

REPUBLIC OF LEBANON

MINISTRY OF ENERGY AND WATER

PROJECT No

CONTRACT No

REHABILITATION OF WATER TOWER IN KHRAIBE AND CONSTRUCTION OF WATER DISTRIBUTION NETWORKS IN KHRAIBE AND EL QRAIYAT (AAKKAR CAZA)

VOLUME 2

BILL OF QUANTITIES

Part A - Preamble to Bill of Quantities

Part B – List of Unit Prices

Part C - Bill of Quantities

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PART A

PREAMBLE TO BILL OF QUANTITIES

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1.000 INTRODUCTION

1.010 GENERAL

The Bill of Quantities is not and does not purport to be either exhaustive or explanatory of all the obligations and duties of the Contractor who shall be deemed to have satisfied himself as to the correctness and sufficiency of the rates and prices entered by him in the Bill of Quantities all of which shall cover all his obligations under the Contract (including those in respect of the supply of goods, materials, plant or services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein and which may reasonably be inferred to be necessary for the Works as described in the Contract whether expressly mentioned therein or not.

1.011 ITEMS DESCRIPTION

A detailed description of the items and of the conditions under which and the manner in which the work is to be done and measured is not set out in each item of the Bill of Quantities. Reference should be made to this Preamble and all other documents forming the Contract.

1.012 DEFINITION OF THE SCOPE OF WORK

The works shall include, but not be limited to, a complete topographic survey, soil investigations, excavation works, backfilling, road works, concrete works, blockworks, cladding, plastering, waterproofing, thermal insulation, painting, fencing, and all necessary works not mentioned above and needed for a good finishing and exploitation of the different structures. Also this category shall include, but not be limited to, the supply and installation of all necessary hydraulic accessories needed for equipment of the reservoirs and related valve chambers.

1.013 RATES AND PRICES

The Contractor shall be deemed to have inserted against each item in the Bills such rates and prices as he may deem necessary to cover the requirements of the Contract. Where neither price nor rate is entered against an item or if the term "included" or any such similar term is used it shall be deemed to have been included in the other priced items in the BOQ and measured accordingly. All rates and prices entered against any item in the BOQ shall be deemed to include all the detailed requirements of the General and Particular Specifications and the requirements of the volume 1.

Rates and prices shall be inserted in the unit rate column of the Bill of Quantities. Each part of the Bill of Quantities shall be totalled and the totals carried to the Summary and Grand Summary.

1.014 MEASUREMENT

The Bill of Quantities includes items as lump sum and others as measured quantities.

1.014.1 Lump Sum

The lump sum items shall not be subject to re-measurement, and shall include the prices for all necessary construction, installation, testing and commissioning among others. The lump sum entered in the Bills shall include the price for a complete installation as described in the specifications.

The prices shall include all work necessary for completion of the Works and shall include the prices for all necessary building work such as forming box outs, supports plinths, cable trenches, and the like and all necessary safety and access works including guards, handrails, fire fighting equipment and the like.

1.014.2 Measured Quantities

All measurements in the Bill of Quantities are taken strictly net. The principle of net measurements shall apply to all Works executed. All quantities measured for payment shall be measured by the Engineer on the basis of actual net quantities of Work fixed in position. Item not used shall neither be measured nor included by the Contractor in his statements.

The quantities given in the Bill are the estimated quantities. In no sense shall such quantities be considered as limiting or extending the amount of the work to be done by the Contractor and of the materials to be supplied by him. The Contractor shall be responsible for checking quantities and for making any necessary surveys and investigations prior to placing any order for materials.

1.015 DEFINITIONS

The following definitions shall apply to items in the Bill of Quantities.

- **Extra - Over**

Any “Extra-Over” (EO) item shall be measured and paid for in addition to the measurement of the basic item to which it relates.

- **Included**

Where the term included is used in the Preamble or in the Bills, any items stated to be included with another item shall not be subject to measurement and their costs shall be deemed to be included within the rates of the billed item.

1.016 DEALING WITH WATER

Unit rates of items in the Bills of Quantities especially excavation items or excavation works shall be deemed to include the prices for dealing with water flows (especially for water courses crossing, or excavation along a water course) and keeping the Works free of water, and shall include prices for dewatering and supporting of trenches and excavation limits for pipeline works and structure works (for reservoirs, pumping stations, etc...) the above-mentioned works shall not be measured and shall not be paid separately.

1.017 WATER AND POWER

Unless otherwise explicitly stated in the Contract, water and power for the purpose of constructing, cleaning, and testing the Works shall be provided by the Contractor at his own expense, and shall not be measured separately.

1.018 RECORDS AND “AS-BUILT” DRAWINGS

After the work has been completed, the Contractor shall submit “as-built” drawings prepared whilst surveying during construction, showing the Works as constructed together with all other information that may either be required or be useful for the operation and maintenance of the Works in the future, such as type of soil, dimensions and location of structures, size of existing pipelines and cables encountered during excavation.

The cost of preparing the shop drawings, “as-built” Drawings and Records shall be deemed to be included by the Contractor in his unit rates for the various items in the Bill of Quantities and shall not be paid for separately. The As-built Drawings shall be submitted, if required by the Engineer, on computer CDs.

1.019 TRAFFIC REGULATION CONTROL AND SAFETY PROVISION

The provision of traffic control, safety equipment, signs, diversions, control systems including obtaining approvals and liaison with third parties for work in public roads and streets or in private sector will not be measured separately but shall be included in pipes rates, and shall include but not by way of limitation:

- Preparing all necessary plans, details and schedules and submission to the Employer/Engineer to obtain all necessary approvals.
- Liaison with third parties, to get all the needed permits from the concerned authorities.
- Erecting, maintaining, moving and removal of safety barriers, signs and traffic control equipment.
- Establishment and management of road diversions.
- Watching and lighting.
- Maintaining Roads and Streets clean and free from construction debris.

1.000 CIVIL WORKS

1.020 EXCAVATION AND TRANSPORT OF UNSUITABLE BACKFILLING MATERIALS

The price per cubic meter of excavation shall include but not be limited to:

Excavation in all kinds of soils and rocks for structures and for access roads, use of all adequate equipment, transport of soil to disposal sites approved by the Engineer, labor, dewatering, temporary and/or final retaining structures for trenches or open digs. The volume of excavations shall be measured from the geometric dimensions of structures and levels determined according to the site layout and drawings. No excess excavations or earthworks shall be paid for unless otherwise stated by the Engineer.

1.021 PREPARATION OF FORMATION UNDER RESERVOIRS AND OTHER CONSTRUCTIONS

The price per cubic meter for preparation of formation under the constructions foundation or slabs on grade shall include compacted gravels, sand, polyethylene sheet (150 μ), compaction equipment, labor and all material and equipment necessary to achieve the subbase and base to receive the concrete, the volume shall be measured according to geometric dimensions shown on the drawings.

1.022 BACKFILLING AND COMPACTION

The price of cubic meter of backfilling shall include backfilling layers (25 cm thickness each before compaction) placed and compacted for the needed area and behind retaining walls or other locations if ordered by written instructions from the Engineer or shown on the drawings. It shall also include geotextile sheets and drainage system if needed (minimum thickness 1.2mm, mass ≥ 300 g/m²), bituminous coating, etc....

The volume of backfill materials shall be computed according to the dimensions shown on the drawings and the site layout and shall be composed of selected material for each case.

The price shall also include material, equipment, labor, etc... and all necessary tasks to achieve the work in perfect conditions.

1.023 BLINDING AND MASS CONCRETE C20

The price per cubic meter shall include all material, equipment, labor, transport,... blinding and/or mass concrete and shall be composed of at least 250 kg of cement per cubic meter of concrete and shall be measured according to the geometric shapes shown on the layout drawings and/or Standard Drawings. Any quantity executed in excess of the indicated dimensions shall not be paid for. Any quantity less than that required in the Contract drawings and according to the specification documents shall be deducted or completed according to the instructions given by the Engineer.

1.024 REINFORCED CONCRETE C30 (BUILDINGS)

The price per cubic meter shall include all material, equipment, labour, transport, admixtures (retarders, plastisizers, waterproofing materials, ...) batching, mixing, placing, vibrating, curing, testing, finishing, scaffolding, reservations for equipment, formwork, wrought formwork (fair face), surface levelling, etc... Dosage of cement shall be 350 kg/cu.m. for technical buildings, channels, retaining walls, foundations, wellhead manholes, etc...

All joints or sealing systems shall be included in the price. Measurement shall be determined according to the geometric shapes indicated on the layout drawings and/or buildings drawings; any quantity executed in excess of the indicated dimensions shall not be paid for. Any quantity less than that required in the Contract drawings and according to the specification documents shall be deducted or completed according to the instructions given by the Engineer.

The price shall also include all materials, equipment, labour, transport, storage, placing, bending, scaffolding, etc... of reinforcing steel supplied, placed, bended, etc... with all needed materials, accessories and tasks to achieve the works in perfect conditions. Detailed bar bending schedules and sheets should be submitted for approval before placing and installation.

The price shall also include all needed works, labor, material, transport, formwork, etc... to execute a fair faced concrete for interior and exterior walls and ceilings of technical rooms.

1.025 FAIR FACE CONCRETE (WALLS, CEILINGS)

An extra over payment shall be added for every visible square meter of wrought formwork (fair face) for interior and exterior reservoir walls, and/or ceilings, interior walls and ceilings of technical buildings, interior and exterior walls and ceilings of technical rooms.

1.026 LEVELLING WITH MECHANICAL FLOAT

The price per square meter includes material, equipment, transport, labor,... and consists in leveling horizontal surfaces of large areas of slabs on grade (reservoirs and/or technical buildings) by a mechanical trowel.

1.027 CYCLOPEAN CONCRETE

The price per cubic meter of cyclopean concrete shall include material, equipment, transport, supply, placing, mixing, labor ... and shall be composed of 300 kg of cement per cubic meter of concrete and a maximum of 40% of hardrocks ($\leq 200\text{mm}$). Formwork and scaffolding are included and cyclopean concrete shall be measured according to geometric shapes determined by written instructions of the engineer. All tasks necessary for the completion of the work are deemed to be included in the price.

1.028 STEEL REINFORCEMENT FOR RESERVOIRS AND OTHER BUILDING

The price per ton include all materials, equipment, labors, transport, storage, placing, bending, scaffolding, etc... of reinforcing steel supplied, placed, bended, etc... with all needed materials, accessories and tasks to achieve the works in perfect conditions.

The price shall be paid per ton of reinforcement steel supplied, bended and placed, and shall be measured according with the dimensions figured on the drawings. Detailed bar bending schedules and sheets should be submitted for approval before placing and installation, these bar bending schedules and sheets will be used for calculation of reinforcing steel weight.

1.029 RENDERING OR PLASTERING OF INTERIOR AND EXTERIOR SURFACES

The price of rendering per square meter shall include cleaning and preparation of all surfaces in addition to all materials: cement, sand, water, equipment, labour, scaffolding, expenses,... supply, transport, placing mortars and shall be measured according to geometric shapes of rendered areas, no excess and no measurement shall be paid for re-entrant or salient angles of openings, chamfered angles or others. The rendering shall consist of three coats according to specifications.

1.030 INTERNAL LINING FOR RESERVOIR

The price per square meter of internal surface waterproofing coating for reservoirs shall include preparation of the surface (sand blasting, water blasting), treatment of singular points (contraction or expansion joints, pipe penetration,...) material, transport, scaffolding, application in several layers, labor, expenses,... in conformity with the technical sheet of approved material, quality tests, structures test, before and after application, warranty. Cristallisation or mineralisation products shall be applied on reservoirs walls and slabs on ground, and flexible protective and waterproofing slurry products on bottom faces of roof slabs or domes.

1.031 WATERPROOFING OF RESERVOIRS AND OTHER BUILDINGS ROOF SLABS WITH THERMAL INSULATION

The price per square meter of roof slab waterproofing shall include material, transport, equipment, labor, supply, installation, preparation of support (screed,...), treatment of singular point (rain outlet, ventilations, openings,...), and shall be composed of a vapor barrier SBS or APP; thickness ≥ 2.5 mm fixed by adherence or semi-adherence, a thermal insulation with minimum thickness of 50 mm and a thermal conductivity $\alpha = 0.037$ Kcal/h.m²/°C, and a waterproofing membranes (SBS/APP) 4 mm thick minimum. Vertical upstands shall be aluminium self-protected, supply and installation of concrete protection grade C20 or concrete paving slabs and a non woven polyester sheet 200 g/m². Supply and installation works of necessary roof drains are deemed to be included in this item and shall not be paid for separately. The membranes shall be measured only for horizontal surfaces and no measurements or excess shall be paid for vertical surfaces.

1.032 WATERPROOFING OF RESERVOIRS AND OTHER BUILDINGS ROOF SLABS WITHOUT THERMAL INSULATION

The price per square meter of roof slab waterproofing shall include material, transport, equipment, labor, supply, installation, preparation of support (screed,...), treatment of singular point (rain outlet, ventilations, openings,...), and shall be composed of auto-protected elastomeric membranes (SBS/APP) 4 mm thickness minimum. In some cases a screed protection shall be included instead of the mineral auto protection. Supply and installation works of necessary roof drains are deemed to be included in this item and shall not be paid for separately.

The membranes shall be measured only for horizontal surfaces and no measurements or excess shall be paid for vertical surfaces.

1.033 WATER TESTING AND DISINFECTION OF RESERVOIRS

The lump sum price of water testing of reservoirs per site shall include:

- Supply, transport and filling of reservoir with water, and checking for leaks. This operation shall be repeated to the Engineer's satisfaction.

- Water sampling for analysis and transport in an adequate packing to the laboratory, suppliers, labor,....
- Bacteriological analysis type B2 (2 per reservoir)
- Cleaning and disinfection including all material, scaffolding, labor, expenses and all tasks necessary to accomplish the work.

1.034 UPVC DRAIN 100MM DIAMETER

The price per linear meter of uPVC drain 100mm diameter of roof slab shall include material, transport, equipment, labor, supply, installation, spiral accessories on the roof and for the slab drain in order to have a complete drain.

The price shall be paid per linear meter of supplied and installed uPVC drains 100mm diameter.

1.035 EXTERIOR STEEL DOORS AND WINDOWS INCLUDING GLAZING AND PAINTING

The price per square meter of exterior steel doors and windows shall include all material, equipment, transport, labor, expenses, water-resistant hardware, glazing (8mm glass) ventilation, mechanical protections, epoxy paint, louvers, openings, locking system, supply, installation, anchoring, reinstatement of support, finishing and all tasks and accessories, necessary to a perfect execution. Metal sheets shall be 3mm thick minimum.

1.036 METAL WORKS

The price per kilogram of metalwork (protection bars, louvers, ventilation, ladders, grating, railings, trap doors,...) shall include all material, equipment, transport, labor, expenses, hardware glazing (8mm glass), epoxy paint, supply, installation, anchoring, locking system, reinstatement of support, finishing and all tasks and accessories necessary to a perfect execution.

1.037 INDUSTRIAL FLOORING

The price per square meter of industrial flooring shall include all material, equipment, transport, labor, expenses, application, preparation of support, scaffolding, curing, finishing, cleaning, singular points, screed if necessary, and shall be composed of heavy duty chemical and abrasion resistant epoxy resin floor (5mm thick). For walls, 2mm thick of epoxy resin will be sufficient (the number of layers should be in compliance with the manufacturer recommendation and the Engineer's approval).

The surfaces shall be measured according to geometric shapes of painted area (floor, wall or ceiling), no measurement and no excess shall be paid for re-entrant or salient angles of openings.

1.038 WASHABLE PAINT INTERNAL OR EXTERNAL USE COATING

The price per square meter of washable paint includes all materials, equipment, transport, labor, expenses, scaffolding, application, preparation of support, finishing, cleaning, singular points, and shall be composed of a double layer of mastic, primer and a minimum of two coats of washable paint (latex emulsion and/or vinyl acrylic emulsion).

The surfaces shall be measured according to geometric shapes of painted area, no measurement and no excess shall be paid for re-entrant or salient angles of openings.

1.039 FENCE

The price per linear meter of fence shall include all excavation, concrete, reinforcement, metalwork, epoxy paint, finishing, material, labor, equipment, supply, transport, anchor bolts, reinstatement of property line, and all tasks necessary for a perfect execution. In case the fence has to be fixed on retaining walls and/or existing or new concrete structures, the contractor must take this constraint in consideration according to each site and adapt his price accordingly.

1.040 ACCESS GATE

The lump sum price of access gate per site shall include all excavation, reinforced concrete, steel access gate, locking system, epoxy paint, water resistant hardware, anchors, finishing material, labor, equipment, formwork, scaffolding, supply, transport, reinstatement of property line and all tasks necessary for a perfect execution. For access gate width refer to site implantation.

1.041 ASPHALTING

The price per square meter of asphaltting for structures and access roads layout shall include earthwork, sub-base preparation (scraping, leveling, compaction,...), sub-base material layer (hard stones, gravel, ...), base course material (hard crushed aggregate,...) bituminous tack coats, asphalt and all material, equipment, supply, transport, labor, expenses, drainage system, testing, quality control, hauling, spreading and compaction, and all necessary tasks for laying, jointing and a perfect execution and shall include, but not be limited to:

- Base course: supply, and transport of materials, earth work, scraping, levelling, compaction, labor, final thickness after compaction 20 cm, testing, quality control and all necessary tasks for a perfect execution.
- Asphalt: supply and transport of materials, bituminous, tack coat, asphalt and all necessary materials, labor, expenses, testing, quality, control, hauling, spreading and compaction and all necessary tasks for laying, jointing and a perfect execution.

1.042 SUPPLY AND INSTALLATION OF PIPES

Pipes shall be classified for payment according to diameter and material and shall be measured in linear meters of pipeline in place measured along the crown of the pipeline.

The length measured for payment shall include the lengths of all fittings, valves and specials installed in the line.

The price shall cover all fittings, bends, joints, reducers, flanges, holderbats, supports, puddle flanges, inserts, bolts, nuts, brackets, bellmouths, as well as hauling, transport, unloading, staking and all necessary labour and accessories to provide a complete installation.

1.043 SUPPLY AND INSTALLATION OF GATE VALVES

Gate valves shall be classified for payment by nominal diameter and nominal pressure class and shall be measured by number.

Price shall include for all fittings necessary to joint the assembly to the pipeline (either new or existing), including thrust flanges, flexible joints, dismantling joints, supports and all items necessary to make a complete installation.

1.044 SUPPLY AND INSTALLATION OF FLOOR DRAINS

Floor drains shall be measured by number, and shall include for floor drain pipe DN 80mm, excavation, backfilling, reinstatement of the concrete surface level, flap valve, bends and all components necessary to provide a complete installation.

1.045 SUPPLY AND INSTALLATION OF FLOAT VALVE

Float valves shall be classified for payment by nominal diameter and nominal pressure class and shall be measured by number. Price shall include all the requirements as stipulated in item “Gate Valves” above.

1.046 SUPPLY AND INSTALLATION OF SUCTION STRAINERS

Suction strainers shall be measured by number according to nominal diameter. Material shall be stainless steel, coated cast iron or bronze.

Price shall include for all fittings necessary to install the suction strainer inside the reservoir on the outlet pipe including flanges, joints, bolts, nuts and all accessories to make a complete installation.

1.047 SUPPLY AND INSTALLATION OF LEVEL INDICATORS

Level indicators shall be measured by number, and the price shall include for all necessary fittings to install the level indicator, civil works, concrete drilling, grouting with suitable material, level indicator, testing, bolts, nuts, etc...

1.048 SUPPLY AND INSTALLATION OF DOUBLE AIR RELEASE VALVES

Air valves shall be measured by number for each air valve size and nominal pressure, and shall include for tees, ARV, gate valves, riser pipes, flanges, bolts, nuts, supports and all components necessary to provide a complete installation.

1.049 SUPPLY AND INSTALLATION OF WATER METERS

Water meters shall be measured by number for each nominal diameter and nominal pressure class, and shall include for filters/Y strainers, flow straighteners (both having same DN and PN as water meters. Moreover, flow straighteners should be of the type which eliminate the need for any straight length of pipe before and after the watermeter), flanges, dismantling joints, supports, bolts, nuts and all components necessary to provide a complete installation.

1.050 SUPPLY AND INSTALLATION OF MANOMETERS

Manometers shall be measured by number regardless of the calibre of the pressure gauge and the diameter of the tapping collar. Price shall include for manometers (case 10 cm, glycerine filled), isolating valves (DN = 15 mm, PN as required), tapping collars, bolts, nuts and all components necessary to provide a complete installation.

1.051 SUPPLY AND INSTALLATION OF PRESSURE REGULATING VALVES (PRVS)

Pressure regulating valves shall be measured by number for each diameter of pipeline and pressure class and shall include for thrust flanges, dismantling joints, filters/Y strainers, manometers, supports, and all components necessary to provide a complete installation.

1.052 SUPPLY AND INSTALLATION OF INSERTS

Inserts shall be classified for payment by nominal diameters, and shall be measured by number, price shall include for material, inserts, installation, grouting, bolts, nuts, flanges, etc...

1.053 SUPPLY AND INSTALLATION OF CONNECTIONS TO EXISTING PIPES

Connection to existing pipe shall be classified for payment according to diameter and material and shall be measured in number of completed connection unit installed in place and the price shall include but not be limited to:

- Extra excavation works to locate the existing pipe
- Removal of any abandoned pipework within the excavation
- Distributing pipes along the trench
- Checking and cleaning pipe from dirt, oil, grease, etc...
- Supply of temporary or final supports
- All necessary types of jointing, welding, etc...
- Checking pipe alignment and elevations using topographical instruments
- Transport of material from the warehouse and/or storage area to site
- Supply and installation of all fittings bends, tees, reducers dismantling joints, flanges, flange adaptors, couplings, bolts, nuts, as well as, hauling, transport, unloading, and staking of pipes, fittings, joints and jointing material
- Supply and installation of gate valves and valve chambers (if needed), including cover and frame

The unit measured for payment shall include all fittings, accessories installed in the line. Only pipes, fittings, junctions, bends, etc... actually installed, jointed and tested and accepted by the Engineer shall be taken into account for payment.

2.000 DISTRIBUTION NETWORKS

2.010 GENERAL

The hydraulic design of distribution pipelines is based on topographic surveys done during the design period. However, some or all topographical points like stakes or benchmarks may have disappeared due to works executed on the road after this period.

For this reason, the Contractor shall be deemed to have covered himself for checking quantities and for making any necessary surveys and investigations prior to placing or ordering for materials.

2.011 TOPOGRAPHIC SURVEY

The price shall cover performing land surveying of the designed networks layout. The surveyor shall start from approved benchmarks and shall mark the stations shown on drawings, using steel pegs and high quality paint. Distance between two stakes or pegs shall not exceed 30m.

Moreover, the Contractor is supposed to visit the site to check and be familiar with the present status of the survey.

EDM devices shall be used exclusively.

New longitudinal profiles shall be issued on transparent paper and AutoCAD files and shall be submitted to the Engineer's approval.

Vertical scale 1:200 and horizontal scale 1:2000

Measurement of topographic survey shall be in horizontal kilometers.

2.012 TRIAL PIT

Trial pits shall be measured by number and shall include for excavation in any material, any type of soil and rock, to a depth not exceeding 3m, hand excavation as necessary, backfilling, reinstatement of the surface to its original condition and reinstatement of road surfaces.

Payment will only be made for trial pits ordered in writing by the Engineer. Any measures taken by the Contractor to locate existing services or determine ground condition shall be included within the respective excavation item, whether separately itemised or not, and shall not be measured for payment.

2.013 TRIAL TRENCH

Trial trenches shall be measured by linear meters and shall include for all requirements as stipulated in item 'Trial pit' above.

2.014 AS-BUILT DRAWINGS

As-built drawings shall be measured by horizontal kms and shall consist of new profiles, plans and details on scale similar to the design drawings scale.

Pipes, manholes, and accessories shall be shown clearly as well as effective cover depth of the crown of the pipe and distance between pipe axis and carriage edge or sidewalk, and between manhole cover center and electric pylons or buildings corners. Adequate number (minimum one for each road or 250 m which is less) of transversal sections showing all existing underground utilities/or facilities, should also be submitted.

Payment shall only be made for as-built drawings approved by the Engineer and submitted on paper and AutoCAD files.

2.015 SUPPLY OF PIPES INCLUDING ALL NECESSARY FITTINGS

Ductile iron K9 and/or HDPE pipes shall be classified for payment according to diameter and shall be measured in linear meters of pipeline supplied and stored in good conditions.

The price shall cover all fittings, bends, tees, reducers, detachable joints, flanges, bolts, nuts, as well as fittings, joints and jointing material.

Only pipes, fittings, junctions, bends, etc... supplied and stored in good conditions and accepted by the Engineer shall be taken into account for payment.

2.016 TRENCH EXCAVATION

The price shall be calculated in terms of linear meters of dug trench only. The minimum width of trench is shown on the corresponding Contract drawings (refer to standard drawings).

This price shall include but shall not be limited to:

- Excavating in any type of soil, rock, structural fill, contaminated fill, clay or others.
- Excavating by hand or machine.
- Excavating in asphalted or non-asphalted roads, in fields, in valleys, in accessible or non accessible areas, including the execution of temporary access roads if needed.
- De-watering operations necessary for keeping the excavation free from water whether rain water or any other sources.
- Extra excavation depth carried out as shown on the longitudinal profiles or under the direction of the Engineer.
- Extra excavation carried out in width for laying of the HDPE duct.
- Transport of unsuitable backfilling materials to disposal sites approved by the Engineer.
- Levelling or grading and compacting the bottom of excavations.
- Supporting, protecting and maintaining existing services and utilities.
- Temporary or permanent supports to sides of excavation, roads or structures as required by the Engineer (soil supports, sheet piling, etc...) or other method proposed by the Contractor and approved by the Engineer (micro-tunnelling , concrete piles, etc...).
- Traffic regulation and safety provisions.
- Repairing of all damaged utilities caused by the execution of the works.

Any excavated quantity will not be paid by the Employer under this item, if it is dumped or accidentally falls in the valley or in the field.

2.017 SAND BEDDING AND SAND SURROUNDS

The sand bedding and sand surrounds shall be classified for payment according to pipe diameter and shall comply with the corresponding contract drawings (refer to standard drawings), and shall be measured by linear meters of completed pipeline.

Price shall include supply of material, backfilling, testing and compaction.

2.018 LAYING OF PIPES

Laying of pipes shall be classified for payment according to diameter and shall be measured in linear meters of completed pipeline in place measured along the crown of the pipeline and the price shall include but not be limited to:

- Removal of any abandoned pipework within the excavation.
- Distributing pipes along the trench.
- Checking and cleaning pipe from dirt, oil, grease, etc..
- Supply of temporary or final supports.
- Laying of pipes.
- All necessary types of jointing, welding, etc...
- Checking pipe alignment and evaluations using topographical instruments.
- Installation of all fittings, bends, tees, reducers, dismantling joints, flanges, couplings, bolts, nuts as well as hauling, transport, unloading, and staking of pipes, fittings, joints, and jointing material.

The length measured for payment shall include the lengths of all fittings, valves and accessories installed in the line.

Only pipes, fittings, junctions, bends, etc... actually laid, jointed and tested and accepted by the Engineer shall be taken into account for payment.

2.019 BACKFILLING OF TRENCHES

1-Sand Backfilling of trenches shall be classified for payment according to pipe diameter and shall be measured by linear meters along the crown of the pipeline (refer to standard drawings).

Sand Backfilling shall include for:

- Supply of imported materials.
- Backfilling in layers and compaction.
- Testing and compaction
- Supply and installation of the warning tape (Marker Tape)

2-Backfilling of trenches shall be classified for payment according to pipe diameter and shall be measured by linear meters along the crown of the pipeline (refer to standard drawings).

Backfilling shall include for:

- Supply of materials.
- Backfilling in layers and compaction.
- Testing and compaction
- Supply and installation of the warning tape (Marker Tape)

2.020 SUPPLY AND INSTALLATION OF BRIDGE OR CULVERT CROSSINGS

Bridge or Culvert crossing shall be classified for payment by number of completed crossing unit installed in place and the price shall include but not be limited to:

- Extra excavation works.
- Removal of any abandoned pipework within the excavation.
- Distributing pipes along the structure.
- Checking and cleaning pipe from dirt, oil, grease, etc...
- Supply of temporary and/or final supports including supply and installation of metal works needed to support the pipe.
- All necessary types of jointing, welding, etc..
- Checking pipe alignment and elevations using topographical instruments.
- Supply and installation of all fittings bends, tees, reducers dismantling joints, flanges, couplings, bolts, nuts, as well as, hauling, transport, unloading, and staking of pipes, fittings, joints, and jointing material.
- Construction of a complete manhole including cover (refer to standard drawings).

The Unit measured for payment shall include all fittings, accessories installed in the line.

Only pipes, fittings, junctions, bends, etc... actually installed, jointed and tested and accepted by the Engineer shall be taken into account for payment.

2.021 SUPPLY AND INSTALLATION OF GATE VALVES

Gate valves shall be classified for payment by nominal diameter and nominal pressure class and shall be measured by number of gate valves supplied and installed.

Price shall include for the supply and installation of all fittings necessary to joint the assembly to the pipeline (either new or existing), including thrust flanges, flexible joints, dismantling joints, supports and all necessary items to make a complete installation.

2.022 SUPPLY AND INSTALLATION OF AIR RELEASE VALVES

Air valves shall be measured by number for each air valve size, and nominal pressure, and shall include gate valves, riser pipe, flanges, bolts, nuts, supports and all necessary components to provide a complete installation.

Reinforced concrete chambers, covers and frames shall be measured separately by number. Cutting and reinstatement shall also be measured separately.

2.023 SUPPLY AND INSTALLATION OF PRESSURE REGULATING VALVES

Supply and installation of pressure regulating valves shall be measured by number for each diameter of pipeline and shall include the supply and installation of thrust flanges, bypass pipe, bends, tees, orifice plates, filters, butterfly valves, short piece pipes, gate valves, air release valves, manometers, collars, flanges, dismantling joints, chamber cover and frame in addition to concrete works which include concrete chamber, supports and steel reinforcement and all works necessary to form a complete installation according to standard drawings.

2.024 SUPPLY AND INSTALLATION OF WASHOUTS

Washouts shall be measured by number for each washout size and pressure class and shall include gate valves, duck foot bends, tees, flap valves, drain pipe UPVC or D.I. pipes for washout with the needed length (excavation, bedding, supply, laying and backfilling) and all necessary items to make a complete washout.

Reinforced concrete chambers, covers and frames shall be measured separately by number. Cutting and reinstatement shall be also measured separately.

2.025 SUPPLY OF DRINKING FOUNTAINS

Drinking fountains shall be paid by number. Price shall include but not limited to:

- Drinking fountain
- Stop valve
- Surface box unit
- Ferrule and tapping collar
- Drain
- HDPE pipe
- Ductile iron pipe
- Flanges, joints, bends, and all necessary accessories to joint the assembly to the pipeline.
- Reinstatement works.
- All accessories necessary to make a complete installation as shown on drawings.

The exact location on the network will be decided on site by the Engineer.

2.026 SUPPLY OF FIRE HYDRANTS

Fire hydrants shall be paid by number. Price shall include but not limited to:

- Fire hydrant
- Gate valve
- Valve chamber
- Cover and frame grade A
- Step irons
- Reinstatement works

Flange sockets, puddle flanges, dismantling joints, bends, pipes and all necessary accessories to joint the assembly to the pipeline.

All accessories necessary to make a complete installation as shown on drawings.

The exact location on the network will be decided on site by the Engineer.

2.027 SUPPLY AND INSTALLATION OF CONNECTIONS TO EXISTING RESERVOIRS

Connections to existing reservoirs shall be measured by number and shall include pipes, bends, tees, concrete works, steel reinforcement, strainers, concrete supports, inserts, float valves (if any), filters, etc... (including excavation, bedding, compacting, supply, laying and backfilling, etc...) and all necessary items to make a complete connection system to the existing reservoir.

2.028 CONSTRUCTION OF PRE-CAST OR CAST IN SITU, REINFORCED CONCRETE VALVE CHAMBERS

Valve chambers where not included in another item, shall be measured by number according to chamber internal length and width and shall include for excavation, formwork, concrete, mass concrete, blinding etc..., reinforcement, rendering, external damp-proofing, painting, backfilling, floor drain, soakaway, step irons access ladders, compacted gravel, sub-base and base layers, asphalt, etc... and all necessary items to make a complete chamber according to the contract drawings.

The valve chamber cover and frame shall be measured by number separately.

2.029 SUPPLY AND INSTALLATION OF VALVE CHAMBER COVER AND FRAME

Valve chamber cover and frame shall be measured by number and shall include all necessary materials and equipment including installation, labour, painting etc... in order to get an installed cover and frame according to the specifications.

2.030 SUPPLY AND INSTALLATION OF SURFACE BOX UNITS

Surface box units shall be measured by number and shall include for spindle guards, extension spindles, caps, couplings, covers, surface box units, and all necessary items to make a complete surface box unit.

2.031 CONCRETE WORKS

Cast in situ or precast concrete shall be measured by net volume shown on drawings.

Concrete, whether included in another item or separately measured, shall include for:

- All material, equipment, labor, transport, admixtures (retarders, plastisizers, waterproofness,...) batching, mixing, placing, vibrating, curing, testing.
- Formwork (Formwork shall be “sawn” finish to all buried external faces of concrete below a line 200mm below ground level and shall be “wrought” finish to all other faces).
- All needed excavation in all kinds of soils and rocks, use of all adequate equipment, transport of soil to disposal sites approved by the Engineer, labor, dewatering, temporary and/or final retaining structures for trenches or open digs, backfilling, compacting, cutting of asphalt.
- Forming of chamfers (25mm x 25mm) to all exposed external angles.
- Forming expansion, contraction, movement and construction joints and for all waterstops, jointing materials, sealing compounds and formwork necessary for forming such joints;
- Building in of all pipes and fittings, bolts, frames, iron and steelwork and the like.
- Finishing of surfaces.
- Reinforcement.
- All necessary items to have the concrete works according to the specifications.

2.032 SUPPLY AND INSTALLATION OF HDPE PIPES FOR SERVICE CONNECTIONS

Supply and installation of HDPE pipes shall be classified for payment according to outer diameter, and shall be measured in linear meters of completed pipeline in place measured along the crown of the pipeline. The length measured for payment shall include the lengths of all fittings, valves, and specials installed in the line.

The price shall cover the supply and installation of all fittings, bends, tees, reducers, joints, adapters as well as hauling, transport, unloading, staking and laying of pipes.

The price shall also include the connection of the newly installed service connection pipes to the existing orifices (عيارات) of subscribers to the concerned water establishment.

Only pipes, fittings, junctions, bends, etc... actually laid, jointed and tested and accepted by the Engineer, shall be taken into account for payment.

Trench excavation, sand bedding, backfilling of trenches, testing and commissioning, cutting and reinstatement of surfaces shall be measured separately.

2.033 SUPPLY AND INSTALLATION OF TAPPING COLLARS

Supply and installation of tapping collars shall be classified for payment according to the distribution main diameter without taking into account the service connection diameter.

The price shall include for the supply and installation of bolts, nuts, rubber joints, wedge keys and all necessary accessories to make a good tapping collar.

2.034 SUPPLY AND INSTALLATION OF STOP VALVES

Supply and installation of stop valves shall be classified for payment by nominal diameter and shall be measured by number.

Price shall include for the supply and installation of all fittings necessary to joint the assembly to the pipeline and all necessary items to make a complete installation.

2.035 TESTING AND COMMISSIONING OF POTABLE WATER PIPES

Testing and commissioning shall be measured by linear meters along the pipe crown. The price shall include all the material, equipment and labour (water, pumps, barrels, manometers, valves, labour, power supply, etc...) and no payment shall be made before getting the Engineer's approval.

For service connections only, testing and commissioning shall be measured by number.

2.036 ROAD REINSTATEMENT

2.036.1 Cutting

Cutting of paved roads shall be measured by linear meters along the pipe crown. It shall include for asphalt cutting at both sides of the trench, and removal of excavated material to disposal sites.

Cutting and breaking of concrete pavements shall be measured by square meters, it shall include for cutting and breaking out of concrete pavement (the width of the cut trenches will be as shown on standard drawings) and removal of excavated material to disposal sites.

The price shall include cutting works and removal of material of widening of trench for chambers or other ancillary structures and fittings.

2.036.2 Reinstatement

Reinstatement of asphalt pavement shall be classified for payment according to type of roads, as for main roads two layers of asphalt shall be applied, and one layer for the other roads, and shall be measured by square meters of completed asphalted and reinstated trench, according to the quantity actually executed but not to exceed the quantities shown on standard drawings for trench reinstatement, the price shall include for:

- Transport of material.
- Recutting works.
- Base and sub-base courses, material.
- Compaction.
- Laying and application of material,
- Tests.
- Repairing of all defects, asphalt or concrete collapse.
- Etc..

The width of asphalt layers shall be in accordance with the standard drawings.

Reinstatement shall also include for any re-cutting works of asphalt or concrete required by collapse of trench edges and for base and sub-base courses and compaction according to drawings and complying with the specifications.

Reinstatement of concrete and concrete stair cases shall be measured by square meters of completed asphalted and reinstated trench, according to the quantity actually executed but not to exceed the quantities shown on standard drawings for trench reinstatement, the price shall include for:

- Transport of material.
- Recutting works.
- Base and sub-base courses, material.
- Compaction.
- Laying and application of material,
- Tests.
- Repairing of all defects, asphalt or concrete collapse.
- Etc..

PART B

LIST OF UNIT PRICES

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.1000	Earthworks			
2.1100	Excavation			
2.1101	Excavation in all types of soils and rocks and transport of unsuitable backfilling material to disposal sites	cu.m	Only LBP	
2.1200	Preparation of formation under reservoirs and other constructions			
2.1201	Supply, preparation and compaction of the granular beds in addition to laying the polyethylene sheet under the construction's foundations	cu.m	Only LBP	
2.1300	Backfilling			
2.1301	Backfilling and compaction	cu.m	Only LBP	
2.2000	Concrete works and accessories			
2.2100	Concrete works			
2.2101	Blinding and mass concrete Class C20	cu.m	Only LBP	
2.2102	Reinforced concrete class C30, 350 kg of cement /cu.m, for other buildings, including formwork	cu.m	Only LBP	
2.2103	Extra over items 2.2102 and 2.2103 for fair faced concrete in reservoirs and other buildings	sq.m	Only LBP	

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.2104	Concrete surface leveling with mechanical float	sq.m	Only LBP	
2.2105	Cyclopean concrete	cu.m	Only LBP	
2.2106	Steel reinforcement for reservoirs and other buildings	Ton	Only LBP	
2.3000	Blockwork, cladding, and plastering			
2.3001	Rendering or plastering of interior and exterior surfaces	lin.m	Only LBP	
2.4000	Waterproofing, thermal insulation, and water quality control			
2.4001	Internal lining for reservoirs	sq.m	Only LBP	
2.4002	Waterproofing of reservoir and other building roof slabs with thermal insulation	sq.m	Only LBP	
2.4003	Waterproofing of reservoirs and other buildings roof slabs without thermal insulation	sq.m	Only LBP	
2.4004	Water testing and disinfection for reservoir	L.S.	Only LBP	
2.4005	uPVC drain 100 mm diameter	lin.m	Only LBP	

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.5000	Metal works			
2.5101	Supply and installation of exterior steel doors and windows including glazing and painting (with blue color)	sq.m	Only LBP	
2.5102	Supply and installation of metal works: steel protection bars for exterior windows, metallic ladders with or without safety hoops, gratings for channels, railings, locks and all other metal works, including painting (blue color)	kg	Only LBP	
2.6000	Painting			
2.6101	Supply and application of industrial flooring	sq.m	Only LBP	
2.6102	Supply and application of internal or external use coating	sq.m	Only LBP	
2.7000	Fence			
2.7101	Supply and installation of site's external fence, including painting	lin.m	Only LBP	
2.7102	Supply and installation of the access gate (L = 4 m)	L.S.	Only LBP	
2.8000	Asphalting			
2.8001	Subgrade compaction, sub-base and base preparation, and asphalting	sq.m	Only LBP	

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.9000	Reservoir hydraulic accessories			
2.9100	Supply and installation of ductile iron K9 pipes including all necessary fittings (bends, tees, reducers, flanges, dismantling joints, support, etc...)			
2.9101	DI pipes, DN 80 (for inlet, outlet, overflow, and washout)	lin.m	Only LBP	
2.9200	Supply and installation of gate valves			
2.9201	Gate valve PN16, DN 80 (for inlet, outlet, and washout)	nb	Only LBP	
2.9300	Supply and installation of valve chamber floor drains			
2.9301	Valve chamber floor drain, including pipe DN 80 and flap valve	nb	Only LBP	
2.9400	Supply and installation of float valves			
2.9401	Float valve PN16, DN 80 (for inlet)	nb	Only LBP	
2.9500	Supply and installation of suction strainers			
2.9501	Suction strainer, DN 80 (for outlet)	nb	Only LBP	

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.9600	Supply and installation of level indicators			
2.9601	Level indicator	nb	Only LBP	
2.9700	Supply and installation of double air release valves including isolating gate valves			
2.9701	Double air release valve including gate valve PN16, DN60 mm (for outlet)	nb	Only LBP	
2.9800	Supply and installation of water meters including Y strainers, filters, flow straighteners			
2.9801	Water meter PN16, DN 80 (for outlet)	nb	Only LBP	
2.9900	Supply and installation of manometers, including tapping collars, isolating valves, bolts, nuts, etc..			
2.9901	Manometer, Ø 100, glycerine filled, DN 15mm, PN16	nb	Only LBP	
2.9902	Manometer, Ø 100, glycerine filled, DN 15mm, PN40	nb	Only LBP	

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
2.91000	Supply and installation of pressure regulating valves, PRVs including Y strainers / filters			
2.91001	PRV, PN40, DN 80	nb	Only LBP	
2.91100	Supply and installation of inserts			
2.91101	Insert DN 80 mm	nb	Only LBP	
2.91200	Supply and installation of connections to existing pipes			
2.91201	Connection to existing pipe	nb	Only LBP	

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.0000	General			
5.0001	Site topographic survey	km.	Only LBP	
5.0002	Trial pit not exceeding 3m depth	nb	Only LBP	
5.0003	Trial trench not exceeding 3m depth	lin.m	Only LBP	
5.0004	As-built drawings	km.	Only LBP	
5.1000	Pipeworks			
5.1100	Supply of HDPE pipes PE100 - PN16 including all necessary fittings (bends, tees, reducers, flanges, etc...)			
5.1101	Supply of 63 mm pipes	lin.m	Only LBP	
5.1102	Supply of 75 mm pipes	lin.m	Only LBP	
5.1200	Trench excavation			
5.1201	Trench excavation for service connections	lin.m	Only LBP	
5.1202	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1300	Sand bedding and surrounds			
5.1301	Sand bedding for service connections	lin.m	Only LBP	
5.1302	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1400	Laying of HDPE pipes PE100 - PN16			
5.1401	Laying of 63 mm pipes	lin.m	Only LBP	
5.1402	Laying of 75 mm pipes	lin.m	Only LBP	
5.1500	Backfilling of trenches on other roads including compaction and testing			
5.1501	Backfilling of trenches for service connections	lin.m	Only LBP	
5.1502	Backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1600	Supply and installation of bridge or culvert crossings			
5.1601	Bridge or culvert crossing	nb	Only LBP	

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.2000	Accessories			
5.2100	Supply and installation of gate valves (including bolts, nuts, dismantling joints, etc..).			
5.2101	Gate valve PN16, DN 60 mm	nb	Only LBP	
5.2102	Gate valve PN16, DN 80 mm	nb	Only LBP	
5.2200	Supply and installation of air release valves			
5.2201	Single air release valve including isolating GV PN16, DN 40 mm	nb	Only LBP	
5.2400	Supply and installation of washouts			
5.2402	Washout PN16, DN 60 mm	nb	Only LBP	
5.2500	Supply and installation of drinking fountains			
5.2501	Drinking fountain PN16	nb	Only LBP	
5.2600	Supply and installation of fire hydrants			
5.2601	Fire hydrant PN16	nb	Only LBP	

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.3000	Valve chambers and surface box units			
5.3100	Construction of pre-cast or cast in situ, concrete valve chamber (excluding cover and frame)			
5.3101	Valve chamber internal size 125 x 100 cm x cm	nb	Only LBP	
5.3102	Valve chamber internal size 150 x 150 cm x cm	nb	Only LBP	
5.3103	Valve chamber internal size 175 x 125 cm x cm	nb	Only LBP	
5.3104	Valve chamber internal size 200 x 150 cm x cm	nb	Only LBP	
5.3200	Valve chamber cover			
5.3201	Valve chamber cover Grade A	nb	Only LBP	
5.3300	Surface box units for washouts and service connections			
5.3301	Supply and installation of surface box unit	nb	Only LBP	
5.4000	Concrete works			
5.4001	Mass concrete - Class C20 for blinding	cu.m	Only LBP	

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.4002	Mass concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	Only LBP	
5.4003	Reinforced concrete - Class C25 for pipe anchors, supports, protection slabs, thrust blocks, drainage and irrigation channels	cu.m	Only LBP	
5.5000	Service connections			
5.5100	Supply and installation of HDPE Pipes			
5.5101	HDPE pipe PN16, OD 20 mm	lin.m	Only LBP	
5.5102	HDPE pipe PN16, OD 25 mm	lin.m	Only LBP	
5.5103	HDPE pipe PN16, OD 32 mm	lin.m	Only LBP	
5.5200	Supply and installation of tapping collars			
5.5201	Tapping collar for DN 63 mm HDPE pipe	nb	Only LBP	
5.5202	Tapping collar for DN 75 mm HDPE pipe	nb	Only LBP	
5.5300	Supply and installation of stop valves			
5.5301	Stop valve PN16, DN 16 mm	nb	Only LBP	

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.5302	Stop valve PN16, DN 20 mm	nb	Only LBP	
5.5303	Stop valve PN16, DN 25 mm	nb	Only LBP	
5.6000	Testing and commissioning of potable water pipes			
5.6001	Testing and commissioning of service connections	nb	Only LBP	
5.6002	Testing and commissioning of 63 mm HDPE pipes	lin.m	Only LBP	
5.6003	Testing and commissioning of 75 mm HDPE pipes	lin.m	Only LBP	
5.7000	Road Reinstatement			
5.7100	Cutting			
5.7101	Cutting of paved roads for water pipes	lin.m	Only LBP	
5.7102	Cutting, breaking-out and removal of concrete pavement or stair cases for water pipes	sq.m	Only LBP	
5.7200	Reinstatement			
5.7201	Reinstatement in one layer of other paved roads including recutting works	sq.m	Only LBP	

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.7202	Reinstatement of concrete pavement or stair cases for water pipes, including base, sub-base courses and concrete pavement	sq.m	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.0000	General			
5.0001	Site topographic survey	km.	Only LBP	
5.0002	Trial pit not exceeding 3m depth	nb	Only LBP	
5.0003	Trial trench not exceeding 3m depth	lin.m	Only LBP	
5.0004	As-built drawings	km.	Only LBP	
5.1000	Pipeworks			
5.1100	Supply of HDPE pipes PE100 - PN16 including all necessary fittings (bends, tees, reducers, flanges, etc...)			
5.1101	Supply of 63 mm pipes	lin.m	Only LBP	
5.1102	Supply of 75 mm pipes	lin.m	Only LBP	
5.1103	Supply of 90 mm pipes	lin.m	Only LBP	
5.1104	Supply of 110 mm pipes	lin.m	Only LBP	
5.1105	Supply of 125 mm pipes	lin.m	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1200	Trench excavation			
5.1201	Trench excavation for service connections	lin.m	Only LBP	
5.1202	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1203	Trench excavation for 125 mm HDPE pipes	lin.m	Only LBP	
5.1300	Sand bedding and surrounds			
5.1301	Sand bedding for service connections	lin.m	Only LBP	
5.1302	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1303	Sand bedding for 125 mm HDPE pipes	lin.m	Only LBP	
5.1400	Laying of HDPE pipes PE100 - PN16			
5.1401	Laying of 63 mm pipes	lin.m	Only LBP	
5.1402	Laying of 75 mm pipes	lin.m	Only LBP	
5.1403	Laying of 90 mm pipes	lin.m	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.1404	Laying of 110 mm pipes	lin.m	Only LBP	
5.1405	Laying of 125 mm pipes	lin.m	Only LBP	
5.1500	Backfilling of trenches on other roads including compaction and testing			
5.1501	Backfilling of trenches for service connections	lin.m	Only LBP	
5.1502	Backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	Only LBP	
5.1503	Backfilling of trenches for 125 mm HDPE pipes	lin.m	Only LBP	
5.1600	Supply and installation of bridge or culvert crossings			
5.1601	Bridge or culvert crossing	nb	Only LBP	
5.2000	Accessories			
5.2100	Supply and installation of gate valves (including bolts, nuts, dismantling joints, etc..).			
5.2101	Gate valve PN16, DN 60 mm	nb	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.2102	Gate valve PN16, DN 80 mm	nb	Only LBP	
5.2103	Gate valve PN16, DN 100 mm	nb	Only LBP	
5.2200	Supply and installation of air release valves			
5.2201	Single air release valve including isolating GV PN16, DN 40 mm	nb	Only LBP	
5.2300	Supply and installation of pressure regulating valves			
5.2301	Pressure regulating valve PN16 for DN 63 mm HDPE pipe	nb	Only LBP	
5.2400	Supply and installation of washouts			
5.2402	Washout PN16, DN 60 mm	nb	Only LBP	
5.2500	Supply and installation of drinking fountains			
5.2501	Drinking fountain PN16	nb	Only LBP	
5.2600	Supply and installation of fire hydrants			
5.2601	Fire hydrant PN16	nb	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.2700	Supply and installation of connections to existing reservoirs			
5.2701	Connection to existing reservoir	nb	Only LBP	
5.3000	Valve chambers and surface box units			
5.3100	Construction of pre-cast or cast in situ, concrete valve chamber (excluding cover and frame)			
5.3101	Valve chamber internal size 125 x 100 cm x cm	nb	Only LBP	
5.3102	Valve chamber internal size 150 x 150 cm x cm	nb	Only LBP	
5.3103	Valve chamber internal size 175 x 125 cm x cm	nb	Only LBP	
5.3104	Valve chamber internal size 200 x 150 cm x cm	nb	Only LBP	
5.3105	Valve chamber internal size 275 x 200 cm x cm	nb	Only LBP	
5.3200	Valve chamber cover			
5.3201	Valve chamber cover Grade A	nb	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.3300	Surface box units for washouts and service connections			
5.3301	Supply and installation of surface box unit	nb	Only LBP	
5.4000	Concrete works			
5.4001	Mass concrete - Class C20 for blinding	cu.m	Only LBP	
5.4002	Mass concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	Only LBP	
5.4003	Reinforced concrete - Class C25 for pipe anchors, supports, protection slabs, thrust blocks, drainage and irrigation channels	cu.m	Only LBP	
5.5000	Service connections			
5.5100	Supply and installation of HDPE Pipes			
5.5101	HDPE pipe PN16, OD 20 mm	lin.m	Only LBP	
5.5102	HDPE pipe PN16, OD 25 mm	lin.m	Only LBP	
5.5103	HDPE pipe PN16, OD 32 mm	lin.m	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.5200	Supply and installation of tapping collars			
5.5201	Tapping collar for DN 63 mm HDPE pipe	nb	Only LBP	
5.5202	Tapping collar for DN 75 mm HDPE pipe	nb	Only LBP	
5.5203	Tapping collar for DN 90 mm HDPE pipe	nb	Only LBP	
5.5204	Tapping collar for DN 110 mm HDPE pipe	nb	Only LBP	
5.5205	Tapping collar for DN 125 mm HDPE pipe	nb	Only LBP	
5.5300	Supply and installation of stop valves			
5.5301	Stop valve PN16, DN 16 mm	nb	Only LBP	
5.5302	Stop valve PN16, DN 20 mm	nb	Only LBP	
5.5303	Stop valve PN16, DN 25 mm	nb	Only LBP	
5.6000	Testing and commissioning of potable water pipes			
5.6001	Testing and commissioning of service connections	nb	Only LBP	

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	UNIT PRICE IN LETTERS (LBP)	UNIT PRICE (LBP)
5.6002	Testing and commissioning of 63 mm HDPE pipes	lin.m	Only LBP	
5.6003	Testing and commissioning of 75 mm HDPE pipes	lin.m	Only LBP	
5.6004	Testing and commissioning of 90 mm HDPE pipes	lin.m	Only LBP	
5.6005	Testing and commissioning of 110 mm HDPE pipes	lin.m	Only LBP	
5.6006	Testing and commissioning of 125 mm HDPE pipes	lin.m	Only LBP	
5.7000	Road Reinstatement			
5.7100	Cutting			
5.7101	Cutting of paved roads for water pipes	lin.m	Only LBP	
5.7102	Cutting, breaking-out and removal of concrete pavement or stair cases for water pipes	sq.m	Only LBP	
5.7200	Reinstatement			
5.7201	Reinstatement in one layer of other paved roads including recutting works	sq.m	Only LBP	
5.7202	Reinstatement of concrete pavement or stair cases for water pipes, including base, sub-base courses and concrete pavement	sq.m	Only LBP	

PART C

BILL OF QUANTITIES

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
2.1000	Earthworks				
2.1100	Excavation				
2.1101	Excavation in all types of soils and rocks and transport of unsuitable backfilling material to disposal sites	cu.m	50		
	Sub-Total 2.1100				
2.1200	Preparation of formation under reservoirs and other constructions				
2.1201	Supply, preparation and compaction of the granular beds in addition to laying the polyethylene sheet under the construction's foundations	cu.m	5		
	Sub-Total 2.1200				
2.1300	Backfilling				
2.1301	Backfilling and compaction	cu.m	10		
	Sub-Total 2.1300				
	Sub-Total 2.1000				
2.2000	Concrete works and accessories				
2.2100	Concrete works				
2.2101	Blinding and mass concrete Class C20	cu.m	2		
2.2102	Reinforced concrete class C30, 350 kg of cement /cu.m, for other buildings, including formwork	cu.m	30		
2.2103	Extra over items 2.2102 and 2.2103 for fair faced concrete in reservoirs and other buildings	sq.m	90		
2.2104	Concrete surface leveling with mechanical float	sq.m	10		
2.2105	Cyclopean concrete	cu.m	2		
2.2106	Steel reinforcement for reservoirs and other buildings	Ton	3		
	Sub-Total 2.2100				
	Sub-Total 2.2000				
2.3000	Blockwork, cladding, and plastering				
2.3001	Rendering or plastering of interior and exterior surfaces	sq.m	180		
	Sub-Total 2.3000				
2.4000	Waterproofing, thermal insulation, and water quality control				
2.4001	Internal lining for reservoirs	sq.m	100		
2.4002	Waterproofing of reservoir and other building roof slabs with thermal insulation	sq.m	18		
2.4003	Waterproofing of reservoirs and other buildings roof slabs without thermal insulation	sq.m	10		
2.4004	Water testing and disinfection for reservoir	L.S.	1		
2.4005	uPVC drain 100 mm diameter	lin.m	10		
	Sub-Total 2.4000				

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
2.5000	Metal works				
2.5101	Supply and installation of exterior steel doors and windows including glazing and painting (with blue color)	sq.m	4		
2.5102	Supply and installation of metal works: steel protection bars for exterior windows, metallic ladders with or without safety hoops, gratings for channels, railings, locks and all other metal works, including painting (blue color)	kg	1000		
	Sub-Total 2.5000				
2.6000	Painting				
2.6101	Supply and application of industrial flooring	sq.m	35		
2.6102	Supply and application of internal or external use coating	sq.m	180		
	Sub-Total 2.6000				
2.7000	Fence				
2.7101	Supply and installation of site's external fence, including painting	lin.m	30		
2.7102	Supply and installation of the access gate (L = 4 m)	L.S.	1		
	Sub-Total 2.7000				
2.8000	Asphalting				
2.8001	Subgrade compaction, sub-base and base preparation, and asphalting	sq.m	50		
	Sub-Total 2.8000				
2.9000	Reservoir hydraulic accessories				
2.9100	Supply and installation of ductile iron K9 pipes including all necessary fittings (bends, tees, reducers, flanges, dismantling joints, support, etc...)				
2.9101	DI pipes, DN 80 (for inlet, outlet, overflow, and washout)	lin.m	144		
	Sub-Total 2.9100				
2.9200	Supply and installation of gate valves				
2.9201	Gate valve PN16, DN 80 (for inlet, outlet, and washout)	nb	4		
	Sub-Total 2.9200				
2.9300	Supply and installation of valve chamber floor drains				
2.9301	Valve chamber floor drain, including pipe DN 80 and flap valve	nb	1		
	Sub-Total 2.9300				
2.9400	Supply and installation of float valves				
2.9401	Float valve PN16, DN 80 (for inlet)	nb	1		
	Sub-Total 2.9400				
2.9500	Supply and installation of suction strainers				
2.9501	Suction strainer, DN 80 (for outlet)	nb	1		
	Sub-Total 2.9500				

REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
2.9600	Supply and installation of level indicators				
2.9601	Level indicator	nb	1		
	Sub-Total 2.9600				
2.9700	Supply and installation of double air release valves including isolating gate valves				
2.9701	Double air release valve including gate valve PN16, DN60 mm (for outlet)	nb	1		
	Sub-Total 2.9700				
2.9800	Supply and installation of water meters including Y strainers, filters, flow straighteners				
2.9801	Water meter PN16, DN 80 (for outlet)	nb	1		
	Sub-Total 2.9800				
2.9900	Supply and installation of manometers, including tapping collars, isolating valves, bolts, nuts, etc..				
2.9901	Manometer, Ø 100, glycerine filled, DN 15mm, PN16	nb	1		
2.9902	Manometer, Ø 100, glycerine filled, DN 15mm, PN40	nb	1		
	Sub-Total 2.9900				
2.91000	Supply and installation of pressure regulating valves, PRVs including Y strainers / filters				
2.91001	PRV, PN40, DN 80	nb	1		
	Sub-Total 2.9800				
2.91100	Supply and installation of inserts				
2.91101	Insert DN 80 mm	nb	11		
	Sub-Total 2.91100				
2.91200	Supply and installation of connections to existing pipes				
2.91201	Connection to existing pipe	nb	1		
	Sub-Total 2.91200				
	Sub-Total 2.9000				
	Total REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER				

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.0000	General				
5.0001	Site topographic survey	km.	2.30		
5.0002	Trial pit not exceeding 3m depth	nb	12.00		
5.0003	Trial trench not exceeding 3m depth	lin.m	35.00		
5.0004	As-built drawings	km.	2.30		
	Sub-Total 5.0000				
5.1000	Pipeworks				
5.1100	Supply of HDPE pipes PE100 - PN16 including all necessary fittings (bends, tees, reducers, flanges, etc...)				
5.1101	Supply of 63 mm pipes	lin.m	1,645.00		
5.1102	Supply of 75 mm pipes	lin.m	605.00		
	Sub-Total 5.1100				
5.1200	Trench excavation				
5.1201	Trench excavation for service connections	lin.m	790.00		
5.1202	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	2,250.00		
	Sub-Total 5.1200				
5.1300	Sand bedding and surrounds				
5.1301	Sand bedding for service connections	lin.m	790.00		
5.1302	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	2,250.00		
	Sub-Total 5.1300				
5.1400	Laying of HDPE pipes PE100 - PN16				
5.1401	Laying of 63 mm pipes	lin.m	1,645.00		
5.1402	Laying of 75 mm pipes	lin.m	605.00		
	Sub-Total 5.1400				
5.1500	Backfilling of trenches on other roads including compaction and testing				
5.1501	Backfilling of trenches for service connections	lin.m	790.00		
5.1502	Backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	2,250.00		
	Sub-Total 5.1500				
5.1600	Supply and installation of bridge or culvert crossings				
5.1601	Bridge or culvert crossing	nb	1.00		
	Sub-Total 5.1600				
	Sub-Total 5.1000				
5.2000	Accessories				
5.2100	Supply and installation of gate valves (including bolts, nuts, dismantling joints, etc..).				
5.2101	Gate valve PN16, DN 60 mm	nb	9.00		
5.2102	Gate valve PN16, DN 80 mm	nb	1.00		
	Sub-Total 5.2100				

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.2200	Supply and installation of air release valves				
5.2201	Single air release valve including isolating GV PN16, DN 40 mm	nb	6.00		
	Sub-Total 5.2200				
5.2400	Supply and installation of washouts				
5.2402	Washout PN16, DN 60 mm	nb	9.00		
	Sub-Total 5.2400				
5.2500	Supply and installation of drinking fountains				
5.2501	Drinking fountain PN16	nb	1.00		
	Sub-Total 5.2500				
5.2600	Supply and installation of fire hydrants				
5.2601	Fire hydrant PN16	nb	1.00		
	Sub-Total 5.2600				
	Sub-Total 5.2000				
5.3000	Valve chambers and surface box units				
5.3100	Construction of pre-cast or cast in situ, concrete valve chamber (excluding cover and frame)				
5.3101	Valve chamber internal size 125 x 100 cm x cm	nb	6.00		
5.3102	Valve chamber internal size 150 x 150 cm x cm	nb	9.00		
5.3103	Valve chamber internal size 175 x 125 cm x cm	nb	4.00		
5.3104	Valve chamber internal size 200 x 150 cm x cm	nb	1.00		
	Sub-Total 5.3100				
5.3200	Valve chamber cover				
5.3201	Valve chamber cover Grade A	nb	20.00		
	Sub-Total 5.3200				
5.3300	Surface box units for washouts and service connections				
5.3301	Supply and installation of surface box unit	nb	36.00		
	Sub-Total 5.3300				
	Sub-Total 5.3000				
5.4000	Concrete works				
5.4001	Mass concrete - Class C20 for blinding	cu.m	1.00		
5.4002	Mass concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	1.00		
5.4003	Reinforced concrete - Class C25 for pipe anchors, supports, protection slabs, thrust blocks, drainage and irrigation channels	cu.m	8.00		
	Sub-Total 5.4000				

KHRAIBE DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.5000	Service connections				
5.5100	Supply and installation of HDPE Pipes				
5.5101	HDPE pipe PN16, OD 20 mm	lin.m	655.00		
5.5102	HDPE pipe PN16, OD 25 mm	lin.m	40.00		
5.5103	HDPE pipe PN16, OD 32 mm	lin.m	95.00		
	Sub-Total 5.5100				
5.5200	Supply and installation of tapping collars				
5.5201	Tapping collar for DN 63 mm HDPE pipe	nb	17.00		
5.5202	Tapping collar for DN 75 mm HDPE pipe	nb	10.00		
	Sub-Total 5.5200				
5.5300	Supply and installation of stop valves				
5.5301	Stop valve PN16, DN 16 mm	nb	23.00		
5.5302	Stop valve PN16, DN 20 mm	nb	2.00		
5.5303	Stop valve PN16, DN 25 mm	nb	2.00		
	Sub-Total 5.5300				
	Sub-Total 5.5000				
5.6000	Testing and commissioning of potable water pipes				
5.6001	Testing and commissioning of service connections	nb	27.00		
5.6002	Testing and commissioning of 63 mm HDPE pipes	lin.m	1,645.00		
5.6003	Testing and commissioning of 75 mm HDPE pipes	lin.m	605.00		
	Sub-Total 5.6000				
5.7000	Road Reinstatement				
5.7100	Cutting				
5.7101	Cutting of paved roads for water pipes	lin.m	3,040.00		
5.7102	Cutting, breaking-out and removal of concrete pavement or stair cases for water pipes	sq.m	30.00		
	Sub-Total 5.7100				
5.7200	Reinstatement				
5.7201	Reinstatement in one layer of other paved roads including recutting works	sq.m	2,420.00		
5.7202	Reinstatement of concrete pavement or stair cases for water pipes, including base, sub-base courses and concrete pavement	sq.m	30.00		
	Sub-Total 5.7200				
	Sub-Total 5.7000				
	Total KHRAIBE DISTRIBUTION NETWORK				

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.0000	General				
5.0001	Site topographic survey	km.	4.30		
5.0002	Trial pit not exceeding 3m depth	nb	22.00		
5.0003	Trial trench not exceeding 3m depth	lin.m	65.00		
5.0004	As-built drawings	km.	4.30		
	Sub-Total 5.0000				
5.1000	Pipeworks				
5.1100	Supply of HDPE pipes PE100 - PN16 including all necessary fittings (bends, tees, reducers, flanges, etc...)				
5.1101	Supply of 63 mm pipes	lin.m	3,235.00		
5.1102	Supply of 75 mm pipes	lin.m	240.00		
5.1103	Supply of 90 mm pipes	lin.m	125.00		
5.1104	Supply of 110 mm pipes	lin.m	135.00		
5.1105	Supply of 125 mm pipes	lin.m	590.00		
	Sub-Total 5.1100				
5.1200	Trench excavation				
5.1201	Trench excavation for service connections	lin.m	1,790.00		
5.1202	Trench excavation for pipes not exceeding 110 mm in diameter	lin.m	3,735.00		
5.1203	Trench excavation for 125 mm HDPE pipes	lin.m	590.00		
	Sub-Total 5.1200				
5.1300	Sand bedding and surrounds				
5.1301	Sand bedding for service connections	lin.m	1,790.00		
5.1302	Sand bedding for pipes not exceeding 110 mm in diameter	lin.m	3,735.00		
5.1303	Sand bedding for 125 mm HDPE pipes	lin.m	590.00		
	Sub-Total 5.1300				
5.1400	Laying of HDPE pipes PE100 - PN16				
5.1401	Laying of 63 mm pipes	lin.m	3,235.00		
5.1402	Laying of 75 mm pipes	lin.m	240.00		
5.1403	Laying of 90 mm pipes	lin.m	125.00		
5.1404	Laying of 110 mm pipes	lin.m	135.00		
5.1405	Laying of 125 mm pipes	lin.m	590.00		
	Sub-Total 5.1400				
5.1500	Backfilling of trenches on other roads including compaction and testing				
5.1501	Backfilling of trenches for service connections	lin.m	1,790.00		
5.1502	Backfilling of trenches for pipes not exceeding 110 mm in diameter	lin.m	3,735.00		
5.1503	Backfilling of trenches for 125 mm HDPE pipes	lin.m	590.00		
	Sub-Total 5.1500				
5.1600	Supply and installation of bridge or culvert crossings				
5.1601	Bridge or culvert crossing	nb	1.00		
	Sub-Total 5.1600				
	Sub-Total 5.1000				

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.2000	Accessories				
5.2100	Supply and installation of gate valves (including bolts, nuts, dismantling joints, etc..).				
5.2101	Gate valve PN16, DN 60 mm	nb	26.00		
5.2102	Gate valve PN16, DN 80 mm	nb	6.00		
5.2103	Gate valve PN16, DN 100 mm	nb	1.00		
	Sub-Total 5.2100				
5.2200	Supply and installation of air release valves				
5.2201	Single air release valve including isolating GV PN16, DN 40 mm	nb	13.00		
	Sub-Total 5.2200				
5.2300	Supply and installation of pressure regulating valves				
5.2301	Pressure regulating valve PN16 for DN 63 mm HDPE pipe	nb	2.00		
	Sub-Total 5.2300				
5.2400	Supply and installation of washouts				
5.2402	Washout PN16, DN 60 mm	nb	13.00		
	Sub-Total 5.2400				
5.2500	Supply and installation of drinking fountains				
5.2501	Drinking fountain PN16	nb	1.00		
	Sub-Total 5.2500				
5.2600	Supply and installation of fire hydrants				
5.2601	Fire hydrant PN16	nb	1.00		
	Sub-Total 5.2600				
5.2700	Supply and installation of connections to existing reservoirs				
5.2701	Connection to existing reservoir	nb	1.00		
	Sub-Total 5.2700				
	Sub-Total 5.2000				
5.3000	Valve chambers and surface box units				
5.3100	Construction of pre-cast or cast in situ, concrete valve chamber (excluding cover and frame)				
5.3101	Valve chamber internal size 125 x 100 cm x cm	nb	13.00		
5.3102	Valve chamber internal size 150 x 150 cm x cm	nb	13.00		
5.3103	Valve chamber internal size 175 x 125 cm x cm	nb	11.00		
5.3104	Valve chamber internal size 200 x 150 cm x cm	nb	2.00		
5.3105	Valve chamber internal size 275 x 200 cm x cm	nb	2.00		
	Sub-Total 5.3100				
5.3200	Valve chamber cover				
5.3201	Valve chamber cover Grade A	nb	41.00		
	Sub-Total 5.3200				

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.3300	Surface box units for washouts and service connections				
5.3301	Supply and installation of surface box unit	nb	117.00		
	Sub-Total 5.3300				
	Sub-Total 5.3000				
5.4000	Concrete works				
5.4001	Mass concrete - Class C20 for blinding	cu.m	2.00		
5.4002	Mass concrete - Class C25 for pipe supports, thrust blocks, anchors, pipe bedding and surround at river crossing.	cu.m	2.00		
5.4003	Reinforced concrete - Class C25 for pipe anchors, supports, protection slabs, thrust blocks, drainage and irrigation channels	cu.m	15.00		
	Sub-Total 5.4000				
5.5000	Service connections				
5.5100	Supply and installation of HDPE Pipes				
5.5101	HDPE pipe PN16, OD 20 mm	lin.m	1,235.00		
5.5102	HDPE pipe PN16, OD 25 mm	lin.m	500.00		
5.5103	HDPE pipe PN16, OD 32 mm	lin.m	55.00		
	Sub-Total 5.5100				
5.5200	Supply and installation of tapping collars				
5.5201	Tapping collar for DN 63 mm HDPE pipe	nb	74.00		
5.5202	Tapping collar for DN 75 mm HDPE pipe	nb	12.00		
5.5203	Tapping collar for DN 90 mm HDPE pipe	nb	6.00		
5.5204	Tapping collar for DN 110 mm HDPE pipe	nb	4.00		
5.5205	Tapping collar for DN 125 mm HDPE pipe	nb	8.00		
	Sub-Total 5.5200				
5.5300	Supply and installation of stop valves				
5.5301	Stop valve PN16, DN 16 mm	nb	74.00		
5.5302	Stop valve PN16, DN 20 mm	nb	28.00		
5.5303	Stop valve PN16, DN 25 mm	nb	2.00		
	Sub-Total 5.5300				
	Sub-Total 5.5000				
5.6000	Testing and commissioning of potable water pipes				
5.6001	Testing and commissioning of service connections	nb	104.00		
5.6002	Testing and commissioning of 63 mm HDPE pipes	lin.m	3,235.00		
5.6003	Testing and commissioning of 75 mm HDPE pipes	lin.m	240.00		
5.6004	Testing and commissioning of 90 mm HDPE pipes	lin.m	125.00		
5.6005	Testing and commissioning of 110 mm HDPE pipes	lin.m	135.00		
5.6006	Testing and commissioning of 125 mm HDPE pipes	lin.m	590.00		
	Sub-Total 5.6000				
5.7000	Road Reinstatement				
5.7100	Cutting				
5.7101	Cutting of paved roads for water pipes	lin.m	6,115.00		
5.7102	Cutting, breaking-out and removal of concrete pavement or stair cases for water pipes	sq.m	30.00		
	Sub-Total 5.7100				

EL QRAIYAT DISTRIBUTION NETWORK

ITEM Nb	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (LBP)	TOTAL AMOUNT (LBP)
5.7200	Reinstatement				
5.7201	Reinstatement in one layer of other paved roads including recutting works	sq.m	4,835.00		
5.7202	Reinstatement of concrete pavement or stair cases for water pipes, including base, sub-base courses and concrete pavement	sq.m	30.00		
	Sub-Total 5.7200				
	Sub-Total 5.7000				
	Total EL QRAIYAT DISTRIBUTION NETWORK				

SUMMARY

Nb	DESCRIPTION	TOTAL AMOUNT (LBP)
1	REHABILITATION OF KHRAIBE WATER TOWER AND CONSTRUCTION OF VALVE CHAMBER	
2	KHRAIBE DISTRIBUTION NETWORK	
3	EL QRAIYAT DISTRIBUTION NETWORK	
	TOTAL	
	VAT (10%)	
	TOTAL (with VAT)	

TOTAL (with VAT) IN LETTERS Only
..... LBP

موافق

مدير المياه بالإنابة

دققه

رئيس مصلحة الدروس بالإنابة

نظمه

المكتب الفني للانماء (BTD)

المهندس منى فقيه

المهندس علي الخطيب

ميشيل مجدلاني

صدق

وزير الطاقة والمياه

موافق

المدير العام للموارد المائية والكهربائية

سيزار أبي خليل

د. فادي جورج قمير