Construction of Sewage Network and Waste Water Treatment Plant (WWTP) in the Municipality of Berane

Volume 4 – Schedules

Section 3-1. Equipment

Lot 1

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# INTRODUCTION

The following data sheets have been prepared in relation to the guide design included in the presented Tender Dossier.

The Tenderer shall state the details of the proposed equipment as requested by the following tables. The Tenderer shall establish these tables for all proposed equipment, accordingly. For each particular equipment (Pumps, Mixers, Valves, PLC, Instrumentation, etc.) the Tenderer shall make as many copies as required by his actual design and shall fill in the page numbers on the bottom of the pages.

The manufacturers and types of devices that are included in the offer shall have to be used for the execution of the Contract. In the case that modifications would be required because of unavailability, change of products, etc, a written modification proposal, duly justified, shall have to be submitted, for approval by the Employer.

Manufacturers, country of origin and types of devices shall be stated completely. If they are not stated completely, the Employer reserves the right to decide about the brand to be installed without any changes in the tendered prices.

If the Tender propose devices that are not listed in the Equipment Datasheets, nor specified in the Tender Documents, the Tenderer shall state the main characteristics for any such device accordingly.

# DATASHEETS

## ELIGIBILITY STATEMENT

| **Description** | **Unit** | **Origin of Material or Equipment** | **Name, Address and**  **Registration Place**  **of Suppliers** |
| --- | --- | --- | --- |
| ***Mechanical equipment*** |  |  |  |
| Centrifugal pumps |  |  |  |
| Positive displacement pumps |  |  |  |
| Drainage pumps |  |  |  |
| Coarse screen |  |  |  |
| Fine screen |  |  |  |
| Screenings compactor |  |  |  |
| Grit classifier |  |  |  |
| Travelling bridge |  |  |  |
| Blowers |  |  |  |
| Decanter |  |  |  |
| Fine bubble diffusers |  |  |  |
| Polymer preparation unit |  |  |  |
| Dosing pumps |  |  |  |
| Stop logs |  |  |  |
| Submersible mixers |  |  |  |
| Mechanical thickener |  |  |  |
| Sludge dewatering centrifuge |  |  |  |
| Odour removal plant |  |  |  |
| Septic reception station |  |  |  |
| Conveyors |  |  |  |
| ***Electrical Equipment*** |  |  |  |
| Transformer Substations and Connection to Main Transformer Station |  |  |  |
| Distribution switchgear |  |  |  |
| Emergency Power Plant |  |  |  |
| Medium Voltage Switchgear |  |  |  |
| Measuring instruments |  |  |  |
| Frequency converters |  |  |  |
| PLC |  |  |  |

## INLET PUMPING STATION

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity : | m3/h |  |
| Delivery head | m |  |
| Pump efficiency | % |  |
| Working fluid |  |  |
| Suction side DN | mm |  |
| Discharge side DN | mm |  |
| Weight per unit | kg |  |
| Materials: |  |  |
| Pump housing |  |  |
| Motor housing |  |  |
| Propeller hub |  |  |
| Impeller type |  |  |
| Shaft |  |  |
| Shaft seal pump side |  |  |
| Shaft seal motor side |  |  |
| Pump curves |  |  |
| Operation mode |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions |  |  |
| Pump sump volume | m3 |  |
| Proposed equipment for level and flow control |  |  |
| Other |  |  |

## STOP LOGS IN INLET STRUCTURE

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions (WxH) | mm |  |
| Thickness | mm |  |
| Total height over operation floor | mm |  |
| Weight per unit | kg |  |
| Material: |  |  |
| frame |  |  |
| gate |  |  |
| spindle |  |  |
| Anti-corrosion protection |  |  |
| Mode of operation |  |  |
| Number of units |  |  |
| ***Motor*** (I/A) |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## COARSE SCREENS

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Peak flow | m3/h |  |
| Minimum water depth | mm |  |
| Maximum flow velocity | m/s |  |
| Headloss | m |  |
| Dimensions | mm |  |
| Bar width | mm |  |
| Clear opening | mm |  |
| Installation angle | ° |  |
| Weight of the unit | kg |  |
| Material |  |  |
| Number of units |  |  |
| Cleaning system |  |  |
| Debris bean capacity | l |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## BELT CONVEYOR

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Length | m |  |
| Width | mm |  |
| Capacity | m³/h |  |
| Total weight | kg |  |
| Materials: |  |  |
| metal part |  |  |
| belt |  |  |
| roller |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## SCREW CONVEYOR

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Length | m |  |
| Width | mm |  |
| Capacity | m³/h |  |
| Total weight | kg |  |
| Materials: |  |  |
| metal part |  |  |
| screw/spiral |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## STOP LOGS IN SCREENING STRUCTURE

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions (WxH) | mm |  |
| Thickness | mm |  |
| Total height over operation floor | mm |  |
| Weight per unit | kg |  |
| Material: |  |  |
| frame |  |  |
| gate |  |  |
| spindle |  |  |
| Anti-corrosion protection |  |  |
| Mode of operation |  |  |
| Number of units |  |  |
| ***Motor*** (I/A) |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## FINE SCREENs

| **Description** | **Unit** | **To be completed by the Tenderer** | |
| --- | --- | --- | --- |
| Type |  |  | |
| Manufacturer |  |  | |
| Country of origin |  |  | |
| Dimensions | mm |  | |
| Number of lines for fine screening |  |  | |
| Channel dimensions in the section of an item (w x h) | mm |  | |
| Flow admitted on one line | m3/h |  | |
| Maximum velocity through the fine screens | m/s |  | |
| Maximum water level upstream / downstream in the channel | mm |  | |
| Mesh admitted for the fine screens | mm |  | |
| Discharge height on conveyors (for two lines) | mm |  | |
| System foreseen for containers evacuation |  |  | |
| Angle of installation | ° |  | |
| Total width of screen and height over operation floor | mm |  | |
| Item weight | kg |  | |
| Material of the frame | - |  | |
| Material of the laminate weir | - |  | |
| Anti-corrosion protection | - |  | |
| Type of anchoring in concrete | - |  | |
| Maximum head loss on the screens | mm |  | |
| Slope of incoming channel | ° | |  |
| Cycle time of a rake operation | s | |  |
| Waste discharge height over operation floor | m | |  |
| Type of differential measurement system | - | |  |
| Drive system of the rake (hydraulic or not) | - | |  |
| Rake travel | mm | |  |
| Lubricants - Oils type |  | |  |
| ***Motor drive*** |  | |  |
| Manufacturer |  | |  |
| Country of origin |  | |  |
| Type |  | |  |
| Rated voltage | V | |  |
| Rated power | kW | |  |
| Rated current | KVA | |  |
| Rated speed (50 Hz) | rpm | |  |
| Degree of protection | - | |  |
| Efficiency | % | |  |
| Power factor | cos ϕ | |  |
| Overload protection (type) | - | |  |

## SCREENINGS PRESS

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Length | m |  |
| Capacity | m³/h |  |
| Dry solids content (of compacted screenings) | % TS | (≥ 35 %) |
| Material: |  |  |
| metal part |  |  |
| screw/spiral |  |  |
| Service water requirement | l/s |  |
| Service water pressure | bar |  |
| Service water connection | ND/PN |  |
| Solenoid valve; brand/type |  |  |
| Solenoid valve; power/frequency | KW/Hz |  |
| Solenoid valve; class protection | IP |  |
| Total weight(total) | kg |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protetion class | IP |  |
| Starting method | D/SD |  |
| Other |  |  |

## GRIT CLASSIFER

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | l/s |  |
| Sand output rate | m³/h |  |
| Dry solids content (classified sand) | % TS | (≥ 70 %) |
| Volatile matter (classified sand) | % TS | (≤ 5 %) |
| total height | mm |  |
| height of sand discharge | mm |  |
| height of tank | mm |  |
| width of tank | mm |  |
| inclination of spiral | mm |  |
| Materials: |  |  |
| tank |  |  |
| covers |  |  |
| screw |  |  |
| wear rails |  |  |
| Total weight | kg |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protetion class | IP |  |
| Starting method | D/SD |  |
| Other |  |  |

## BLOWERS FOR AERATED GRIT CHAMBER

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | m³/h |  |
| Discharge pressure | bar |  |
| Pressure difference | bar |  |
| Weight per unit | kg |  |
| Blower speed | rpm |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| ***Acoustic Hood*** |  |  |
| Dimension; Length x Width x Height |  |  |
| Capacity of cooling fan | m³/h |  |
| Power requirement | kW |  |
| Noise level at 1 m distance | dB(A) |  |
| Material |  |  |
| external panelling |  |  |
| internal panelling |  |  |
| frame |  |  |
| Other |  |  |

## AERATION EQUIPMENT IN AERATED GRIT CHAMBER

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Throughput | m³/h |  |
| Operation pressure | bar |  |
| Pressure loss | bar |  |
| Length unit | mm |  |
| Diameter | mm |  |

## STOP LOGS

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions (WxH) | mm |  |
| Thickness | mm |  |
| Total height over operation floor | mm |  |
| Weight per unit | kg |  |
| Material: |  |  |
| frame |  |  |
| gate |  |  |
| spindle |  |  |
| Anti-corrosion protection |  |  |
| Mode of operation |  |  |
| Number of units |  |  |
| ***Motor*** (I/A) |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## SCRAPER BRIDGE FOR AERATED GRIT CHAMBER

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Dimensions |  |  |
| width of the bridge | m |  |
| length of the bridge | m |  |
| height of the bridge | m |  |
| diameter of the wheel | mm |  |
| Total weight | kg |  |
| Material of the bridge |  |  |
| Material of the scraper |  |  |
| Material of the skimming blade |  |  |
| Scraper velocity | cm/s |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| ***Gear box*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Gear ratio |  |  |
| Other |  |  |

## GRIT EVACUATION PUMP

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity of the pump | m³/h |  |
| Delivery head | m WC |  |
| Pump Efficiency | % |  |
| Solids content | mg/l |  |
| Weight per unit | kg |  |
| Material: |  |  |
| Pump housing |  |  |
| Motor housing |  |  |
| Propeller hub |  |  |
| Impeller type |  |  |
| Shaft |  |  |
| Shaft seal pump side |  |  |
| Shaft seal motor side |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## MIXNG UNIT IN EQUALIZATION TANK

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | m³/h |  |
| Spec. energy input | W/m³ |  |
| Diameter | mm |  |
| Peripheral speed | m/s |  |
| Material: |  |  |
| gearbox |  |  |
| shaft |  |  |
| propeller |  |  |
| Total weight | kg |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## SBR FEEDING PUMPING STATION

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | m3/h |  |
| Delivery head | m |  |
| Pump efficiency | % |  |
| Working fluid |  |  |
| Suction side DN | mm |  |
| Discharge side DN | mm |  |
| Weight per unit | kg |  |
| Materials: |  |  |
| Pump housing |  |  |
| Motor housing |  |  |
| Propeller hub |  |  |
| Impeller type |  |  |
| Shaft |  |  |
| Shaft seal pump side |  |  |
| Shaft seal motor side |  |  |
| Pump curves |  |  |
| Operation mode |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions |  |  |
| Pump sump volume | [m3] |  |
| Proposed equipment for level and flow control |  |  |
| Other |  |  |

## MIXNG EQUIPMENT IN SBR

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | m³/h |  |
| Spec. energy input | W/m³ |  |
| Diameter | mm |  |
| Peripheral speed | m/s |  |
| Material: |  |  |
| shaft |  |  |
| propeller |  |  |
| Total weight | kg |  |
| Speed variator |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## DECANTER

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Operating principle |  |  |
| Capacity | m3/h |  |
| Inlet connection | DN |  |
| Outlet connection | DN |  |
| Dimensions | m |  |
| Total weight | kg |  |
| Materials |  |  |
| Installation detail |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## FINE BUBBLE AERATORS

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units per tank |  |  |
| Total number of units |  |  |
| Type |  |  |
| Diameter of each unit | mm |  |
| Membrane surface area | m2 |  |
| Immersion depth | m |  |
| Nominal Capacity |  |  |
| min | m³/m x h |  |
| max | m³/m x h |  |
| Spec. oxygen transfer rate |  |  |
| min | kg02/h/u |  |
| max | kg02/h/u |  |
| Material: |  |  |
| membrane/diffuser |  |  |
| supporting pipe |  |  |
| connecting pieces |  |  |
|  |  |  |
| ***Aeration Grid*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Material thickness of pipe | mm |  |
| Outside measurement | mm x mm |  |
| Length per unit | m |  |
| Material |  |  |
| Weight per unit | kg |  |
| Other data |  |  |

## BLOWERS (SBR aeration)

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | m³/h |  |
| Discharge pressure | bar |  |
| Pressure difference | bar |  |
| Weight per unit | kg |  |
| Blower speed | rpm |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Power requirement | V/Hz |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| ***Acoustic Hood*** |  |  |
| Dimension; Length x Width x Height |  |  |
| Capacity of cooling fan | m³/h |  |
| Noise level at 1 m distance | dB(A) |  |
| Material |  |  |
| external panelling |  |  |
| internal panelling |  |  |
| frame |  |  |
| Other |  |  |

## EXCESS SLUDGE PUMPING STATION

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity : | m3/h |  |
| Delivery head | m |  |
| Pump efficiency | % |  |
| Working fluid |  |  |
| Suction side DN | mm |  |
| Discharge side DN | mm |  |
| Weight per unit | kg |  |
| Materials: |  |  |
| Pump housing |  |  |
| Motor housing |  |  |
| Propeller hub |  |  |
| Impeller type |  |  |
| Shaft |  |  |
| Shaft seal pump side |  |  |
| Shaft seal motor side |  |  |
| Pump curves |  |  |
| Operation mode |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Country of origin |  |  |
| Manufacturer |  |  |
| Dimensions |  |  |
| Other |  |  |

## MIXING UNIT IN SLUDGE BUFFER TANK

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | m³/h |  |
| Spec. energy input | W/m³ |  |
| Diameter | mm |  |
| Peripheral speed | m/s |  |
| Material: |  |  |
| shaft |  |  |
| propeller |  |  |
| Total weight | kg |  |
| Speed variator |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## EXCESS SLUDGE THICKENER

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity (volumetric) | m3/h |  |
| Capacity | kg TS/h |  |
| Dry solids content, Input | % |  |
| Dry solids content, Output | % |  |
| Daily operation time | h/d |  |
| Belt width | m |  |
| Service water demand | l/s |  |
| Pressure requirement | bar |  |
| Length x Width x Height | m |  |
| Total weight | kg |  |
| Material |  |  |
| Machine frame |  |  |
| Parts in contact with media |  |  |
| Sieve fabric/mesh |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Other data |  |  |

## THICKENER FEEDING PUMPS

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity : | m3/h |  |
| Delivery head | m |  |
| Pump efficiency | % |  |
| Working fluid |  |  |
| Suction side DN | mm |  |
| Discharge side DN | mm |  |
| Weight per unit | kg |  |
| Materials: |  |  |
| Pump housing |  |  |
| Motor housing |  |  |
| Propeller hub |  |  |
| Impeller type |  |  |
| Shaft |  |  |
| Shaft seal pump side |  |  |
| Shaft seal motor side |  |  |
| Pump curves |  |  |
| Operation mode |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions |  |  |
| Other |  |  |

## POLYMER PREPARATION UNITS

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Adjustable dosing rate | kg/h |  |
| Dosing form | wet/dry |  |
| Dosing concentration | % |  |
| Dilution |  |  |
| Storage volume | m³ |  |
| Agitator drive | kW |  |
| Dosing screw (heated) | kW |  |
| Feed line | DN |  |
| Suction line | DN |  |
| Service water connection | DN |  |
| Overflow | DN |  |
| Level indication (type) |  |  |
| Dimensions | m |  |
| Material |  |  |
| frame |  |  |
| tank |  |  |
| Control panel |  |  |
| Power requirements | V/Hz |  |
| Other data |  |  |

## POLYMER DOSING PUMPS

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Operation principle |  |  |
| Dosing concentration | % |  |
| Capacity | l/h |  |
| Head | bar |  |
| Suction side | DN |  |
| Discharge side | DN |  |
| ***Motor driv*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions |  |  |
| Other |  |  |

## FERRIC CHLORIDE STORAGE AND DOSING SYSTEM

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| ***Storage Vessel*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Storage volume | m³ |  |
| Feed line | DN |  |
| Suction line | DN |  |
| Level indication (type) |  |  |
| Filling cabinet (description) |  |  |
| Material |  |  |
| frame |  |  |
| tank |  |  |
| ***Dosing Pumps*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type | No. |  |
| Operation principle |  |  |
| Dosing concentration | % |  |
| Capacity | l/h |  |
| Head | bar |  |
| Suction side | DN |  |
| Discharge side | DN |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Dimensions |  |  |
| Other |  |  |

## 

## SLUDGE PUMPING STATION

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity : | m3/h |  |
| Delivery head | m |  |
| Pump efficiency | % |  |
| Working fluid |  |  |
| Suction side DN | mm |  |
| Discharge side DN | mm |  |
| Weight per unit | kg |  |
| Materials: |  |  |
| Pump housing |  |  |
| Motor housing |  |  |
| Propeller hub |  |  |
| Impeller type |  |  |
| Shaft |  |  |
| Shaft seal pump side |  |  |
| Shaft seal motor side |  |  |
| Pump curves |  |  |
| Operation mode |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Dimensions |  |  |
| Other |  |  |

## SLUDGE DEWATERING UNIT

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Volumetric capacity | m3/h |  |
| Capacity | kg TS/h |  |
| Dry solids content, Input | % |  |
| Dry solids content, Output | % |  |
| Daily operation time | h/d |  |
| Sound level | dB(A) |  |
| Service water demand | l/s |  |
| Pressure requirement) | bar |  |
| Length x Width x Height | m |  |
| Total weight | kg |  |
| Material |  |  |
| - Machine frame |  |  |
| - Parts in contact with media |  |  |
| - Bowl |  |  |
| - Media chute |  |  |
| - Vibration adsorbers |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions |  |  |
| Other |  |  |

## SCREW CONVEYORS

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Length | m |  |
| Width | mm |  |
| Capacity | m³/h |  |
| Total weight | kg |  |
| Materials: |  |  |
| metal part |  |  |
| screw/spiral |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## SEPTIC RECEPTION STATION

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity | m³/h |  |
| Screen clear opening | mm |  |
| Discharge chute | m |  |
| Material of housing |  |  |
| Material of sieve |  |  |
| Sealing material |  |  |
| Flange connections | DN |  |
| Service water requirement | l/s |  |
| Service water pressure | bar |  |
| Service water connection | DN |  |
| Total weight | kg |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Dimensions |  |  |
| Other |  |  |

## ODOUR REMOVAL PLANT

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Operating principle |  |  |
| Capacity of Fan | m3/h |  |
| Power consumption | kW |  |
| Recirculation pump capacity | m3/h |  |
| Power consumption | kW |  |
| Surface load | m3/ m2/h |  |
| Dimensions | m |  |
| Total weight | kg |  |
| Inlet connection |  |  |
| Outlet connection |  |  |
| Materials |  |  |
| Housing |  |  |
| Packing |  |  |
| Control board |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Power requirements | V/Hz |  |
| Total power consumption | kW |  |
| Other |  |  |

## DRAINAGE PUMPING STATION

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Type |  |  |
| Capacity : | m3/h |  |
| Delivery head | m |  |
| Pump efficiency | % |  |
| Working fluid |  |  |
| Suction side DN | mm |  |
| Discharge side DN | mm |  |
| Weight per unit | kg |  |
| Materials: |  |  |
| Pump housing |  |  |
| Motor housing |  |  |
| Propeller hub |  |  |
| Impeller type |  |  |
| Shaft |  |  |
| Shaft seal pump side |  |  |
| Shaft seal motor side |  |  |
| Pump curves |  |  |
| Operation mode |  |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Power supply | V/Hz |  |
| Protection class | IP |  |
| Motor speed controller |  |  |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Control panel |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Dimensions |  |  |
| Other |  |  |

## LIFTING DAVIT

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Load | kg |  |
| Swivel angle | deg |  |
| Total weight | kg |  |
| Separate Weight (heaviest part) | kg |  |
| Material of construction |  |  |
| Material of chain/rope |  |  |
| Other |  |  |

## CRANE

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Load | kg |  |
| Hoist drive |  |  |
| Lifting speed | m/s |  |
| Horizontal speed | m/s |  |
| Material of housing |  |  |
| Total weight | kg |  |
| ***Motor drive*** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Number of units |  |  |
| Installed power | kW |  |
| Absorbed power | kW |  |
| Motor speed | rpm |  |
| Protection class | IP |  |
| Starting method | D/SD |  |
| Other data |  |  |

## CONTAINERS

|  |  |  |
| --- | --- | --- |
| **Description** | **Unit** | **To be completed by the Tenderer** |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number. of units |  |  |
| Capacity | m³ |  |
| Material |  |  |
| Dimensions | m |  |
| Other |  |  |

## TRANSFORMER SUBSTATION

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Number of units |  |  |
| Nominal high voltage | kV |  |
| Nominal low voltage | V |  |
| Rated power | kVA |  |
| No-load loss | W |  |
| Load loss | W |  |
| Tapping range | % |  |
| Vector group |  |  |
| ***Design of the Substation*** |  |  |
| Number of transformers: |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Cooling medium |  |  |
| Weight including cooling medium | kg |  |
| Dimension of the transformer | m |  |
| Total space required for the substation including the necessary equipment ( ground area ) | m |  |
| Protective equipment |  |  |
| Additional equipment for connection to main transformer station |  |  |
| Valid specification |  |  |
| Number of pages with additional information:  (Standards, components and supplements) |  |  |

## DISTRIBUTION SWITCHGEAR

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| For each distribution switchgear these forms are to be copied and made up. Switchgears as scope of delivery of the mechanical equipment are also to be listed and indicated | | |
| Number of transformers: |  |  |
| Manufacturer: |  |  |
| Country of origin |  |  |
| Type: |  |  |
| Designation of the Switchgear : |  |  |
| Page No… of… |  |  |
| Number of fields / cabinets: |  |  |
| Dimension of switchgear: |  |  |
| Dimension of required ground area: |  |  |
| Nominal current: | A |  |
| Degree of protection: |  |  |
| Permissible ambient temperature: |  |  |
| Equipment |  |  |

## EMERGENCY POWER SUPPLY

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Nominal power | kVA |  |
| Nominal cosϕ |  |  |
| Nominal voltage 3~ | V |  |
| Steady-state regulation | % |  |
| Voltage recovery time | s |  |
| Nominal current 3~ | A |  |
| Sustained short circuit | A |  |
| Nominal speed: | rpm |  |
| Nominal frequency: | Hz |  |
| Static frequency |  |  |
| deviation: | % |  |
| Frequency recovery time: | s |  |
| Length: | m |  |
| Width: | m |  |
| Height | m |  |
| Mean sound pressure level | dB(A) |  |
| Load rejection in % of nominal power | % |  |
| Allowable temperature limits | °C |  |
| Weight | kg |  |
| ***Moto*r drive** |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Continuous rating | kW |  |
| Nominal speed | rpm |  |
| Number of cylinders |  |  |
| Cylinder bore | mm |  |
| Mean piston speed: | m/s |  |
| Piston stroke: | mm |  |
| Piston displacement |  |  |
| Compression ratio | bar |  |
| Max lubricating oil consumption: | l/h |  |
| Fuel consumption on full load: | l/h |  |
| Specific fuel consumption on full load | g/kWh |  |
| Specific fuel consumption on 75% load | g/kWh |  |
| Specific fuel consumption on 50% load | g/kWh |  |
| Type of starter |  |  |
| Type of alternator |  |  |
| Volume of cooling water | l |  |
| Volume of lubricating oil | l |  |
| Demand of cooling air | m³/h |  |
| Demand of combustion air | m³/h |  |
| ***Generator*** |  |  |
| Manufacturer: |  |  |
| Country of origin |  |  |
| Type: |  |  |
| Type of construction: |  |  |
| Nominal power: | kVA |  |
| Nominal cosϕ: |  |  |
| Nominal voltage 3~: | V |  |
| Static voltage deviation: | % |  |
| Voltage correcting range: | % |  |
| Total harmonic distortion (THD) of voltage: | % |  |
| Nominal speed: | rpm |  |
| Nominal frequency: | Hz |  |
| Power efficiency on full load and cosϕ=0,8: |  |  |
| Degree of protection: |  |  |
| Demand of cooling air: | m³/h |  |
| Design of the Emergency Power Supply |  |  |
| Total space required for the generating set, including exhaust gas equipment, ventilation, switchgear and reserve for the second stage ( ground area ) | m2 |  |
| Capacity of fuel tank | l |  |
| Additional equipment (Summary description of calculated equipment) |  |  |
| Specifications |  |  |

## MEDIUM VOLTAGE SWITCHGEAR

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Nominal voltage | kV |  |
| Insulation level |  |  |
| Nominal peak current | kA |  |
| Rated short-time current | kA |  |
| Nominal current of busbar | A |  |
| Nominal lightning impulse withstand voltage | kV |  |
| Power-frequency withstand voltage | kV |  |
| Number of functional units |  |  |
| Specifications |  |  |
| Dimension of switchgear: | m |  |
| Dimension of the switchgear room ( ground area ): | m |  |
| Degree of protection: |  |  |
| Allowable temperature limits: | °C |  |
| Summary description of the design with indication of the built-in components |  |  |

## MEASURING INSTRUMENTS

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Type |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Measured value |  |  |
| Measuring principle |  |  |
| Location |  |  |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type of sensor |  |  |
| Type of measuring transmitter |  |  |
| Measuring range (min. - max./physical unit) |  |  |
| Error | % of full scale |  |
| Type and size of process connection |  |  |
| Power supply (input voltage / frequency) | V / Hz |  |
| Type / number of output contacts |  |  |
| Type / number of analog outputs |  |  |
| Type / number of counting pulse outputs |  |  |
| Type / number of bus interfaces |  |  |
| Type / number of inputs |  |  |
| Type / make of overvoltage protection |  |  |
| Manufacturer's catalogues to be submitted with the offer! |  |  |

## Flow measurement equipment

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Rated flow range | l/s |  |
| Rated velocity range | m/s |  |
| Maximum error | m/s |  |
| Required length between probes | m |  |
| Number of units |  |  |
| Ultrasonic level sensors for flow metering |  |  |
| Type and characteristics (enclosure description data, leaflets, etc) |  |  |

## LEVEL measurement equipment

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Characteristics (enclosure description data, leaflets, etc) | l/s |  |
| Rated level range | m |  |
| Maximum error | m |  |
| Number of units |  |  |

## pH measurement equipment

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Characteristics (enclosure description data, installation, leaflets, etc) |  |  |
| Number of units |  |  |

## Redox measurement equipment

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Characteristics (enclosure description data, installation, leaflets, etc) |  |  |
| Number of units |  |  |

## Dissolved oxygen measurement equipment

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Characteristics (enclosure description data, installation, leaflets, etc) |  |  |
| Number of units |  |  |

## Automatic sampling unit

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| Manufacturer |  |  |
| Country of origin |  |  |
| Type |  |  |
| Characteristics (enclosure description data, installation, leaflets, etc) |  |  |
| Number of units |  |  |

## SPARE PARTS

The Tenderer shall supply spare parts for the first 2 years of operation from the completion date stated on the Taking Over Certificate. Spare parts lists shall be elaborated based of the manufacturers recommendations and included in theTender proposal.

| **Description** | **Unit** | **To be completed by the Tenderer** |
| --- | --- | --- |
| ***Mechanical Equipment*** |  |  |
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| ***Electrical Equipment*** |  |  |
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# Clarification and Bidder’s Declaration

**Clarification**

The Tenderer hereby declares that no other equipment then what has been presented in the above Equipment Datasheets shall be used for the design and subsequent construction of the WWTP in Berane.

Any modifications of proposed equipment can only be undertaken by means of a written request to the Engineer, accompanied with a due justification for the replacement and adequate technical information to prove that the proposed equipment has similar characteristics as the equipment to be replaced.

The Engineer shall determine if the replacement is warranted or not and inform the Contractor in writing within 14 days.

**Tenderer’s Declaration**

The Tenderer herewith declares that the information provided in the enclosed Equipment Datasheets is correct and complete.

Name and first name: […………………………………………………………………]

Duly authorised to sign on behalf of:

[………………………………………………………………………………………...…]

Place and date: […………………………………………………………….………….]

Stamp of the firm/company: