**Section II: Schedule of Requirements**

**eSourcing reference:** ITB/2022/44100

1. **Summary of Requirements**

UNOPS requirements are comprised of the following lots:

* Lot 1: Rehabilitation of the Existing Water Network and Construction of New House Connections in Sarieh District (A1 & A2)
* Lot 2: Rehabilitation of the Existing Water Network and Construction of New House Connections in Sarieh District (A3)

1. **Technical specifications for Goods and Comparative Data Table**

*Important Note: Bidder shall fill the ‘Bidder Offer’ column within the technical specifications, with clear and accurate answers, and shall outline any deviation from the technical specifications. The bidder shall state the reference (i.e. location and exact page-number) within the submittals/brochure/datasheet/etc that prove the compliance with the Specification.*

| **EVALUATION CRITERIA SUBMITTALS REQUIRED CERTIFICATES FOR ALL WATER NETWORK MATERIALS** | | | |
| --- | --- | --- | --- |
| NO. | UNOPS minimum technical requirements | Is the bid compliant? Bidder to complete | Details of goods offered. Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.0 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | Toxicity testing shall be performed for all pipes in accordance to (WRAS) | ☐ Yes ☐ No |  |
| **2.0** | Manufacturer’s Authorization Form. | ☐ Yes ☐ No |  |
| **3.0** | Certificate of origin. | ☐ Yes ☐ No |  |
| **4.0** | Manufacturer experience certificates; a certificate from the manufacturer (self declaration) that he has at least 10 years in the field of production for pipes and fittings | ☐ Yes ☐ No |  |
| **5.0** | Quality assurance certificate (ISO 9001). | ☐ Yes ☐ No |  |
| **6.0** | The supplier/ contractor shall supply full technical specifications and catalogs highlighting the items to be supplied at the time of tender. | ☐ Yes ☐ No |  |
| **7.0** | Provide a commitment letter to supply all abroad materials within 120 calendar days. | ☐ Yes ☐ No |  |
| **8.0** | Provide a commitment letter to supply 50% of the local materials within 30 calendar days and 100% within 120 calendar days. | ☐ Yes ☐ No |  |
| **All certificates must be valid and in English language, the above mentioned certificates must be provided for each of listed material.** | | | |

| **EVALUATION CRITERIA OF DUCTILE IRON (DI) PIPES** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.2 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | Pipe Class Ductile Iron Pipes and joints shall be C25 **class according to EN 545-2010**. DI pipes shall be centrifugally cast, with socket and spigot ends, EPDM rubber gaskets | ☐ Yes ☐ No |  |
| **2.0** | Check pipe Dimensions | ☐ Yes ☐ No |  |
| **3.0** | Wall Thickness. | ☐ Yes ☐ No |  |
| **4.0** | External Diameter | ☐ Yes ☐ No |  |
| **5.0** | Internal Diameter | ☐ Yes ☐ No |  |
| **6.0** | Length | ☐ Yes ☐ No |  |
| **7.0** | Straightness of the pipes | ☐ Yes ☐ No |  |
| **8.0** | Pipe External coating | ☐ Yes ☐ No |  |
| **9.0** | Pipe Internal coating | ☐ Yes ☐ No |  |
| **10.0** | Cement Lining thickness | ☐ Yes ☐ No |  |
| **11.0** | Tensile strength | ☐ Yes ☐ No |  |
| **12.0** | Elongation test | ☐ Yes ☐ No |  |
| **13.0** | Hydrostatic pressure | ☐ Yes ☐ No |  |
| **14.0** | Hardness | ☐ Yes ☐ No |  |
| **15.0** | Microstructure Examination supported by picture | ☐ Yes ☐ No |  |
| **16.0** | Works leak tightness test for pipes and fittings | ☐ Yes ☐ No |  |
| **17.0** | Pipe marking | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF DUCTILE IRON FITTINGS** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.6 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | Ductile iron fittings shall be sand cast in accordance with EN 545-2010 | ☐ Yes ☐ No |  |
| **2.0** | Each Socket joint shall be supplied with its EPDM gasket | ☐ Yes ☐ No |  |
| **3.0** | All fittings must conform with the requirements of norms and standards, and should be suitable to be used in conjunction with pressure pipes to the appropriate EN standards. | ☐ Yes ☐ No |  |
| **5.0** | All fittings must have molded-in identification and appropriate product information | ☐ Yes ☐ No |  |
| **6.0** | The joints of ductile iron (DI) fittings shall be according to the above mentioned standards. | ☐ Yes ☐ No |  |
| **7.0** | Dimension Range: above DN 100 | ☐ Yes ☐ No |  |
| **8.0** | Working pressure: PN 16 | ☐ Yes ☐ No |  |
| **9.0** | Fittings unless otherwise specified shall be of flanged type compatible with the pipe system. | ☐ Yes ☐ No |  |
| **10.0** | Flange dimensions and drilling according to the ANSI/ASME Standard B16.42 or EN 1092-2. | ☐ Yes ☐ No |  |
| **11.0** | Flanged fittings shall be supplied with flat gasket, straps, bolts, nuts and washers shall be stainless steel type 304. | ☐ Yes ☐ No |  |
| **12.0** | The DI bends shall be designed and manufactured as automatic push-on joint type installed along and with DI pipes of type socket-spigot, fittings such as T-pieces and tapers shall be of flanged type drilled to required PN. | ☐ Yes ☐ No |  |
| **13.0** | External coating: Electro-deposited coating with a mean thickness not less than 70 µm and local minimum thickness not less than 50 µm, applied on a blast-cleaned and phosphate surface or equivalent in accordance with ANSI/AWWA C550 | ☐ Yes ☐ No |  |
| **14.0** | Internal coating: cement mortar lining with seal coat | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF HIGH DENSITY POLYETHYLENE PIPES HDPE** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.3 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | The polyethylene pipes shall conform to the requirements of Polyethylene (PE) pipes for water supply under pressure–Specification(ISO 4427-1/2:2007), (EN12201-1, EN 12201-2),or equivalent in which a supplier must submit a copy of that standard and a proof of equivalency to the above specifications. | ☐ Yes ☐ No |  |
| **2.0** | Material of pipes must be PE 100; raw material used shall be according to ISO4427 or equivalent standards and has to be from the positive PE100+ Association list | ☐ Yes ☐ No |  |
| **3.0** | Pipe length | ☐ Yes ☐ No |  |
| **4.0** | Dimension of the pipe diameter and wall thickness | ☐ Yes ☐ No |  |
| **5.0** | Pressure class: PN 16 | ☐ Yes ☐ No |  |
| **6.0** | The Standard Dimension Ratio (SDR): SDR 11 | ☐ Yes ☐ No |  |
| **7.0** | Material Designation: PE 100 | ☐ Yes ☐ No |  |
| **8.0** | Pipe Marking | ☐ Yes ☐ No |  |
| **9.0** | Tensile Strength | ☐ Yes ☐ No |  |
| **10.0** | Elongation test | ☐ Yes ☐ No |  |
| **11.0** | Hydrostatic pressure test for 165 hour | ☐ Yes ☐ No |  |
| **12.0** | Hardness Test | ☐ Yes ☐ No |  |
| **13.0** | Melt flow rate | ☐ Yes ☐ No |  |
| **14.0** | Change of melt flow rate | ☐ Yes ☐ No |  |
| **15.0** | Oxidation induction time | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF HIGH DENSITY POLYETHYLENE (HDPE) FITTINGS** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.7 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | All fittings shall be in accordance with ISO 4427 or Equivalent.  Installed using electro-fusion technology and | ☐ Yes ☐ No |  |
| **2.0** | Material PE 100 | ☐ Yes ☐ No |  |
| **3.0** | Dimension | ☐ Yes ☐ No |  |
| **4.0** | Melt flow rate | ☐ Yes ☐ No |  |
| **5.0** | Oxidation induction time | ☐ Yes ☐ No |  |
| **6.0** | Geometrical characteristic | ☐ Yes ☐ No |  |
| **7.0** | Appearance and color | ☐ Yes ☐ No |  |
| **8.0** | Hydrostatic strength | ☐ Yes ☐ No |  |
| **9.0** | Electrical resistance | ☐ Yes ☐ No |  |
| **10.0** | Connection Type | ☐ Yes ☐ No |  |
| **11.0** | Design Requirements | ☐ Yes ☐ No |  |
| **12.0** | Marking | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF CPVC PIPES AND FITTINGS FOR PRESSURE SYSTEM** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.5 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | Sch. 80 Chlorinated Polyvinyl Chloride ( CPVC ) Plastic Pipes in accordance with ASTM F 441 | ☐ Yes ☐ No |  |
| **2.0** | Nominal size | ☐ Yes ☐ No |  |
| **3.0** | External diameter | ☐ Yes ☐ No |  |
| **4.0** | Minimum wall thickness | ☐ Yes ☐ No |  |
| **5.0** | Pipe Length | ☐ Yes ☐ No |  |
| **6.0** | Tensile Test | ☐ Yes ☐ No |  |
| **7.0** | Pipe Pressure rating | ☐ Yes ☐ No |  |
| **8.0** | Elongation test | ☐ Yes ☐ No |  |
| **9.0** | Hardness Test | ☐ Yes ☐ No |  |
| **10.0** | Pipe marking | ☐ Yes ☐ No |  |
| **11.0** | Specific gravity | ☐ Yes ☐ No |  |
| **12.0** | water absorption | ☐ Yes ☐ No |  |
| **13.0** | Impact resistance | ☐ Yes ☐ No |  |
| **14.0** | Compressive strength | ☐ Yes ☐ No |  |
| **15.0** | Compressive modulus | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF GALVANIZED IRON PIPES AND FITTINGS** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.4 & 5.8 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | Galvanized steel pipes must be seam-welded, galvanized threaded pipes (Heavy series) in accordance with BS.EN 10255 latest edition. | ☐ Yes ☐ No |  |
| **2.0** | Pipe material | ☐ Yes ☐ No |  |
| **3.0** | Nominal size DN | ☐ Yes ☐ No |  |
| **4.0** | Designation of threatened | ☐ Yes ☐ No |  |
| **5.0** | The dimensions of the pipes must be according to EN 10255: 2004  Pipe outside diameter ( Max, Min). Wall thickness, | ☐ Yes ☐ No |  |
| **6.0** | Mass per unit of length | ☐ Yes ☐ No |  |
| **7.0** | Length | ☐ Yes ☐ No |  |
| **8.0** | Tensile Strength. | ☐ Yes ☐ No |  |
| **9.0** | Elongation test | ☐ Yes ☐ No |  |
| **10.0** | The galvanization shall be done by a hot-dip zinc coating process according to EN10240. | ☐ Yes ☐ No |  |
| **11.0** | Chemical characteristic of coating layer shall be in accordance with EN 10240 | ☐ Yes ☐ No |  |
| **12.0** | Pipe marking | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF DUCTILE IRON GATE VALVE** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.12.10 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | The Gate valves shall be resilient seated gate valves ductile iron in both the Non-Rising Stem  and Outside Stem versions as specified.  All valves will be rated for PN 16 working pressure. | ☐ Yes ☐ No |  |
| **2.0** | body wedge and bonnet (16-25 bar). | ☐ Yes ☐ No |  |
| **3.0** | Seat Resilient seat | ☐ Yes ☐ No |  |
| **4.0** | Valve stem(shaft)SS 420 ( x20Cr13) (for potable water | ☐ Yes ☐ No |  |
| **5.0** | Thread nut Brass, bronze, SS304, SS316. | ☐ Yes ☐ No |  |
| **6.0** | Body Bolts shall be electro-zinc plated steel with hex heads and hex nuts in accordance with, A2 SS-EN 10088-3. | ☐ Yes ☐ No |  |
| **7.0** | All valves shall open by turning to the left or counter clockwise, when viewed from the stem. | ☐ Yes ☐ No |  |
| **8.0** | All internal ferrous metal surfaces shall be fully coated, blue color, holiday free, to a minimum thickness 250 microns epoxy coating. | ☐ Yes ☐ No |  |
| **9.0** | Side coating shall be non-toxic, impart no taste to water, and shall be coated in accordance with EN standards. | ☐ Yes ☐ No |  |
| **10.0** | The color is Blue and the grade code is RAL 5005 or RAL 5015, any other grade must be subjected to the Employer approval on time of tender. | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF DUCTILE IRON BUTTERFLY VALVE** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.12.11 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | Butterfly valves may be used on water mains 8 inches and larger. | ☐ Yes ☐ No |  |
| **2.0** | butterfly valves shall be of the tight closing, metal seat type with recess-mounted and securely fastened to the valve body or attached to the valve disc. | ☐ Yes ☐ No |  |
| **3.0** | Directions of flow shall be satisfactory for applications involving valve operation after long periods of inactivity. | ☐ Yes ☐ No |  |
| **4.0** | Valve discs shall rotate 90 degrees from the full open position to the tight shut position. | ☐ Yes ☐ No |  |
| **5.0** | Double eccentric design | ☐ Yes ☐ No |  |
| **6.0** | Ductile cast iron EN 1563- EN-JS1030- EN-GJS-400-1 | ☐ Yes ☐ No |  |
| **7.0** | Sealing disk lever: Ductile cast iron EN 1563- EN-JS1030- EN-GJS-400-15 (GGG 40) | ☐ Yes ☐ No |  |
| **8.0** | Shaft:Min X20Cr13(1.4201), SS304,SS316.according to (EN 10088-3). | ☐ Yes ☐ No |  |
| **9.0** | Thread nut: Brass, bronze, SS304, SS316 (SS-EN1982,SS-EN 12168, EN 10088-3) | ☐ Yes ☐ No |  |
| **10.0** | Bolts: Shall be electro-zinc plated steel with hex heads and hex nuts in accordance with, A2 SS-EN 10088-3. | ☐ Yes ☐ No |  |
| **11.0** | Face to face to EN 558-1, basic series 14 | ☐ Yes ☐ No |  |
| **12.0** | Flanged according to EN 1902-2. | ☐ Yes ☐ No |  |
| **13.0** | Flangedconnection to DIN 2501. | ☐ Yes ☐ No |  |
| **14.0** | Soft sealing. | ☐ Yes ☐ No |  |
| **15.0** | Glands shall be O-ring. | ☐ Yes ☐ No |  |
| **16.0** | Valves shall be suitable for installation in either horizontal or vertical position. | ☐ Yes ☐ No |  |
| **17.0** | All internal ferrous metal surfaces shall be fully coated, blue color, holiday free, to a minimum thickness 250 microns with a two part thermosetting epoxy coating. Said coating shall be non-toxic, impart no taste to water, and shall be coated in accordance with EN standards. The color grade is RAL 5005. | ☐ Yes ☐ No |  |

| **EVALUATION CRITERIA OF DUCTILE IRON SINGLE AND DOUBLE AIR RELEASE VALVES** | | | |
| --- | --- | --- | --- |
| **NO.** | **UNOPS minimum technical requirements** | **Is the bid compliant?** Bidder to complete | **Details of goods offered.** Bidder to  complete  Insert details of goods offered, including specifications and brand/model offered |
|  | **Refer to section 5.12.12 from technical specifications** | ☐ Yes ☐ No |  |
| **1.0** | Air Valves shall be single automatic air valves, PN 16, operation pressure PN 0.1 – 6 bars and 1-16 bars, with body/bonnet of special plastics or Ductile Iron according to EN-GJS-400-18 / EN-JS 1030, or equivalent, according to EN 1563 (GGG400 - DIN1693). | ☐ Yes ☐ No |  |
| **2.0** | Body and cover shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693) and shall be inside and outside epoxy powder coated complying in general with DIN 30677 part 2, | ☐ Yes ☐ No |  |
| **3.0** | The valve shall be with a venting orifice no smaller than the nominal valve size. | ☐ Yes ☐ No |  |
| **4.0** | The float ball shall be spherical and made of stainless steel grade 316. | ☐ Yes ☐ No |  |
| **5.0** | All Internal parts shall be made of stainless steel grade 316. | ☐ Yes ☐ No |  |
| **6.0** | The air and vacuum valve shall be of the triple function type with a flanged inlet to EN 1092-2 PN 16 (or 10) (DIN 28605 / DIN 2501/BS 4504) and shall be suitable and approved for the use with potable water at a nominal working pressure from 1 to 16 bar. | ☐ Yes ☐ No |  |
| **7.0** | coating thickness shall be minimum 250µm, freedom from imperfections shall be tested by high-voltage method. | ☐ Yes ☐ No |  |