Annex 1 Lot 1

Technical Specification for 15mm Domestic Water Meters (Multi-Jet) Lot 1

Meter Scope

Domestic water meter for house connection.

The meter shall comply with ISO 4064-1: 2014, MID 2014/32/EU and OIML R 49-1:2013. In addition, it shall comply with the EEC Council Directive No. 75/33/EEC. The meter shall be Class 1; R-200 for installations in horizontal, clearly marked on meter body. The meter must be new and manufactured in the year of delivery. The domestic water meter shall be supplied as a complete kit with DN 15 BSP threaded inlet and outlet tail coupling kits for connection to water pipes.

Meter Manufacturer Certification

The meter manufacturer must have MID 2014/32/EU certification for the meters to be supplied. Certified copies of the certifications must be attached with the tender.

Meter Design:

The domestic water meter shall be Multi Jet meter for fully treated water. The maximum number of revolutions per cubic meter to be stated in the tender and should not exceed AWWA standard C700-04. The meter should be designed for external tropical installation.

Meter Materials

General: The materials used in the construction of the meter should be designed to withstand treated (potable) water in Nairobi City Water Distribution System, the climatic conditions of Nairobi City and all potable water supplied to WHO International regulations and to operate normally for 5 years without any need for normal maintenance or repair and without the maximum error exceeding the specified limits. The domestic water meter must be constructed throughout of materials which are resistant to internal and external corrosion and if necessary be protected by some suitable surface treatment. All materials of the water meter which are in contact with the water flowing through the water meter shall be non-toxic and non-tainting. Water temperature variations within the working range shall not affect the materials used in the construction of the water meter.

Meter Bodies: The domestic water meter shall have a durable case protecting the measuring chamber in which the vane operates. The mounting casing shall not be repaired in any manner. The inlet and outlet nipples shall be 180^0 apart and located in the same horizontal plane.

The outer body casing shall be of split case type with upper part fitted to the lower part by means of cap bolts (or bolt and nuts) which are screwed together and a watertight seal inserted between the two. Alternatively, the outer casing may consist of two threaded parts, which screw together.

Plastic Water Meters

The outer casing must be of specially blended polyacetal material in compliance with EEC 75/33 directives and OIML R49 recommendations. The measuring element shall be of high grade polymer to ensure minimum wear and a high degree of reliability.

Alternative consideration may be given to meter body casing made from other composite materials other than the above if such materials have technical advantages and life expectancy under normal use in excess of 10 years.

Serial Number: On every meter body there shall be marked the nominal diameter of the meter *(eg. DN 15 mm), the meter model, an arrow indicating the direction of flow in indelible marking cast in raised characters, in very easily visible position on the outer case of the meters, **but NOT on the lid**. The letters "NCWSC" followed by the serial number (e.g. NCWSC 1512345619) in one continuous string should be engraved on the meter body and laser marked on the upper part of the totalizer in Number and Barcode, near the index, in big letters (5mm minimum) and not on any transparent part of the totalizer. The set of the serial numbers to be used will be issued by NCWSC to the winning bidder.

External Case Bolts: Where external case bolts, screws, cap bolts, nuts and washers form part of the meter design these shall be arranged for ease of removal after long service. They shall be of the same composition as the meter casing if appropriate or of stainless steel.

Type of Dial

The meter dial must be of "Sealed Register" sealed in a transparent capsule filled with protective propylene glycol or glycerin.

Meters with numbered drums in contact with the water being measured are not acceptable.

Transmission.

The transmission between the Turbine and the dial must be of mechanical type. Meters with transmission by magnetic coupling are NOT acceptable.

Connectors:
Meter body casing nipple shall have an external straight DN 15mm BSP threads. Coupling nuts shall have internal BSP threads of the same nominal pitch and diameter as in each case of the meter body. They shall be of the same composition as the meter casing if appropriate or of stainless steel. The tailpiece connections shall have external BSP taper thread of the same size as the normal diameter of the meter.

Meter Size: The domestic meter must correspond to (OIML R-49:2013) and no deviations from this shall be accepted. The length of the water meters shall not exceed the following:

Nominal Diameter	**mm**	**15**
Length	mm	150-200

The length of a meter with connectors screwed on shall be between 250 and 275mm.

Counter: The meter shall have tempered glass lens of minimum 5mm thickness with flat and smooth surface, scratch resistant and that does not turn opaque

The indicator shall provide for reliable and unambiguous direct reading of the volume of water measured in cubic meters (m^3) and litres. The indications of volume shall be by any of the two types as follows: -

Type 1 By a row of inline consecutive digits in one or more apertures (drum counters);

or

Type 2 A combination of drum counters for whole units of cubic meters and pointers on circular scales for fractions of cubic meters.

Drum counters shall be black for indication of a cubic meter and its multiples shall be red for indication of fractions of a cubic meter. Visible movements of the digits shall be upwards and the actual height of the digits on the drums shall be not less than 4 mm. The advance of a digital unit shall be completed while the next lower valued digit is within the last tenth of its travel. The drums showing digits of

lowest value shall move continuously in Type 1, and may move continuously in Type 2. Indicators with pointers (Type 2) shall rotate in a clockwise direction. The value of each division on the scales shall be expressed in multiples or sub-multiples of ten.

Each scale shall be graduated in cubic meters or accompanied by a multiplying factor (x0.0001, x0.001, x0.01, x0.1) according to the value of the scale. The symbol (m^3) shall appear on the dial.

The gear unit and the counter shall be combined and completely hermetically sealed. **Unsealed counters will not be accepted.**

The numbered drums shall be contained in a transparent hermetically sealed capsule. The counter shall be placed in a window of adequate thickness in the meter body and be placed so as to allow for ease of meter reading. Counter window shall be of minimum 5mm thickness. Black numbers on white shall denote cubic meters and white numbers on red shall denote litres.

The meter shall be pre-equipped for retrofitting with new generation bi-directional pulse emitter.

The pre-equipment and the proposed communication equipment should be insensitive to magnets of up to 3850 gauss.

The indicator shall, as minimum requirement, record the following values:

Size of Meter (DN)	**Minimum Registration (m^3)**	**Minimum Registration before Self Re-Set (m^3)**
15mm	**0.0001**	**100,000**

Tightness, Pressure and Temperature Resistance: The water meter shall permanently sustain (without leakage, malfunctioning or permanent deformation) a minimum working pressure of 16 bar, a test pressure of 2.5 times the working pressure and be suitable for water temperatures up to 50 degree Celsius.

Measuring Chamber: These shall be machined to precision limits and satisfactorily secured in position within the outer casings to ensure that no distortion to any part of the mechanism might occur which might affect the sensitivity or registration of the meters at internal pressures up to 16 bars. Measuring chamber shutter diaphragms shall be made of bronze morel, stainless steel or other suitable material having satisfactory characteristics.

Vane: Internal Mechanisms shall be made of vulcanized hard rubber or other materials that are un-hygroscopic, anti-scaling, antimagnetic and wear-resistant, having satisfactory characteristics including sufficient rigidity and strength to operate at the rated capacity of the meter. They should have sufficient dimensional stability to retain operating clearance at working temperatures up to 50^0C. A designed life expectancy in excess of 10 years is expected for all moving parts of the working chambers.

The meters shall operate at PH 6.5 – 8.5

Tenderer shall specify the optimum pH and the water quality for which the meters have been designed.

Meter Protection

Strainers: A suitable in-built inner strainer (0.75 mm aperture and 2,844 mm^2 mesh area) shall protect the measuring mechanism. Inlet strainers should be of rigid construction close fitting and designed for easy removal. Inlet strainers should be of nickel-plated copper, stainless steel or other materials having satisfactory characteristics.

Reverse Flow Restrictor / Non-return Valves:
All meters must be fitted with an in-built non removable maintenance free non return valve that shall prevent meter reversal.

Sealing: Water meters shall be provided with a means of sealing so that after sealing, both before and after the water meter has been properly installed, there shall be no possibility of dismantling or altering the water meter or its adjustment device without visibly damaging the seal. The meters shall be sealed subsequent to manufacture and before delivery to the purchaser. The preferred method of sealing is by a corrosive resistant wire inserted through 2.5 mm diameter holes in the halves of the body, and secured by a circular sheet metal seal impressed by a device which provides a unique imprint on the seal denoting manufacturer's identity.

Meter Characteristics & Performance:
The flow rate values shall (as a minimum) meet the following:

All flow measurements quoted are to be supported by a test certificate from the National Standards Institute (or a similar body) of the country of origin and Kenya Bureau of Standards.

Meteorological Class

Nominal Diameter (ND)		**15 mm**	**Permissible error Temp (0-30^{0}c)**	**Permissible error Temp (>30^{0}c≤50^{0}c)**
Overload flow rate…….....Q_4	m³/h	3.125	±1%	±2%
Permanent flow rate ..... Q_3	m³/h	2.5	±1%	±2%
Transitional flow rate .....Q_2	m³/h	0.02	±1%	±2%
Minimum flow rate.....……Q_1	m³/h	0.0125	±3%	±3%
Ratio……...Q_3/Q_1		200		

The meter performance specification shall either be to OIML 49: 2013 or ISO 4064:2014, Class 1: R200. The meters must be able to retain their accuracy when installed in horizontal planes. The accuracy curves may be compared with the AWWA VC-700-64 Standard and be equal to or better than these standards.

Headloss: Characteristic curves of head losses plotted against the rate of flow from the minimum flow rate shall be provided by the Tenderer. The meters shall show a loss of head not exceeding 0.63 bars between Q_1 and Q_3 in accordance with the standards.

Factory Visit:
There shall be a factory visit to the manufacturer's premises to ascertain compliance to the contract specifications after notice of contract award and prior to signing of the contract agreement. The factory visit will be at the cost of the procuring entity.

Testing of Meters: Testing of the meters will be done in accordance to either OIML 49: 2013 or ISO 4064:2014, Class 1:R200.

Tender Sample Meters: The tenderer shall provide a sample of three (3) meters within two days prior to bid opening date and acknowledged by the supply chain manager; which will be sampled during the evaluation stage of the tender. Two sample meters shall be tested for accuracy and pressure at NCWSC meter testing bench. One of the tested meters shall then be stripped to ascertain compliance of the physical components to the specifications. A detailed report shall be prepared. In case of any dispute on the test results, the remaining meter will be tested and checked at KEBS in the presence of the bidder and NCWSC representative at the bidders cost. The KEBS results shall be final.

Testing on Delivery of Meters:
A systematic random sampling of ten percent (10%) of the delivered meters in sequentially serialized batches of one hundred (100) meters shall be tested at the NCWSC's meter test bench.

If 2 or more out of the sampled 10 meters in a batch fails, then the batch is rejected.

In case of a dispute 20% of the tested meters shall be re-tested by the Kenya Bureau of Standards (KEBS) to verify the results at the Bidder's cost.

In case of a contradiction on results between NCWSC and KEBS the two parties shall agree upon a third (3^{rd}) accredited laboratory by KENAS for further testing of the same meters in the presence of both parties at the bidder's cost.

The results from the later test shall be deemed to be final.

Non-conformance inaccuracy test: A batch shall be considered as having failed if more than ten percent (>10%) of the tested meters fail the test. Under these circumstances the whole batch shall be subjected to 100% testing and only the meters that pass shall be accepted and the failed meters shall be rejected and returned to the supplier. The cost of testing shall be charged to the contract at a rate of Kes.400 per meter.

Manufacturing defects
These shall include but not limited to leakage, cracked body, faulty dials, stopped meter.
Detection of any of the above on any meter shall be considered as a manufacturing defect then: -

I. The entire consignment shall be tested 100% and only the meters that pass shall be accepted and the failed meters shall be rejected and returned to the supplier. The cost of testing shall be charged to the contract at a rate of Kes.400 per meter.
II. The supplier shall be instructed to deliver another consignment within 60days. If the delivery subsequent to the consignment found to have manufacturing defects is found to have any defective meter, contract termination shall commence immediately in accordance to clause 3.16 of GCC and concluded after finalization of testing defined in item (I) above. No further delivery shall be accepted.

Design Workmanship and Materials: The meters shall be guaranteed against defects in materials and workmanship for a minimum period of two Years from date of delivery subject to their being used only for the measurement of wholesome water that meets WHO guidelines under the normal conditions of flow, pressure and temperature recommended by the manufacturers for the size and type of meter concerned. The supplier shall provide durability test certificates for all deliveries.

Meters should be designed for easy disassembly and re-assembly without the use of special tools or equipment and should be easy to maintain and repair. Meters designed to resist vandalism / tampering will be preferred.

Packaging: Packing shall be made of strong carton box, and inside such carton box, each meter plus the associated fittings shall be packed in its own carton box. The meters shall further be packed in batches of 10 meters. The cartons shall be labelled with the meter model, manufacturer's logo and contacts.

Spare parts: The supplier shall also provide a full and complete list of all parts of the meters offered duly named (**IN ENGLISH**) and numbered together with the prices for each separate part in Kes.

Maintenance manuals:
A complete set of maintenance manuals in ENGLISH, spare parts lists, extruded drawings, wall charts required for maintaining the meters or in carrying out tests are to be provided with the tender.

After sales service: Address of the local agents technical advisors and details of after sales-service are to be submitted together with each tender. Information on stocks of meters, meter spares etc, which will be held by the local agents, is also to be stated in the tender.

Additional information: The tenderer is at liberty to provide additional information on the meter not catered for in this document.

Meter test certificates
During delivery each meter shall be accompanied by the following test certificates in accordance to OIML R49 2013 and ISO 4064:2014

1. Accuracy testing
2. Pressure testing and
3. Durability

TABLE 2.1a: TECHNICAL EVALUATION CRITERIA FOR LOT 1

ITE	CRITERIA (All are Mandatory)	(YE	(N	Comme
1	Two samples of the meter submitted by the bidder must pass the test. (Test Results will be analyzed during Technical Evaluation).			
2	**Meter Scope** ISO 4064-1: 2014, MID 2014/32/EU and OMIL R 49-1:2013. EEC Council Directive No. 75/33/EEC.			
3	**Meter Manufacturer Certification** Must have certification of MID 2014/32/EU			
4	**Meter Design**: Multi Jet			
5	**Meter Bodies:** **Plastic:** Specially blended polyacetal material in compliance with EEC 75/33			
6	**Serial Number:** NCWSC 1512345619			
7	**Connectors:** Coupling kits with internal BSP threads			
8	**Meter length with connectors:** 250 - 275mm			
9	**Meter Installation** Vertical			
10	**Counter:** Sealed capsule 5 Digits			
11	**Meter Protection** **Strainers:** In-built strainer **Reverse Flow Restrictor / Non-Return Valves:** In-built Non-Removable and maintenance free NRV **Sealing**: Sealing holes 2.5 mm diameter			
12	**Tightness, Pressure and Temperature Resistance** ≥16 Bars ≤50°C			
13	**Meteorological Class:** Class R-200 and above requirements			

14	**Meter test certificates** 1. Accuracy testing 2. Pressure testing and 3. Durability			
15	**The successful bidder's manufacturing factory shall be visited by NCWSC representatives and inspection conducted after notice of contract award and prior to signing of the contract agreement. This shall be done before delivery of the first batch of the water meters to confirm compliance to the**			

Annex 2 Lot 2

Technical Specification for 15mm Domestic Water Meters (Volumetric) Lot 2

Meter Scope

Domestic water meter for house connection.

The meter shall comply with AWWA C710, ISO 4064-1: 2014, OIML R 49-1:2013 and MID 2004/22/EC. In addition, it shall comply with the EEC Council Directive No. 75/33/EEC. The meter shall be Class 1; R-200 to R-250 for installations in horizontal, clearly marked on meter body. The meter must be new and manufactured in the year of delivery. The domestic water meter shall be supplied as a complete kit with DN 15 BSP threaded inlet and outlet tail coupling kits for connection to water pipes. The meter shall be of an oscillating piston positive in action.

Meter Manufacturer Certification

The meter manufacturer must have MID 2004/22/EC certification for the meters to be supplied. Certified copies of the certifications must be attached with the tender.

Meter Design:

The domestic water meter shall be volumetric (piston) type for fully treated water. The maximum number of revolutions per cubic meter to be stated in the tender and should not exceed AWWA standard C710-04. The meter should be designed for external tropical installation in a vertical, horizontal and inclined setting.

Meter Materials

General: The materials used in the construction of the meter should be designed to withstand treated (potable) water in Nairobi City Water Distribution System, the climatic conditions of Nairobi City and all potable water supplied to WHO International regulations and to operate normally for 5 years without any need for normal maintenance or repair and without the maximum error exceeding the specified limits. The domestic water meter must be constructed throughout of materials which are resistant to internal and external corrosion and if necessary be protected by some suitable surface treatment. All materials of the water meter which are in contact with the water flowing through the water meter shall be non-toxic and

non-tainting. Water temperature variations within the working range shall not affect the materials used in the construction of the water meter.

Meter Bodies: The domestic water meter shall have a durable measuring chamber in which the piston operates. The mounting casing shall not be repaired in any manner. The inlet and outlet shall have a common axis.

The outer body casing shall be of split case type with upper part fitted to the lower part by means of cap bolts (or bolt and nuts) which are screwed together and a watertight seal inserted between the two. Alternatively, the outer casing may consist of two threaded parts, which screw together.

Plastic Water Meters

The outer casing must be of specially blended polyacetal material in compliance with EEC 75/33 directives and OIML R49 recommendations. The measuring element shall be of high grade polymer to ensure minimum wear and a high degree of reliability.

Alternative consideration may be given to meter body casing made from other composite materials other than the above if such materials have technical advantages and life expectancy under normal use in excess of 10 years.

Serial Number: On every meter body there shall be marked the nominal diameter of the meter (e.g. DN 15 mm), the meter model, an arrow indicating the direction of flow in indelible marking cast in raised characters, in very easily visible position on the outer case of the meters, **but NOT on the lid**. The letters "NCWSC" followed by the serial number (e.g. NCWSC 1512345619) in one continuous string should be engraved on the meter body and laser marked on the upper part of the totalizer in Number and Barcode, near the index, in big letters (5mm minimum height) and not on any transparent part of the totalizer. The set of the serial numbers to be used will be issued by NCWSC to the winning bidder.

External Case Bolts: Where external case bolts, screws, cap bolts, nuts and washers form part of the meter design these shall be arranged for ease of

removal after long service. They shall be of the same composition as the meter casing if appropriate or of stainless steel.

Type of Dial

The meter dial must be circular, straight reading in cubic meters (M^3) of "Sealed Register" sealed in a transparent capsule filled with protective propylene glycol or

glycerin. No portion of the register shall be in contact with the measured water. (Meters with numbered drums in contact with the water being measured are not acceptable)

Transmission.
The transmission between the piston and the dial of mechanical type is preferred to magnetic couplings.

Connectors:
Meter body casing nipple shall have an external straight DN 15mm BSP threads. Coupling nuts shall have internal BSP threads of the same nominal pitch and diameter as in each case of the meter body. They shall be of the same composition as the meter casing if appropriate or of stainless steel. The tailpiece connections shall have external BSP taper thread of the same size as the nominal diameter of the meter.

Meter Size: The domestic meter must correspond to (OIML R-49:2013 and AWWA C710) and no deviations from this shall be accepted. The length of the water meters shall not exceed the following:

Nominal Diameter	**mm**	**15**
Length	mm	145-190

The length of a meter with connectors screwed on shall be between 200 and 250mm.

Counter: The meter shall have tempered glass lens of minimum 5mm thickness with flat and smooth surface, scratch resistant and that does not turn opaque.

The indicator shall provide for reliable and unambiguous direct reading of the volume of water measured in cubic meters (m^3) and litres. The indications of volume shall be by any of the two types as follows: -

Type 1 By a row of inline consecutive digits in one or more apertures

(drum counters);

or

Type 2 A combination of drum counters for whole units of cubic meters and pointers on circular scales for fractions of cubic meters.

Drum counters shall be black for indication of a cubic meter and its multiples shall be red for indication of fractions of a cubic meter. Visible movements of the digits shall be upwards and the actual height of the digits on the drums shall not be less than 4 mm. The advance of a digital unit shall be completed while the next lower valued digit is within the last tenth of its travel. The drums showing digits of lowest value shall move continuously in Type 1, and may move continuously in Type 2. Indicators with pointers (Type 2) shall rotate in a clockwise direction. The value of each division on the scales shall be expressed in multiples or sub-multiples of ten.

Each scale shall be graduated in cubic meters or accompanied by a multiplying factor (x0.0001, x0.001, x0.01, x0.1) according to the value of the scale. The symbol (m^3) shall appear on the dial.

The gear unit and the counter shall be combined and completely hermetically sealed. **Unsealed counters shall not be accepted.**

The numbered drums shall be contained in a transparent hermetically sealed capsule. The counter shall be placed in a window of adequate thickness in the meter body and be placed so as to allow for ease of meter reading. Counter window shall be of minimum 5mm thickness. Black numbers on white shall denote cubic meters and white numbers on red shall denote litres.

The meter shall be pre-equipped for retrofitting with new generation bi-directional pulse emitter.

The pre-equipment and the proposed communication equipment should be insensitive to magnets of up to 3850 gauss.

The indicator shall, as minimum requirement, record the following values:

Size of Meter (DN)	**Minimum Registration (m^3)**	**Minimum Registration before Self Re-Set (m^3)**
15mm	**0.0001**	**100,000**

Tightness, Pressure and Temperature Resistance: The water meter shall permanently sustain (without leakage, malfunctioning or permanent deformation) a minimum working pressure of 16 bar, a test pressure of 2.5 times the working pressure and be suitable for water temperatures up to 50 degrees Celsius.

Measuring Chamber: The measuring chamber shall be self-contained unit, smoothly finished, firmly seated, and easily removed from the main casing and shall not be produced as part of the main casing. The chamber shall be secured in the main casing so that the accuracy of the meter will not be affected by any distortion of the main case that may occur with operating pressure less than 16 bars.

Rotary Piston : Piston shall be smoothly finished and equipped with thrust rollers. The piston spindles shall be fastened securely. It should have sufficient dimensional stability to retain operating clearance at working temperatures up to 50^0C. A designed life expectancy in excess of 10 years is expected.

The meters shall operate at PH 6.5 – 8.5

Tenderer shall specify the optimum pH and the water quality for which the meters have been designed.

Meter Protection

Strainers: The meter shall have an in-built strainer screen, which shall be rigid, fit snugly, be easy to remove and have an effective straining area at least double the main casing inlet.

Reverse Flow Restrictor / Non-return Valves:

All meters must be fitted with an in-built non removable maintenance free non return valve that shall prevent meter reversal.

Sealing: Water meters shall be provided with a means of sealing so that after sealing, both before and after the water meter has been properly installed, there shall be no possibility of dismantling or altering the water meter without visibly damaging the seal. The meters shall be sealed subsequent to manufacture and before delivery to the purchaser. The preferred method of sealing is by a corrosive resistant wire inserted through 2.5 mm diameter holes in the halves of the body, and secured by a circular sheet metal seal impressed by a device which provides a unique imprint on the seal denoting manufacturer's identity.

Meter Characteristics & Performance:

The flow rate values shall (as a minimum) meet the following:

All flow measurements quoted are to be supported by a test certificate from the National Standards Institute (or a similar body) of the country of origin and Kenya Bureau of Standards.

Meteorological Class

Nominal Diameter (ND)		**15 mm**	**Permissible error Temp (0-30^{0}c)**	**Permissible error Temp (>30^{0}c≤50^{0}c)**
Overload flow rate…….....Q_4	m³/h	3.125	±1%	±2%
Permanent flow rate ..... Q_3	m³/h	2.5	±1%	±2%
Transitional flow rate .....Q_2	m³/h	0.02	±1%	±2%
Minimum flow rate.....……Q_1	m³/h	0.0125	±3%	±3%
Ratio…….....Q_3/Q_1		200 to 250		

The meter performance specification shall be to OIML 49: 2013, ISO 4064:2014 Class 1:R200 to R250 or to equivalent internationally recognized Standard. The meters must be able to retain their accuracy when installed in

either horizontal, vertical or inclined planes. The accuracy curves may be compared with the AWWA C710 Standard and be equal to or better than these standards.

Headloss: Characteristic curves of head losses plotted against the rate of flow from the minimum flow rate shall be provided by the Tenderer. The meters shall show a loss of head not exceeding 0.63 bars between Q_1 and Q_3 in accordance with the standards.

Factory Visit:
There shall be a factory visit to the manufacturer's premises to ascertain compliance to the contract specifications after notice of contract award and prior to signing of the contract agreement. The factory visit will be at the cost of the procuring entity.

Testing of Meters: Testing of the meters will be done in accordance to AWWA C710, OIML 49: 2013, ISO 4064:2014 Class 1:R200 to R250

–Tender Sample Meters: The tenderer shall provide a sample of three **(**3) meters within two days prior to bid opening date and acknowledged by the supply chain manager; which will be sampled during the evaluation stage of the tender. Two sample meters shall be tested for accuracy and pressure at NCWSC meter testing bench. One of the tested meters shall then be stripped to ascertain compliance of the physical components to the specifications. A detailed report shall be prepared. In case of any dispute on the test results, the remaining meter will be tested and checked at KEBS in the presence of the bidder and NCWSC representative at the bidders cost. The KEBS results shall be final.

Testing on Delivery of Meters: A systematic random sampling of ten percent (10%) of the delivered meters in sequentially serialized batches of one hundred (100) meters shall be tested at the NCWSC's meter test bench.

If 2 or more out of the sampled 10 meters in a batch fails, then the batch is rejected.

In case of a dispute 20% of the tested meters shall be re-tested by the Kenya Bureau of Standards (KEBS) to verify the results at the Bidder's cost.

In case of a contradiction on results between NCWSC and KEBS the two parties shall agree upon a third (3^{rd}) accredited laboratory by KENAS for further testing of the same meters in the presence of both parties at the bidder's cost.

The results from the later test shall be deemed to be final.

Non-conformance in accuracy test: A batch shall be considered as having failed if more than ten percent (>10%) of the tested meters fail the test.

Under these circumstances the whole batch shall be subjected to 100% testing and only the meters that pass shall be accepted and the failed meters shall be rejected and returned to the supplier. The cost of testing shall be charged to the contract at a rate of Kes.400 per meter.

Manufacturing defects

These shall include but not limited to leakage, cracked body, faulty dials, stopped meter.

Detection of any of the above on any meter shall be considered as a manufacturing defect then: -

III. The entire consignment shall be tested 100% and only the meters that pass shall be accepted and the failed meters shall be rejected and returned to the supplier. The cost of testing shall be charged to the contract at a rate of Kes.400 per meter.

2. The supplier shall be instructed to deliver another consignment within 60days. If the delivery subsequent to the consignment found to have manufacturing defects is found to have any defective meter, contract termination shall commence immediately in accordance to clause 3.16 of GCC and concluded after finalization of testing defined in item (I) above. No further delivery shall be accepted.

Design Workmanship and Materials: The meters shall be guaranteed against defects in materials and workmanship for a minimum period of two Years from date of delivery subject to their being used only for the measurement of wholesome water that meets WHO guidelines under the normal conditions of flow, pressure and temperature recommended by the manufacturers for the size and type of meter concerned. The supplier shall provide durability test certificates for all deliveries.

Meters should be designed for easy disassembly and re-assembly without the use of special tools or equipment and should be easy to maintain and repair. Meters designed to resist vandalism / tampering will be preferred.

Packaging: Packing shall be made of strong carton box, and inside such carton box, each meter plus the associated fittings shall be packed in its own carton box. The meters shall further be packed in batches of 10 meters. The cartons shall be labelled with the meter model, manufacturer's logo and contacts.

Maintenance manuals:

A complete set of maintenance manuals in ENGLISH, spare parts lists, extruded drawings, wall charts required for maintaining the meters or in carrying out tests are to be provided with the tender.

After sales service:

Address of the local agents technical advisors and details of after sales-service shall be submitted together with each tender. Information on stocks of meters and meter spares, which will be held by the local agents, is also to be stated in the tender.

Meter test certificates

During delivery each meter shall be accompanied by the following test certificates in accordance to AWWA C710, OIML R49 2013 and ISO 4064:2014

4. Accuracy testing
5. Pressure testing and
6. Durability

Additional information: The tenderer is at liberty to provide additional information on the meter not catered for in this document.

Summary of the technical data of the goods

Tenderer must complete the attached Annex A, which summarizes the technical data of the goods being offered under this tender.

ANNEX 'A' TO TECHNICAL SPECIFICATION
(To be completed by all Tenderer)

A. Type/Model of meter: ……..……..……..……..

METER SIZE	MIN. FLOW THAT CAN BE REGISTERED M3 /h	PERMANENT FLOW THAT CAN BE REGISTERED M3 /h	OVERLOAD FLOW THAT CAN BE REGISTERED M3 /h	OUTER CASING TYPE	MAX. ADMISSIBLE PRESSURE (BARS)	MAX. ADMISSIBLE TEMP. (^{0}C)	PRE-EQUIPPED FOR REMOTE READING. (Yes / No)
15 mm							

B. Copies of test certificates from manufacturer shall be attached.

C. After-sales service of the meters can be carried out by (Name of Local Agent)

……

Located at …… Box No. …….

Telephone ……..

Contact Person ……

TABLE 2.1b: TECHNICAL EVALUATION CRITERIA FOR LOT 2

ITEM	CRITERIA (All are Mandatory)	(YES)	(NO)	Comments
1	Two samples of the meter submitted by the bidder must pass the test. (Test Results will be analyzed during Technical			
2	**Meter Scope** ISO 4064-1: 2014, MID 2014/32/EU and OMIL R 49-1:2013. EEC Council Directive No. 75/33/EEC.			
3	**Meter Manufacturer Certification** Must have certification of MID 2004/22/EC			
4	**Meter Design**: Volumetric (piston) type			
5	**Meter Bodies:** **Plastic:** Specially blended polyacetal material in compliance with			
6	**Serial Number:** NCWSC 1512345619			
7	**Connectors:** Coupling kits with internal BSP threads			
8	**Meter length with connectors:** 200 - 250mm			
9	**Meter Installation** Vertical & Vertical			
10	**Counter:** Sealed capsule 5 Digits			

11	**Meter Protection** **Strainers:** In-built strainer screen **Reverse Flow Restrictor / Non-Return Valves:** In-built Non-Removable and maintenance free NRV **Sealing**: Sealing holes 2.5 mm diameter			
12	**Tightness, Pressure and Temperature Resistance** ≥16 Bars ≤50°C			
13	**Transmission** Mechanical or Magnetic			
14	**Meteorological Class:** Class R-200 and above requirements			
15	**Meter test certificates** 1. Accuracy testing 2. Pressure testing and 3. Durability			
16	**The successful bidder's manufacturing factory shall be visited by NCWSC representatives and inspection conducted after notice of contract award and prior to signing of the contract agreement. This shall be done before delivery of the first batch of the water meters to**			