipality of Tanagra". The purpose of the requested system is to treat the filter backwash water of the said water treatment plant and return it to the raw water tank in order to be retreated by the Water Treatment Plant existing equipment and become potable water.
- Setting and starting up the requested system after its installation.
- Provision of an "Operation and Maintenance Manual" to the respective Technical Service of the Municipality of Tanagra.
- Provision of a training session for the respective employees of the Technical Service of the Municipality of Tanagra.

It is noted that the requested system should include the necessary components for its operation to be connected to and be synched with the existing treatment equipment at the Water Treatment plant of Schimatari.

The technical specifications of the system are presented in the respective chapter.

2.3. Assignment Outputs

Delivery of a fully operational and on duty Filter Backwash Water Recirculation and Reuse System at the Water Treatment Plant of Schimatari, Municipality of Tanagra" accompanied by an "Operation and Maintenance Manual" and a training session for the respective employees of Technical Service of the Municipality of Tanagra.

2.4 Deliverables

Item	Description	Unit	Quantity
A	**Filter Backwash Water Recirculation and Reuse System**		
A1	A fully operational and on duty Filter Backwash Water Recirculation and Reuse System at the Water Treatment Plant of Schimatari, Municipality of Tanagra, in compliance with the technical specifications presented in the Annex of the present document. The works included are the following:	System	1
A1.1	Preparatory works	Lump Sum	1

A1.2	Delivery of equipment	Lump Sum	1
A1.3	Hydraulic and electrical connections	Lump Sum	1
A1.4	Testing and starting-up	Lump Sum	1
B	**Operation and Maintenance Manual**		
B1	Operation and Maintenance Manual, including troubleshooting section.	Manual	1
C	**Training**		
C1	Training session for the employees of the Technical Service of the Municipality of Tanagra.	Session	1

Details are provided in Annex I – Technical Specifications

This tender is not divided into lots.

2.5. Obligations

During the construction phase of the project, the following obligations are put into force:

- All necessary measures (marking, fencing, etc.) to avoid accidents, to protect residents and workers from danger that may be created during the construction of the project, to be taken.
- Storage of materials, even temporary, at the construction area should not present danger to the employees of the Municipality of Tanagra.
- After the completion of the construction, if necessary, the rehabilitation of the construction area needs to be conducted.
- Pictures of the work progress should be collected and sent to GWP-Med.
- A final list of materials and equipment to be sent to GWP-Med.

Other specific obligations are presented in Annex 2.

2.6. Health and Safety Precautions

Responsibility for all aspects concerning health and safety issues for the duration of this project is vested entirely in the contractor entrusted to do this job, who will exercise all control over operations, materials, employees, and all other factors respecting health and safety norms.
More details in Articles 1 and 11 of Annex 2.

2.7. Reporting line

The awarded contractor will communicate directly with Dr. Nikos Skondras, Senior Program Officer at GWP-Med (Contracting Authority).
Additionally, the awarded contractor will consult with and work under the direct supervision of the technical representatives of the Municipality of Tanagra (Supervising Authority).

2.8. Monitoring and Progress Control

Dr Nikos Skondras, Senior Programme Officer at GWP-Med, and Mr. Charalampos Lappas, Programme Officer at GWP-Med, will be providing oversight and guidance from the side of the

Project Team. Coordination calls between the consultant and the Project Team will be held at weekly basis, to monitor the progress of the assigned services.
Services will be rendered and will be considered completed upon approval of the deliverables by the Project Coordinator, the GWP-MED Executive Secretary and the Technical Service of the Municipality of Tanagra.

2.9. Site Visit

The bidders must visit the location of the technical intervention in order to have an understanding of the actual conditions on the spot and be able to prepare their technical offer and assess the situation for the preparation of their financial offer.
The site visit has to be completed at least ten (10) days from the publication of the tender (including the date of the tender publication).

2.10. Work Permissions

The Technical Service of the Municipality of Tanagra will provide the necessary permit / clearance, written, for the awarded contractor to start working on the requested assignment.

3. Duration of the Contract

Delivery of the works should be completed by 30/06/2025.
The overall duration of the contract will be maximum by 30/07/2025.

The date of the commencement of the contract execution shall be the last signing of the contract.

4. Contract Price, Schedule of Payments

The maximum fee for this assignment is **335,000 EUR (including VAT)**. This amount includes all other costs, income taxes and any other amount payable or cost that may be required for the completion of the service.

The schedule of payments is as follows:

- 30% payment upon completion of the preparatory works (to be verified by the Technical Service of the Municipality of Tanagra).
- 30% payment upon delivery of the equipment (to be verified by the Technical Service of the Municipality of Tanagra).
- 40% payment upon completion of the remaining works and services (to be verified by the Technical Service of the Municipality of Tanagra).

Each payment will be issued upon receiving the respective deliverables and after the written approval from the technical service of the Municipality of Tanagra.

In the event that there are delays in the execution of the contract the awarded contractor is liable to a deduction of €100 per day, for every day of delay, including Sundays and public holidays, up to a maximum of 10% of the contracted amount in case there are delays in the execution.

5. Guarantee

The awarded contractor agrees to submit to the Contracting Authority Performance and Good Operation Guarantee accounting to 5% of the contract value (excluding VAT).
The Performance Guarantee shall cover comprehensively and on a non-discriminatory basis the application of all the terms of the contract and any claim by the contracting authority or the client against the awarded contractor.
The successful contractor shall, within twenty (20) days from dispatch of the relevant special written notice, sign and date the contract and return it together with a copy of the Performance Guarantee. Any Performance Guarantee issuance expenses bear's the successful participant.
The Performance Guarantee shall be released after the completion of four (4) months from the written acceptance of the works performed by the Technical Service of the Municipality of Tanagra.
The Contracting Authority will issue no payment to the Contractor until the Performance Guarantee has been submitted.

The awarded contractor will provide a Guarantee on all equipment for a minimum period of 12 months against faulty workmanship and materials and on the operation of the system as a whole. If during this period any parts or equipment have to be changed (due to faulty workmanship and not due to the selected operation conditions), the guarantee on that part is to be renewed for another year from date of replacement. The initial guarantee as well as the replacement guarantee include the equipment cost (transfer, labour cost, taxes, insurance etc.). The cost of the replacement of the faulty equipment or/and the necessary works is to be covered by the awarded contractor.

6. Selection Criteria (Pass / Fail)

Successful participants must provide the following documents:

A. Technical Offer:

- Be enrolled in one of the official professional or trade registries at the country of registration.
- Be licensed to perform works in Greece.
- Be classified as "Water Treatment Contractor" or include such classification in the working codes.
- Provide Certification to carry out the requested works (ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 or equivalent on "design, supply, installation, maintenance and support of water treatment systems).
- Provide a warranty for good operation for at least 1 year for the whole system which is to be installed.

- Provide proof of their average annual turnover for the last three (3) fiscal years being at least equivalent to the maximum amount of this Call proven through Financial Statements (Income Statement and Balance Sheet) of the last three years duly certified by a Public Accountant, and with authentication of receiving by the Government's Internal Revenue Authority. Include any indication of credit rating, industry rating, etc.
- Provide a statement that at least one certified electrician / installer will be used to perform the electrical works.
- Provide a statement of understanding the requested objective, services, and deliverables.
- Provide a Graphic Works Schedule - Program of Works in the form of a Gantt Chart, which will ensure the most effective way for maximum water conservation.
- Provide a signed statement certifying that the components to be supplied are new and unused.
- Provide the datasheet of the offered equipment.
- Provide the CE or ISO certificates of the pumps, and any other electromechanical equipment which is to be offered.
- Provide a signed statement of availability of resources (e.g. financial, tools, equipment, personnel / technicians) to perform the requested tasks (either own resources or through collaboration).
- Provide proof (contract and accompanying documentation) of having executed at least one related work of equal or higher value in the last three years.
- Provide proof (contract and accompanying documentation) of having executed at least one work which included at least six (6) of the seven (7) following aspects, in the last three years:
  - Booster water pumps
  - Dosing pumps for chemicals
  - Filtration with Lamella
  - Pipe flocculator
  - Filtration with pressure filter of at least two layers of filtering media
  - Drying unit with filter bags
  - Control panel
- Provide proof of visiting the location of implementation of the requested works in the preset period.

B. Financial Offer (Annex 4)

7. Awarding Criterion and Evaluation Process

Award criterion is the Most Economically Advantageous offer with criterion the lowest price for the offers satisfying the selection criteria.

8. Submission of Offers

Please refer to the **Call for Offers Document** for the proper submission of the Technical and Financial Offer.

ANNEX 1 – TECHNICAL SPECIFICATIONS

The following material derived from a technical study that was conducted by an awarded expert at the Water Treatment Plant of Schimatari. The awarded contractor will have access to that study.
Additionally, the awarded contractor will have access to the variation (from the original study) suggested and accepted by the Technical Service of the Municipality of Tanagra.

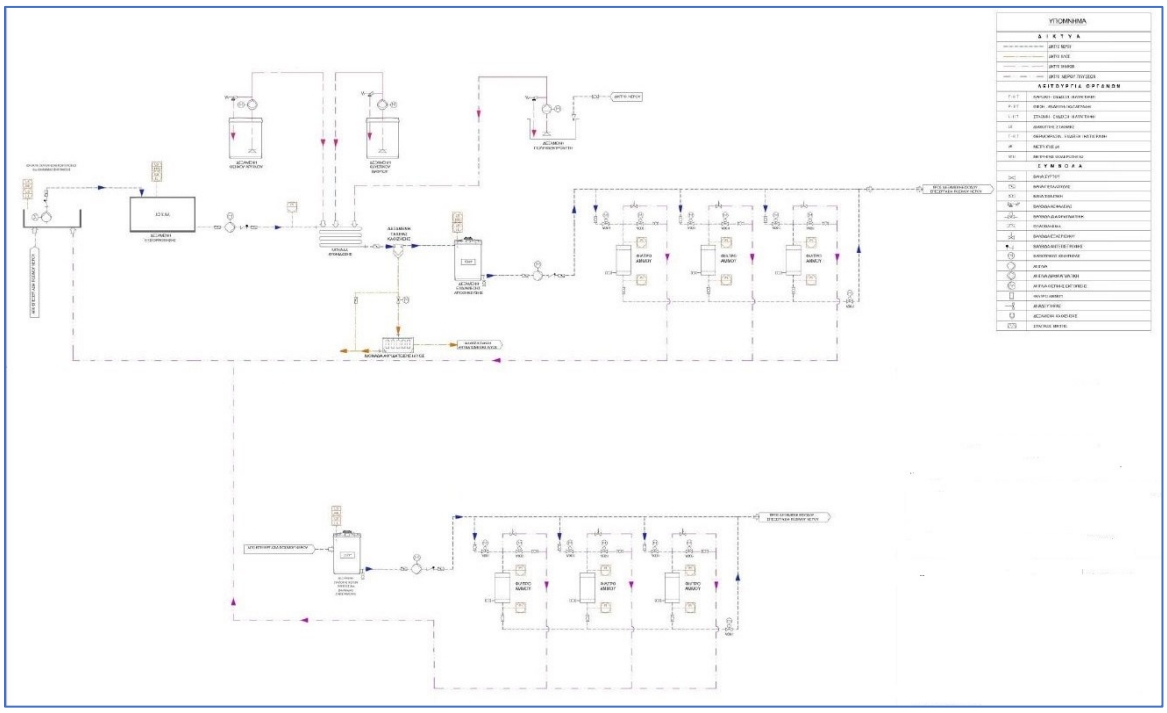
1. Water Treatment Plant of Schimatari

No of filters	
Filters with 2,5m diameter:	4
Filters with 1,8m diameter:	3
Flow per filter (m^3/h)	
Filters with 2,5m diameter:	100.00 m^3/h
Filters with 1,8m diameter:	50.00 m^3/h
Backwash water per filter (m^3) per washing cycle	Washing Cycle Duration: BW1: 12m, BW2: 12m, CR: 5m
Filters with 2,5m diameter:	79.50 m^3
Filters with 1,8m diameter:	41.30 m^3
Total backwash water (m^3) of all the filters:	441.90 m^3
Filters with 2,5m diameter:	318.00 m^3
Filters with 1,8m diameter:	123.90 m^3
No of backwash per 24 hours:	2
Total backwash water (m^3/24h):	883.80 m^3
Filters with 2,5m diameter:	636.00 m^3
Filters with 1,8m diameter:	247.80 m^3
Annual volume of backwash water (m^3):	322.587.00 m^3
Backwash water to be treated (m^3/h)	36.83 m^3/h
Turbidity of backwash water (NTU)	308 NTU
Total Suspended Solids of backwash water (mg/l)	286.00 mg/l
Weight of dry mud (kg/d)	0.253 kg/d

It is noted that the filters at the Water Treatment Plant of Schimatari perform both the rinsing and the backwash phases. Both volumes are included in the "backwash" term used above.

2. Treatment Process of Backwash Water at the Water Treatment Plant of Schimatari

Treatment Stages:
Those are presented in the attached PID:



Works included:

- Construction of a shaft to collect the backwash water
- Installation of a control / electrical panel
- Hydraulic and electrical connection of the equipment (including piping, fittings, cables, etc.).
- Concrete base for the equipment (if needed)
- Protection of the electromechanical equipment from the outdoors weather conditions.

3. Technical Specifications of Equipment

Treatment of the washing water of the 1st stage of the existing filters

3.1. Collection Shaft

A shaft of max 10 m^3 will be constructed on the backwash water drainpipe to collect the backwash water and forward it to a Balancing Tank (3.3). Specifically, the construction will expand the existing shaft to serve the filter backwash water collection. The shaft will also collect the filter backwash water from the filters which will be installed as components of the system requested at the present assignment.

3.2. Shaft Pump

A surface pump will be installed next to the shaft with all the necessary hydraulic connections in order to forward the collected water from the shaft to a backwash water Collection Tank (3.3). The pump will have an approximate flow of 180 m3/h at 14 m and will be at least 11kW.

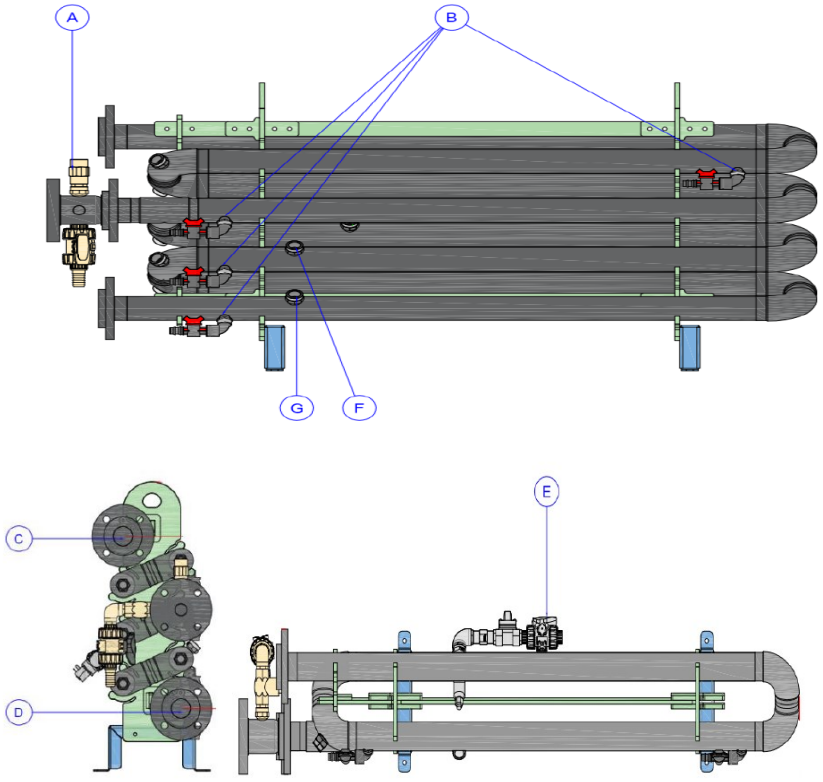
3.3. Collection / Balancing Tank

The filter backwash water will be forwarded from the Collection Shaft (3.1) to a Collection / Balancing Tank with a volume of at least 40 m^3. The tank will be installed outdoors on a suitable base made of concrete (if necessary) and will be made out of LLDPE.

3.4. Booster Pump to Flocculator

A booster pump of approximate flow of 35 m^3/h at 13 m and it will be at least 2,2 kW. The pump will be installed on the outlet of the Collection / Balancing Tank (3.3) to forward the collected water through the Pipe Flocculator, towards the Sedimentation Tank.

3.5. Pipe Flocculator



Point	Description	Size
A	Insert point for polymer	¾"
B	Sampling point	½"
C	Effluent after the addition of chemicals	DN 150
D	Influent to be treated	DN 100

E	Cleaning point KIT pH	-
F	Insert point for pH related chemicals	¾"
G	Insert point for coagulant	¾"

3.6. Dosing Pumps

3.6.1. Dosing pump for coagulant
A minimum flow of 3 l/h is required. The offered dosing pump must be of 0 – 10 l/h at 4 bar. The dosing tank will be accompanied by a tank of 500lt volume for chemicals.

3.6.2. Dosing pump for sodium hydroxide
A minimum flow of 3 l/h is required. The offered dosing pump must be of 0 – 10 l/h at 4 bar. The dosing tank will be accompanied by a tank of 500lt volume for chemicals.

3.6.3. Dosing pump for polymer
A minimum flow of 7 l/h is required. The offered dosing pump must be of 0 – 20 l/h at 2 bar. The dosing tank will be accompanied by a tank of 500lt volume for chemicals.

For the startup of the system, the contractor will offer the necessary quantity of at least 25lt of coagulant, 25lt sodium of hydroxide and 100lt of polymer.

3.7. Sedimentation Tank – Lamella Type

Indicative Technical Specifications	**Size**
Length (m)	4,50
Width (m)	3,50
Height (m)	2,23
Surface (m^2)	54,60
In / Out (water)	DN 150 / DN 200
In / Out (mud)	DN 80

The sedimentation unit will be made of Stainless Steel 304 or Glass Reinforced Plastic (GRP) with a layer of suitable resin or synthetic materials, with a plastic layer on the points of contact with the water, or Polypropylene (PP) or Polyethylene (PE). The inclined plates, will be made of plastic of adequate stiffness in order to remain in parallel formation and to avoid deformation during operation. The plates will be removable for maintenance reasons.

The applicant may suggest more than one (1) smaller tank but with a total surface equal to or higher than 54.60 m^2.

3.8. Drying Unit for the Rejected Mud from the Sedimentation Tank

The removal of the sedimented mud will be made with a suitable electrovalve which will be installed at the point of mud rejection on the Sedimentation Tank (3.7). The electrovalve will be controlled in a way that will allow the mud to move to the mud towards a mud thickening unit with bag filters. The unit will be of double layout with three bag filters in each side.
The surface of the bag filters for the thickening of the mud will be approximately 16,00 m^2/day.
The water drained through the bag filters will return to the Collection Shaft (3.1).

3.9. Intermediate Tank Before the Sand Filter

A plastic tank of 10 m^3 will be installed before the Pressure Filters (3.11) and after the Sedimentation Tank to stabilize the flow of water to the Pressure Filters. It will be placed on a suitable base made of concrete (if necessary) and will be made out of LLDPE.

3.10. Booster Pump to Pressure Filters

A pump will be installed next to the intermediate tank with all the necessary hydraulic connections in order to forward the collected water from the tank to the filter system (3.11). The pump will have an approximate flow of 35 m3/h at 20 m and will be at least 3kW.

3.11. Automatic Pressure Filter System

Technical Specifications	
Number of filters	3
Flow (m^3/h) per filter	12,27 m^3/h
Velocity (m/h) per filter	13,73 m/h
Filter diameter (inches)	42" (1085mm)
Material of filter	Glass Reinforced Plastic
Shape	Vertical, cylindrical, with hemispherical edges
Cylindrical height (mm)	1.185 mm
Maximum pressure of operation (bar)	5
Test pressure	60% more than the maximum operation pressure
Pressure drop	Less than 1 bar
Backwash flow (m^3/h)	25 m^3/h (for 10 minutes)
Diaphragm valves	7 (for all the system of the 3 filters)
Filtering media	
Substrate	
Layer 1	Silica Gravel 10 – 15 mm
Layer 2	Silica Gravel 6 – 10 mm
Layer 3	Silica Gravel

	2 – 5 mm
Total height of substrate	450 mm
Filtering Layer 1	Silica Sand 0,5 – 1 mm 380 mm height
Filtering Layer 2	Anthracite 0,8 – 1,6 mm 430 mm height

The three (3) Pressure Filters will be connected in parallel arrangement.
The backwash water of the filters will be directed back to the Collection Shaft (3.1) while the filtered water is forwarded to the Raw Water Tank of the Water Treatment Plant.

Additional features:

- The filters must rest on a base to prevent damage from moisture and also to allow easy access to the bottom of the filter.
- The filters must be accompanied by a piping system made of PVC polymer material, of high quality with particular resistance to corrosion, diameter Φ63.
- In the upper part of the filters there must be a cylindrical system of uniform distribution, while in the lower part of the filter there is a system of uniform distribution of the water perforated distributors placed radially.
- The filters will be accompanied by an air compressor which will include an electric motor and an air tank of 100lt, and the following technical specifications:
  - Flow: 175 l/min
  - Pressure: up to 8 bar
  - Power: 2.5 hp

Operation and washing control unit

The backwashing of each filter is performed with water. The water comes to the filters via pumping (the one displayed in 3.10). The filters will be equipped with diaphragm-type valves which will be controlled by pneumatic motors / actuators. Totally, the filtering system will be equipped with seven (7) diaphragm valves [two (2) on each filter and one (1) on the connecting pipe for filtered water]. The valve operation commands will be provided by an electric board of 24V. The whole filtering system will be controlled by an electric board.
The control will ensure:

- The automatic operation in all the phases of filtering, rinsing and backwashing.
- The minimization of hydraulic hammering.
- The chronometric setting of the backwashing of each filter.
- The independent setting of the duration of each stage of backwashing.
- The option of manual operation with the simple pressing of a button.

The filtering system is composed of three (3) Pressure Filters connected in parallel. Its operation includes two (2) phases:

- Normal or Filtering Operation: The water is inserted from the top of each filter vessel and the total suspended solids are removed as it moves downwards through the filtering materials. Finaly, the water exits each vessel from the bottom.
- Backwash Operation: The water is inserted from the bottom of each vessel and removes the suspended solids from the filtering media as it moves upwards. From there, it is forwarded to the drain. The backwash of each filter is performed with water (after the Sedimentation Tank). Each filtered is backwashed separately and consecutively.

All the filtering system operations are performed automatically.

Treatment of the washing water of the 2nd stage of the existing filters

In Schimatari Water Treatment plant there already exists a hydraulic configuration that collects the washing water of the 2nd stage of the four larger existing filters to a tank.

3.12. Intermediate Tank Before the Sand Filter

A plastic tank of approximately 20 to 25 m^3 already exists in the WTP of Schimatari. This tank will be used for the collection and stabilization of the flow of water coming from the backwash operation of the 2nd Stage of all the filters and not only the four larger ones.
For this reason, the drain of the 2nd stage of the three smaller vessels will be connected to the existing hydraulic configuration.

3.13. Booster Pump to Pressure Filters

A pump will be installed next to the intermediate tank with all the necessary hydraulic connections in order to forward the collected water from the tank to the filter system (3.14). The pump will have an approximate flow of 45 m3/h at 22 m and will be at least 4kW.

3.14. Automatic Pressure Filter System

Technical Specifications	
Number of filters	3
Flow (m^3/h) per filter	15 m^3/h
Velocity (m/h) per filter	12,85 m/h
Filter diameter (inches)	48” (1218mm)
Material of filter	Glass Reinforced Plastic
Shape	Vertical, cylindrical, with hemispherical edges
Cylindrical height (mm)	1.110 mm
Maximum pressure of operation (bar)	5
Test pressure	60% more than the maximum operation pressure
Pressure drop	Less than 1 bar

Backwash flow (m^3/h)	25 m^3/h (for 10 minutes)
Diaphragm valves	7 (for all the system of the 3 filters)
Filtering media	
Substrate	
Layer 1	Silica Gravel 10 – 15 mm
Layer 2	Silica Gravel 6 – 10 mm
Layer 3	Silica Gravel 2 – 5 mm
Total height of substrate	465 mm
Filtering Layer 1	Silica Sand 0,5 – 1 mm 390 mm height
Filtering Layer 2	Anthracite 0,8 – 1,6 mm 470 mm height

All other information related to the Pressure Filters are similar to the ones presented in 3.11. The main difference is that the water which will be used for the backwashing of the filters comes from the Collection tank of 3.12 and not after the Sedimentation Tank.

Operation of Filter Backwash System

The requested system should include the necessary components (including PLC) for its operation to be connected to and be synched with the existing treatment equipment at the Water Treatment plant of Schimatari.

4. Bill of Quantities

ITEM / EQUIPMENT	**QUANTITY**
Construction of a 10 m^3 (max) shaft	1 (lump sum)
Supply of a pump of 180 m^3/h at 14 m, 11 kW	1
Supply of a flow balancing tank of 45 m^3, LLDPE	1
Supply of a pump of 35 m^3/h at 13 m, 2.2 kW	1
Supply of a pipe flocculation with chemical dosing inlets	1
Supply of dosing pump for polymer (0 – 20 lt/h at 2 bar), including tank of 500 lt. for chemicals	1
Supply of dosing pump for coagulant (0 – 10 lt/h at 4 bar), including tank of 500 lt. for chemicals	1

Supply of dosing pump for sodium hydroxide (0 – 10 lt/h at 4 bar), including tank of 500 lt. for chemicals	1
Supply of Sedimentation tank(s) of a total surface of 55 m^2	1
Supply of drying unit of daily bag filter surface of 16 m^2	1
Supply of an intermediate plastic tank of 10 m^3	1
Supply of a pump of 35 m^3/h at 20 m, 3 kW (able to support the backwash of the filters of 42').	1
Supply of pressure filter of 42' including its filtering media	3
Supply of a pump of 45 m^3/h at 22 m, 4 kW (able to support the backwash of the filters of 48').	1
Supply of pressure filter of 48' including its filtering media	3
Coagulant for the start-up	25kg
Polymer for the start-up	100kg
Sodium hydroxide for the start-up	25kg
Control panel / electric board in synch with the existing operational system at the WTP.	1
Electrical connections	1 (lump sum)
Hydraulic connections	1 (lump sum)
Concrete slab for the placement of the equipment which is to installed outdoors.	1 (lump sum)
Shed to cover the equipment which is to installed outdoors.	1 (lump sum)

5. Drawings

P&ID drawing is provided as separate .pdf file.

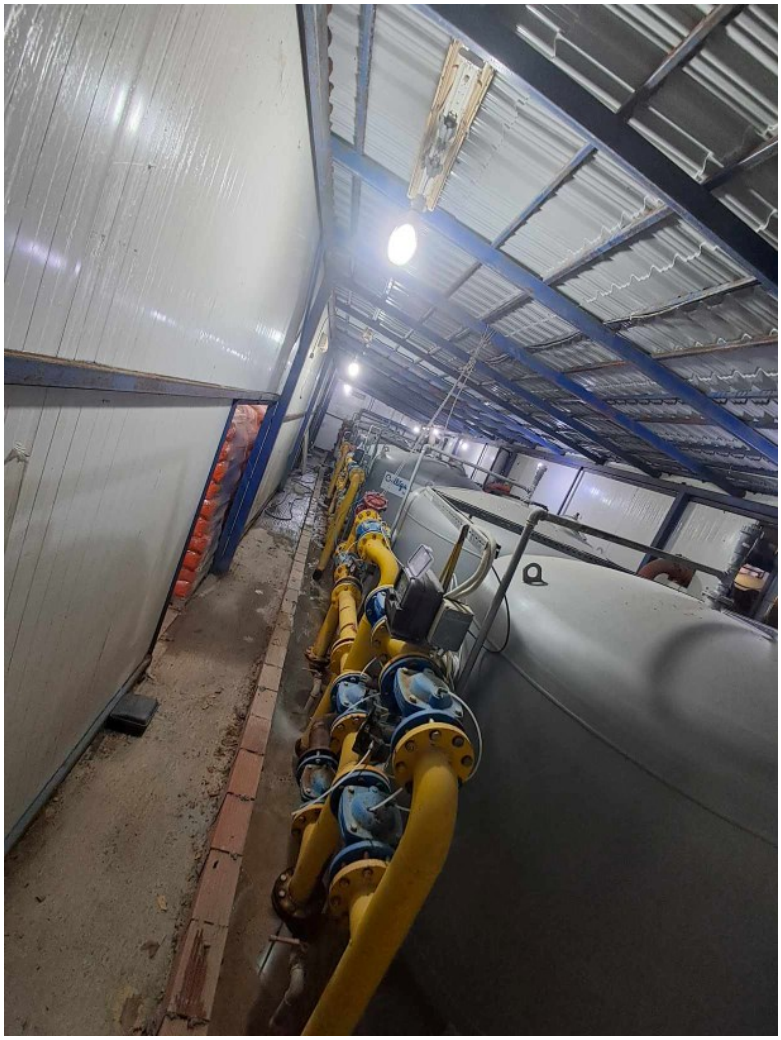
6. Phases of Work

Phase I	Preparatory works (e.g. cleaning of the area of installation, ground leveling, concrete slab, etc.)
Phase II	Supply and delivery of equipment to the location of installation
Phase III	Hydraulic and electrical connection of equipment and control / electric board
Phase IV	Testing and start-up of the system
Phase V	Operation and Maintenance Manual, including troubleshooting section
Phase VI	Training session for the employees of the Technical Service of the Municipality of Tanagra

7. Indicative Drawing of the Area of Installation

Indicative drawing is provided as separate .pdf file.

8. Pictures of the Area of Installation

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ANNEX 2 – SPECIFIC OBLIGATIONS

Article 1. Works insurance

For the proper implementation of the works, the Contractor is obliged to have the construction works insured against all risks (civil liability and insurance to third parties), including cases of damage due to force majeure.

Article 2. Study of project execution conditions

The Contractor accepts with his offer that he/she has fully studied the nature and location of the works, the general and local conditions, mainly regarding the conditions of finding, transporting, depositing and storing materials, the existence of labor, water, electricity, the volatility of weather conditions, the possibility of flooding of streams and generally all natural conditions in the area of the works, the configuration and condition of the soil and subsoil, the type, quality and quantity of materials and water above and below ground, the type and means that will be required before the commencement and during the period of works and any other matters which in any way may affect, in connection with the contract; the work or its cost.

In particular, he/she studied and took into account in the offer the load and traffic conditions of vehicles and the existence and operation of projects and public utility networks (pipelines, sewerage in general, etc.). It is noted that the responsibilities for correspondence and consultations that may be needed with the various Public Utilities all belong to the Contractor. All such actions will be done with the knowledge of the Supervising Authority.

The Contractor acknowledges that interference is expected from other Contractors of other projects and for this reason has taken into account these charges in the contractual prices of the offer and in the detailed construction program and that no such interference will be the basis for additional compensation to the Contractor. The Contractor shall cooperate with all other Contractors under the instructions of the Supervising Authority, and undertakes the obligation not to obstruct the execution of any other works or works of a public sector body, which may be affected by the works of the present assignment, to protect existing constructions from any damage or interruption of their operation and without reducing its liability to restore or contribute to the immediate restoration of damages or interruptions.

The Contractor must, in any case where he considers that a change in the plan of the approved design would be technically and economically beneficial to the project, to inform the Supervising and Contracting Authority, who may accept or reject the proposed change.

Article 3. Contractor's compliance with the contract and the orders of the Supervising Authority.

The Contractor must comply with the provisions of the Special Conditions and other elements of the contract, as well as with the written orders of the Supervising and Contracting Authority. The Contractor has no obligation to comply with the orders given to him/her orally but only with the written orders or service notes of the Supervising Engineer certified by relevant documents of the Supervising Authority.

Exceptionally, in urgent cases, the Contracting and Supervising Authorities' order for amendments or additions may also be given orally at the site of the works. In this case, a relevant entry must be made in the project logbook. If such an order is given by the supervisor, he shall forthwith inform the Contracting Authority in writing of the issue of a proper order issued within three

working days of such written notification. If this order partially or totally alters the orders of the supervisor, the Contractor shall be compensated for the work he has carried out, in accordance with the order of the supervisor, until the order of the managing department is received.

Article 4. Quality of Materials – Inspections

The Contractor must procure at his own risk and expense all the materials and equipment that will be required for the execution of the project.

The receipt and quality control of the materials used in the construction of the project or incorporated in it, is done by the Supervising and Contracting Authority.

The materials must be of excellent quality and meet the terms of the respective applicable National Technical Specifications.

If during the implementation of the project, the Supervising Authority considers that the materials and equipment to be used do not meet the requirements of the specifications or are generally unsuitable, the Supervising Authority orders the non-use of the materials and equipment.

Article 5. Inspections – Construction Test

The Supervising Authority will proceed whenever is deemed appropriate and at the expense of the Contractor to inspections and tests of the structures, in order to ascertain, inter alia, their quality and effectiveness. The controls - tests are:

- Waterproofing of tanks and wells.
- Tightness of pipelines.
- Operation of gravitational networks
- Operation of pumps

Article 6. Electro-mechanical and mechanical equipment

The Contractor must procure at his own risk and expense all the electro-mechanical and mechanical equipment that will be required for the execution of the project. The equipment provided by the Contractor will be new and unused, in excellent working condition and will be maintained normally.

If, however, and at the absolute discretion of the Supervising Authority, the mechanical and other equipment introduced into the project are not deemed sufficient for the timely completion of the works, then the Contractor is obliged, within ten days from a written order of the Contracting Authority, to reinforce the existing on-site mechanical equipment, etc. in accordance with the instructions of the Supervising Authority.

Article 7. Deadline for completion – Timetable – Indicative/exclusive partial deadlines – Detailed programme – Logbook – Progress of work – Penalties

The Contractor within five (5) days from the signing of the Contract must submit to the Supervising Authority for approval a detailed program, showing the order of execution of the works. This plan will also be drawn up in the form of a project progress diagram (GANTT diagram) so that the sections and the time limits for completion of the project are clearly shown. This program must be returned to the contractor, approved or modified, partially or totally, within eight (8) days of its submission.

The Contractor must use each time adequate crew of technicians and workers and mechanical means of construction or work overtime on Sundays and holidays and train night crews, without

being entitled for this reason to additional compensation, if this is deemed necessary to ensure the execution of the works in accordance with their above progress program.
The Supervising and/or Contracting Authority, if it considers that the rate of progress of the works is not satisfactory and in accordance with the work schedule, may require the Contractor to increase the number of his crew, overtime on working days and the number of machines and generally to take all measures necessary to accelerate the progress of the works. The Contractor must comply with the relevant orders of the Supervising and Contracting Authorities, without additional compensation.
The non-compliance of the Contractor with the above orders and the proven unjustified delay in the execution of the works according to the above program, gives the Contracting Authority the right to terminate the contract and deprive the Contractor of the right to continue the project. The non-exercise of the above rights of the Contracting Authority does not release the Contractor from any obligation arising from the contract.

The Contractor must keep a detailed logbook of works and weather conditions. The logbook should be filled in daily and should be indicated in a concise manner, in particular:

i. General weather conditions, while harsh conditions need to be registered indicating the time of occurrence and duration, if possible.
ii. Location and description of operations. Indication of the work for which there is no progress or is not being carried out, and the reasons for this.
iii. Time of start and end of critical tasks within the day.
iv. Arrivals and departures of main equipment.
v. The materials presented and the operations carried out.
vi. Delays, difficulties, accidents, damage, abnormal circumstances causing delays, the time for temporary suspension or resumption of work.
vii. Emergencies
viii. Any other relevant information relating to the project.

Article 8. Excavations – Backfillings – Demolitions

The excavation of trenches and shafts for the installation of pipelines and the execution of technical works shall be carried out in accordance with the execution plans (certified by the Supervision Authority) and the on-site instructions of the Supervision. The depths and widths of the excavation bottom where the implementation of the drawings of the approved design is not possible, shall be determined by the Supervisor according to the specific local conditions.
Excavations other than those specified in the plans or by the Supervising Authority are not recognized without its prior written order, nor are other works carried out due to additional excavation (backfilling, pavement restorations, etc.) recognized. The Contractor must propose to the Supervising Authority the modifications which, in his/her opinion, are required.
The excavated products shall be temporarily placed on the lower than the cross-section side so as not to be carried away by water towards the trench / shafts. The excavation of ditches / shafts and subsequent works up to and including their refilling, if necessary, must be carried out at the fastest possible pace, especially in areas with heavy traffic, so as not to maintain for long the irregularities caused to pedestrian traffic, cars, etc. by the existence of the ditch, soil, etc. It is particularly emphasized that the Contractor is obliged not to leave a part of a trench/shaft of any

length in which the works will not have been completed (from excavation to its refill), unless specified otherwise.
The Contractor must ascertain the possible existence of obstacles before excavations begin, gathering the required information from the competent Services, in order to avoid damages and accidents. Care will be taken not to damage underground cables, water supply networks, etc. Where residential water pipes meet, they must be properly supported and protected. Passage next to poles will be treated with complete and safe special support of the side of the trench / shaft at the necessary length and depth, with the appropriate safety measures each time. Unforeseen obstacles will be dealt with according to the specific circumstances.

Article 9. Removal of waste materials

Excavation products and generally any kind of useless materials coming from demolitions, constructions related to road surface restorations, etc., will be removed without delay. Waste materials will be removed, even partially, in order to limit as much as possible, the period of existence of the anomaly that comes from it. Materials that need to be removed are:
The removal of excess excavated products must be carried out by the Contractor without objection and regardless of whether the quantity is large or small. The places where these materials are deposited shall be approved each time by the competent authority. The cost of removal shall be included in the excavation price.

Article 10. Improper construction of works - Defects

If, during the construction of the works until final acceptance, any work shows defects which are not rectified by the Contractor, an order from the Supervising and Contracting Authorities will be notified to him/her. The order shall specify the defects, determine whether they are substantial, insignificant or dangerous and set a reasonable time limit for their rectification. Restoration may include the removal of defective works and their reconstruction, if necessary. If the defect is not substantial and its rectification requires disproportionate costs, the order shall set a percentage reduction in the contractor's remuneration for the corresponding works. In the latter case, the order may also include the execution of certain operations to limit the defect.
If the defect is discovered at the time of acceptance of the works, the provisions of the respective law shall apply, and the rectification of the defects shall be established by the Contracting Authority.
The Contractor is declared void from the contract when his/her works are systematically poorly crafted or the materials he uses do not meet the specifications.

Article 11. Health and Safety

The Contractor is obliged to execute the works in a safe manner for his staff, or the staff of the project operator, or any third party, in order to eliminate or minimize the risks of accidents or occupational diseases during the construction phase of the project and in accordance with the Laws, Decrees, Police and other provisions and instructions of the Supervision Authority, concerning the health and safety of workers. Indicatively, and not restrictively, the following are mentioned:

- The Presidential Decree of 22-12-33 (Government Gazette 406 A/33) and its amendment by Presidential Decree 17/78 "On the safety of workers and employees of employees on portable ladders"

- Presidential Decree 447/75 (Government Gazette 142 A/75) "On the safety of employees engaged in construction work".
- Law 495/76 (Government Gazette 337A/76) "On weapons and explosives".
- Presidential Decree 778/80 (Government Gazette 193A/80) "On safety measures during the execution of building works".
- Presidential Decree 1073/81 (Government Gazette 260A/81) "On safety measures during the execution of works on building sites and all kinds of works under the responsibility of Civil Engineers".
- Law 1430/84 (Government Gazette 49A/84) "Sanctions of the International Labour Convention concerning safety provisions in construction, industry, etc.".
- Law 1568/85 (Government Gazette 177A/18.10.85) "On the health and safety of workers".
- Presidential Decree 294/88 (Government Gazette 138A/88) "Minimum employment time of safety technician and occupational doctor".
- Presidential Decree 395/94 (Government Gazette 220A/94) "Minimum Safety and Health Requirements for the use of work equipment by workers at work, in compliance with Directive 89/655/EEC".
- Presidential Decree 396/94 (Government Gazette 220/94) "Minimum safety and health requirements for the use by workers of personal protective equipment at work, in compliance with Directive 89/656/EEC".
- Presidential Decree 397/94 (Government Gazette 221A/94) "Minimum health and safety requirements for the manual handling of loads, where there is a particular risk of back injury, in compliance with Directive 90/269/EEC".
- Presidential Decree 399/94 (Government Gazette 221 A'/94) "Protection of workers from the risks related to exposure to carcinogens at work, in compliance with Directive 90/340/EEC".
- Presidential Decree 105/95 (Government Gazette 67A/95) "Minimum requirements for safety and/or health signs at work, in compliance with Directive 92/58/EEC".
- Presidential Decree 16/96 (Government Gazette 10A/96) "Minimum health and safety requirements in the workplace, in compliance with Directive 89/654/EEC".
- Presidential Decree 17/96 (Government Gazette 11A/96) "Implementation of measures to promote the improvement of health and safety of workers, in compliance with Directive 89/391/EEC and 91/383/EEC".
- Presidential Decree 305/96 (Government Gazette 212A/96) "Minimum requirements to be applied at temporary or mobile construction sites", in compliance with Directive 92/57/EEC.

Regarding the adoption of safety measures, the Contractor is obliged to carry out under his/her responsibility any relevant study (static study of scaffolding, study of temporary marking of works, etc.) and to take all relevant measures. The Contractor bears full and exclusive responsibility for any damage caused to anyone by the breach of the above obligations, being liable, among others, for the payment of the relevant compensations. The Contractor must take protective measures, in accordance with the current legislation during the design and construction phase of the project. The Contractor of the project must insure to the insurance service as provided by law all the staff he will employ.

The Contractor is solely responsible for the observance of all provisions and regulations relating to the execution of the project and the provision of work, is responsible for any violation and is therefore charged with the payment of fines, compensation and any other amounts imputed to him/her.

Article 12. Storage of materials, works, and existing structures

The Contractor must keep at his/her own risk and expense the supplies and materials in his possession (equipment, pipes, special pieces, and other components) intended for the execution of the project. The Contractor will be responsible for any loss or breakage or damage thereof and has the obligation to replace them.

All claims of the Contracting Authority for the safekeeping of its property will be executed by the Contractor without any special compensation. If the Contracting / Supervising Authority finds that the Contractor does not adequately protect materials, machinery, supplies or works performed, then this property may be protected by the former, with the cost of safekeeping to be borne by the Contractor, and will be deducted from what he is entitled to receive.

Article 13. Protection of vegetation – environment

The Contractor has the obligation to take measures to protect the environment. He/she must comply with the applicable environmental legislation.

The Contractor protects the vegetation of the area where the project is executed and is responsible for any felling of trees, shrubs and destruction of a plantation that would not be necessary for the execution of the project. In case of damage or destruction to elements of the natural environment, which are not provided for in the approved design of the project (or by any modifications approved by the Supervising Authority), the Contractor, regardless of any responsibilities that may arise for him/her, is obliged to restore the existing works or the natural environment to the state it was in before its installation, at his/her expense, without being entitled to any financial compensation or extension of the deadline.

Violation in the fulfillment of obligations such as lack of proper protection of the environment, failure to protect the public, delay in repairing damage to other public works or public property impose on the contractor the sanctions of the respective laws.

Article 14. Damage to the project - Damage from force majeure

Until final acceptance, the Contractor bears the risk of damage from any cause. The Contractor is obliged to correct within a reasonable deadline the defects of the project, which will be detected during construction and until final acceptance. If the defect is not substantial and its correction requires disproportionate costs, a relative reduction of the contractor's consideration shall be made.

The Contractor is not entitled to any compensation from the Contracting Authority for any damage caused to the works, for any damage or loss of materials and generally for any damage due to negligence, carelessness or unpretentiousness of him/her or his/her staff or to non-use of appropriate means or to any other cause, except in cases of force majeure. The Contractor is obliged to repair the damages borne by him/her at his own expense.

In case of damage caused by force majeure to the works carried out or to the materials located on the construction site, the Contractor has the right, by reporting to the Supervising Authority,

submitted within ten days from the occurrence of the damage, to indicate the time when the damage occurred, the cause, the type, the extent and cost necessary to remedy it.

Article 15. Use the project before completion

The Technical Service of Tanagra Municipality, which will receive the project as a donation from GWP-Med, has the right to take possession or use any part of the work that has been partially or totally completed, only after its administrative acceptance (partial) in accordance.

If such possession or use delays the progress of the work, then the Contractor grants a corresponding extension of the deadline for completion of the work.

If the use of the project by the Technical Service of Tanagra Municipality before its completion entails additional costs for the Contractor, then the Technical Service of Tanagra Municipality shall pay these costs which must be fully justified.

Works for the restoration of damages due to the use of a work delivered to use before its acceptance in accordance with the provisions hereof, shall be carried out only after a written order of the Contracting Authority.

Article 16. Measurements – Hidden Works

At the end of each deliverable, the Contractor prepares measurements in distinct parts of the project for the works executed in the previous period. The measurement shall include for each operation a brief description of the operation with an indication of the corresponding article of the invoice or the protocols for regulating unit rates of new work performed and the necessary measurement drawings, data, and diagrams for this purpose, based on direct measurement data of operations or protocols of hidden operations.

The measurements, accompanied by the necessary measurement data and drawings, in electronic form, shall be submitted by the Contractor to the Supervising Authority for inspection no later than ten days (10) after the end of the period following their execution, after being signed by him with the indication "as prepared by the Contractor". which ends with the approval decision of the latter.

The Supervising Authority, within five (5) days from the submission of the measurements by the Contractor, has the obligation to check and correct the calculations, approve the measurements and notify the contractor of the measurements that have been checked and corrected. The Contractor, if he does not accept the corrections, may exercise the prescribed right of objection. If the submitted measurements show deficiencies that make it impossible to check or correct them, the Supervising Authority returns the measurements to the Contractor within the above five (5) day deadline and invites him to remedy the specific deficiencies. The Contractor is obliged within five (5) days resubmit the measurements by completing all the information requested in the invitation. After resubmission of the measurements, the Supervising Authority may not return them again to the Contractor for completion but is obliged within ten (10) days to check, correct, approve, and notify them to the contractor. The measurements, if they are not returned approved or corrected or for completion within the above period or if, after their resubmission, they are not checked, corrected, approved and notified to the Contractor within the above deadline, are considered automatically approved, only in the sense that they can be included by the Contractor in a subsequent account.

In the case of works, the quantitative verification of which is not possible in the final form of the project (hidden works), such as works that are to be overlapped by others and are not finally

visible, quantities received by weighing or the like, the Contractor is obliged to invite the Supervising Authority for the Receipt of Hidden Works, in order to proceed jointly with the counting or weighing and to draw up a protocol of receipt of hidden works or a weighing protocol respectively. This protocol, signed by the contractor and the supervisor, shall be a prerequisite for the certification of the work concerned. The invitation of the Contractor to the Supervising Authority must be made for the joint weighing at least one (1) working day before it, and for the receipt of the field data at least five (5) working days before they are carried out. Failure by the designated bodies to respond to the invitation may constitute grounds for default on the part of the developer and shall result in disciplinary action against those responsible. The protocol of receipt of works must accompany the measurement of the relevant works, has no enforceable administrative character, and is not challenged independently except together with the challenge to the approval act of the measurement.

One (1) month at the latest after the certified completion of the project, the Contractor is obliged to submit to the Supervising Authority individual measurements that are missing and the "final measurement", i.e. a final summary table summarizing the quantities of all partial measurements and the protocols of the paragraph of receipt of hidden works. If these have been checked by the Supervising Authority, the quantities shall be entered as corrected, even if objections by the contractor or requests for treatment are pending. Such inclusion in the final measurement shall not constitute a waiver by the contractor of such lawfully filed applications or objections, nor shall it entitle him to submit new ones. For individual measurements which have not yet been checked by the department, the measurement quantities as drawn up by the Contractor prior to the department's inspection shall be recorded. The final measurement shall be signed by the Contractor with the words 'as drawn up by the Contractor'. The Supervising Authority is obliged to proceed with the audit of the final measurement within one (1) month from its submission and to notify the Contractor of the audited and corrected measurement.

If no final measurement is submitted by the Contractor, no later than one month after the notification to him/her of the certificate of completion of the works, a special penalty of two thousandths (2‰) of the total amount paid to the contractor until then for the whole contract shall be imposed on him, for each completed month of delay. The penalty is imposed by decision of the managing department and for a maximum of six (6) months of delay. Irrespective of the imposition of the penalty clause and after the expiry of the period of its imposition, the final measurement is drawn up by the department that may use private technicians and workshops for this purpose, charging the relevant cost at the expense of the contractor. The final measurement thus drawn up shall be communicated to the Contractor.

Article 17. Completion of works – Delivery

The completion of the assigned works will be certified to the Contracting Authority by the Technical Service of Tanagra Municipality, as the Supervising Authority of the project, in compliance with its internal procedures. The Contracting Authority will receive the final invoice from the Contractor, the works are transferred automatically to the Contracting Authority until its donation to the Technical Service of Tanagra Municipality.