Part 2: Pricing Data

**ECC3 Option B**

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C2.1 Pricing assumptions: Option B

# How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract (ECC3) Option B states:

|  |  |  |
| --- | --- | --- |
| **Identified and defined terms** | 11  11.2 | (21) The Bill of Quantities is the *bill of quantities* as changed in accordance with this contract to accommodate implemented compensation events and for accepted quotations for acceleration. |
|  |  | (28) The Price for Work Done to Date is the total of   * the quantity of the work which the *Contractor* has completed for each item in the Bill of Quantities multiplied by the rate and * a proportion of each lump sum which is the proportion of the work covered by the item which the *Contractor* has completed.   Completed work is work without Defects which would either delay or be covered by immediately following work. |
|  |  | (31) The Prices are the lump sums and the amounts obtained by multiplying the rates by the quantities for the items in the Bill of Quantities. |

This confirms that Option B is a re-measurement contract and the bill comprises only items measured using quantities and rates or stated as lump sums. Value related items are not used. Time related items are items measured using rates where the rate is a unit of time.

# Function of the Bill of Quantities

Clause 55.1 in Option B states, “Information in the Bill of Quantities is not Works Information or Site Information”. This confirms that specifications and descriptions of the work or any constraints on how it is to be done are not included in the Bill, but in the Works Information. This is further confirmed by Clause 20.1 which states, “The *Contractor* Provides the Works in accordance with the Works Information”. Hence the *Contractor* does **not** Provide the Works in accordance with the Bill of Quantities. The Bill of Quantities is only a pricing document.

# Guidance before pricing and measuring

Employers preparing tenders or contract documents, and tendering contractors are advised to consult the sections dealing with the bill of quantities in the NEC3 Engineering and Construction Contract Guidance Notes before preparing the *bill of quantities* or before entering rates and lump sums into the *bill*.

There is no general provision in Option B for payment for materials on Site before incorporation into the *works*. If secondary Option X14 Advanced payment has not been used then the tendering contractor may obtain the same effect by inserting appropriate items in the method related charges where the *method of measurement* allows, or alternatively making allowance in the rates of the *bill of quantities* for the financing of Plant and Materials until they are incorporated in the *works.*

When compensation events arise, the default position is that the Bill of Quantities is not used to calculate the cost effect of the event. Defined Cost and the resulting Fee is used and Defined Cost includes all components of cost which the *Contractor* is likely to incur, including so called P & G items. Rates and lump sums from the Bill of Quantities, or from any other source, may be used instead of Defined Cost and the Fee only if the *Contractor* and *Project Manager* agree. If they are unable to agree, then Defined Cost plus Fee is used.

# Measurement and payment

## Symbols

The units of measurement described in the Bill of Quantities are metric units abbreviated as follows:

[add or delete as required]

|  |  |
| --- | --- |
| **Abbreviation** | **Unit** |
| % | percent |
| h | hour |
| ha | hectare |
| kg | kilogram |
| kl | kilolitre |
| km | kilometre |
| km-pass | kilometre-pass |
| kPa | kilopascal |
| kW | kilowatt |
| l | litre |
| m | metre |
| mm | millimetre |
| m2 | square metre |
| m2-pass | square metre pass |
| m3 | cubic metre |
| m3-km | cubic metre-kilometre |
| MN | meganewton |
| MN.m | meganewton-metre |
| MPa | megapascal |
| No. | number |
| sum | Lump sum |
| t | tonne (1000kg) |

## General assumptions

### Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance has been made in the quantities for waste.

### The Prices and rates stated for each item in the Bill of Quantities shall be treated as being fully inclusive of all work, risks, liabilities, obligations, overheads, profit and everything necessary as incurred or required by the *Contractor* in carrying out or providing that item.

### An item against which no Price is entered will be treated as covered by other Prices or rates in the *bill of quantities*.

### The quantities contained in the Bill of Quantities may not be final and do not necessarily represent the actual amount of work to be done. The quantities of work assessed and certified for payment by the *Project Manager* at each assessment date will be used for determining payments due.

### The short descriptions of the items of payment given in the *bill of quantities* are only for the purposes of identifying the items. Detail regarding the extent of the work entailed under each item is provided in the Works Information.Only use this section if the statement for Option B in the Contract Data, “The method of measurement is \_\_\_\_\_\_\_\_ amended as follows” refers the reader to this section rather than include the amendments within the Contract Data statement. Otherwise delete this heading. In any case delete this note when complied with.

C2.2 the *bill of quantities*

| **Item**  **No.** | **Description** | | **Unit of Measure** | | **Qty** | | **Unit Price** | **Total** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **Underground Scanning** | | | | | | | |
| 1.1 | Visual inspection, electro-magnetic detection and ground penetrating radar | | m² | | 1200 | |  |  |
| **1 Total** | | | | | | | |  |
| **2** | **STRUCTURAL INSPECTION & REPORT** | | | | | | | |
| 2.1 | High pressure washing | | m² | | 4163 | |  |  |
| 2.2 | Visual inspection & photos | | Sum | | 1 | |  |  |
| 2.3 | Concrete core drilling and testing (Including repair) | | Each | | 20 | |  |  |
| 2.4 | NDT test to determine concrete cover and reinforcement size/positioning | | m² | | 408 | |  |  |
| 2.5 | Phenolphthalein test to determine PH of concrete | | Each | | 20 | |  |  |
| 2.6 | Inspection Report as per Works Information | | Sum | | 1 | |  |  |
| **2 Total** | | | | | | | |  |
| **3** | **SUBSTRATE PREPERATION** | | | | | | | |
| 3.1 | Saw-cut and chipping of defective concrete to a depth of 100mm | | m² | | 204 | |  |  |
| 3.2 | Removal of corrosion on reinforcement | |  | | | | | |
| 3.2.1 | Wire brush | | m² | | 102 | |  |  |
| 3.2.2 | Sand blasting | | m² | | 102 | |  |  |
| 3.3 | Cutting and removing of all defective steel re-enforcement | |  | | | | | |
| 3.3.1 | Y10 | | m | | 100 | |  |  |
| 3.3.2 | Y12 | | m | | 100 | |  |  |
| 3.3.3 | Y16 | | m | | 100 | |  |  |
| 3.4 | Application of concrete bonding agent | | m² | | 766 | |  |  |
| 3.5 | Application of corrosion inhibitor and bonding agent to steel reinforcement | | m² | | 204 | |  |  |
| **3 Total** | | | | | | | |  |
| **4** | **REINFORCEMENT** | | | | | | | |
| 4.1 | High tensile reinforcement to structural concrete | |  | | | | | |
| 4.1.1 | Y10 | | m | | 100 | |  |  |
| 4.1.2 | Y12 | | m | | 100 | |  |  |
| 4.1.3 | Y16 | | m | | 100 | |  |  |
| **4 Total** | | | | | | | |  |
| **5** | **STRUCTURAL CONCRETE REPAIR** | | | | | | | |
| 5.1 | Hand applied repair mortar (50mm thick) | | m² | | 204 | |  |  |
| 5.2 | Re casting of concrete elements | | m³ | | 6 | |  |  |
| 5.3 | Shotcrete application to increase the concrete cover (40mm) | | m² | | 674 | |  |  |
| 5.4 | Crack Repair | |  | | | | | |
| 5.4.1 | Crack injection (Cracks<5mm) | | m | | 200 | |  |  |
| 5.4.2 | Concrete expansion joint repair | | m | | 824 | |  |  |
| **5 Total** | | | | | | | |  |
| **6** | **SURFACE PROTECTION** | | | | | | | |
| 6.1 | Application of concrete waterproofing | | m² | | 2743 | |  |  |
| 6.2 | Painting of structural steel | |  | | | | | |
| 6.2.1 | Wire brushing of corroded steel | | m² | | 199 | |  |  |
| 6.2.2 | Primer | | m² | | 199 | |  |  |
| 6.2.3 | Top coat | | m² | | 199 | |  |  |
| 6.3 | Painting of handrails | |  | | | | | |
| 6.3.1 | Wire brushing of corroded steel | | m² | | 124 | |  |  |
| 6.3.2 | Primer | | m² | | 124 | |  |  |
| 6.3.3 | Top coat | | m² | | 124 | |  |  |
| **6 Total** | | | | | | | |  |
| **7** | **PIPE REPAIR** | | | | | | | |
| 7.1 | Cleaning and CCTV inspection only | |  | | | | | |
| 7.1.1 | 200 NB Pipe | | m | | 2310 | |  |  |
| 7.1.2 | 300 NB Pipe | | m | | 2310 | |  |  |
| 7.2 | Cleaning, CCTV inspection and epoxy pipe coating | |  | | | | | |
| 7.2.1 | 100 NB Pipe | | m | | 186 | |  |  |
| 7.2.2 | 150 NB Pipe | | m | | 14 | |  |  |
| 7.2.3 | 200 NB Pipe | | m | | 26 | |  |  |
| 7.2.4 | 250 NB Pipe | | m | | 27 | |  |  |
| 7.3 | Return Activated Sludge (RAS) System | |  | |  | |  |  |
| 7.3.1 | Decommissioning, removal and disposal of old asbestos pipe | | Sum | | 1 | |  |  |
| 7.3.2 | Supply new 100 NB galvanised steel pipe (3m) | | Sum | | 1 | |  |  |
| 7.3.3 | Supply of new valves | | Sum | | 1 | |  |  |
| **7 Total** | | | | | | | |  |
| **8** | **STEP IRON REPLACEMENT** | | | | | | | |
| 8.1 | 20mm Step iron replacement (galvanised) | | Each | | 13 | |  |  |
| **8 Total** | | | | | | | |  |
| **9** | **REPLACEMENT OF AC PIPE WITH HDPE** | | | | | | | |
| 9.1 | Excavation of pipe trench | | m³ | | 7.38 | |  |  |
| 9.2 | Removal of old AC pipe | | m | | 126 | |  |  |
| 9.3 | Asbestos disposal at Hollfontein landfill | | Sum | | 1 | |  |  |
| 9.4 | Installation of new HDPE pipe | | m | | 82 | |  |  |
| 9.5 | Backfilling to pipe trench compacted to 90% MOD AASHTO in layers not exceeding 150mm | | m³ | | 57 | |  |  |
| **9 Total** | | | | | | | |  |
| **10** | **CIVIL MODIFICATION OF INLET CHANNEL** | | | | | | | |
| 10.1 | Civil modification to accommodate new micro strainers | | Sum | | 1 | |  |  |
| **10 Total** | | | | | | | |  |
| **11** | **CIVIL MODIFICATION OF MCC ROOM** | | | | | | | |
| 11.1 | Civil modification to accommodate new (larger) switchgear | | Sum | | 1 | |  |  |
| 11.2 | Removal and installation of new profiled IBR 890, 0.5mm Standard Chromadek sheeting | | m² | | 45 | |  |  |
| **11 Total** | | | | | | | |  |
| **12** | **SEWAGE REMOVAL AND TRANSPORTATION** | | | | | | | |
| 12.1 | Transportation of sewage from Pump Station 3 to STP during the period of pipe inspection | | Hour | | 24 | |  |  |
| **12 Total** | | | | | | | |  |
| **13** | **REFURBISHMENT OF LABORATORY** | | | | | | | |
| 13.1 | Taking up and removal of vinyl floor tiles | | m² | | 18 | |  |  |
| 13.2 | Hacking up and removing porcelain wall tiles | | m² | | 116 | |  |  |
| 13.3 | Removal of built-in air-conditioning unit | | Each | | 1 | |  |  |
| 13.4 | Removal of existing cabinets, frame and sink in laboratory | | Sum | | 1 | |  |  |
| 13.5 | Taking out and removing piping, sanitary fittings etc, including cutting off as necessary, disconnecting piping from fittings and making good floor and wall finishes. | | Sum | | 1 | |  |  |
| 13.6 | Making Good | | | | | | | |
| 13.6.1 | External wooden door, striped by sanding and coated with three coats of approved wood preservative | | Each | | 2 | |  |  |
| 13.6.2 | Internal wooden door, striped by sanding and coated with two coats of approved enamel | | Each | | 6 | |  |  |
| 13.6.3 | Build-up of old air-conditioning unit opening. Bricks to match existing, class II mortar and plastered on the inside (15mm) | | Sum | | 1 | |  |  |
| 13.7 | Floor Tiling | | | | | | | |
| 13.7.1 | 350 x 350 Ceramic floor tile fixed with adhesive to screed and flush pointed with tinted grout | | m² | | 50 | |  |  |
| 13.7.2 | Mosaic shower tiles fixed with adhesive to screed and flush pointed with tinted waterproof grout | | m² | | 2.2 | |  |  |
| 13.8 | Wall Tiling | | | | | | | |
| 13.8.1 | 600 x 300 Ceramic wall tile fixed with adhesive to screed and flush pointed with tinted grout | | m² | | 130 | |  |  |
| 13.9 | LABORATORY CABINETS AND FITTINGS | | | | | | | |
| 13.9.1 | Epoxy coated steel frame with adjustable feet and phenolic resin working surface | | Sum | | 1 | |  |  |
| 13.9.2 | 1000mm Double door cabinet with two drawers | | Each | | 7 | |  |  |
| 13.9.3 | 500mm Four drawer unit. | | Each | | 2 | |  |  |
| 13.9.4 | 500mm Waste bin unit. | | Each | | 2 | |  |  |
| 13.9.5 | 1000mm Double door cabinet with blank for sink. | | Each | | 1 | |  |  |
| 13.9.6 | 1000mm Sliding glass door cabinet (wall mounted). | | Each | | 5 | |  |  |
| 13.9.7 | 552 x 400 x 231mm Polypropylene injection molded sink | | Each | | 1 | |  |  |
| 13.9.8 | Hot and cold water tap with metal polyester coated handles (180o opening function), full swivel action spout, ceramic headwork and fixed metal nozzle. | | Each | | 1 | |  |  |
| 13.9.9 | Double door test sample fridge. | | Each | | 1 | |  |  |
| 13.9.10 | WC suite comprising of WC pan, double flap heavy duty plastic seat and cistern | | Each | | 2 | |  |  |
| 13.9.11 | Coral Avocado Wall Mounted Basin & Floor Pedestal Set | | Each | | 2 | |  |  |
| 13.9.12 | "Metsi" MI-294 basin mixer with cast fixed outlet. | | Each | | 2 | |  |  |
| 13.9.13 | "Stella" Shower set | | Each | | 2 | |  |  |
| 13.9.14 | Crome plated robe hook | | Each | | 2 | |  |  |
| 13.9.15 | Chrome plated shower soap holder | | Each | | 2 | |  |  |
| 13.9.16 | Three (3) roll stainless steel toilet roll holder | | Each | | 2 | |  |  |
| 13.9.17 | Polyester shower curtain | | Each | | 2 | |  |  |
| 13.9.18 | 150 x 150mm Male stainless steel restroom sign | | Each | | 1 | |  |  |
| 13.9.19 | 150 x 150mm Female stainless steel restroom sign | | Each | | 1 | |  |  |
| 13.9.20 | 600 x 900mm Framed Mirror | | Each | | 2 | |  |  |
| **13 Total** | | | | | | | |  |
| **14** | **PLUMBING AND DRAINAGE** | | | | | | | |
| 14.1 | Excavation of earth not exceeding 1m deep | | * m³ | | 30.8 | |  |  |
| 14.2 | Heavy duty (Class 34) uPVC drain pipe. 110mm OD pipes laid in trenches | | m | | 40 | |  |  |
| 14.3 | Extra over heavy duty (Class 34) uPVC drain pipe fittings | | Each | | 8 | |  |  |
| 14.4 | Backfilling to pipe trench compacted to 90% MOD AASHTO in layers not exceeding 150mm | | m³ | | 30.8 | |  |  |
| **14 Total** | | | | | | | |  |
| **15** | **PAINTWORK** | | | | | | | |
| 15.1 | Walls - One coat of low odour premium quality velvet sheen paint | | m² | | 150 | |  |  |
| 15.2 | Ceilings - One coat of low odour premium quality velvet sheen paint | | m² | | 57 | |  |  |
| **15 Total** | | | | | | | |  |
| **16** | **DRYING BED** | | | | | | | |
| 16.1 | Repair of bottom distribution system and laterals | | Sum | | 1 | |  |  |
| 16.2 | Emptying drying bed and disposal | | Sum | | 1 | |  |  |
| 16.3 | Replacement of drying bed sand (Graded gravel (crushed stone) to be placed around the bottom drains in layers up to 30cm with a minimum of 15cm above the top of the bottom drains. Typical Gravel size 15mm - 30mm, At least 3 cm of top layer should consist of gravel of 3 to 7 mm size(90% distribution),Clean sand of effective size of 0.5 to 0.75mm (90% distribution). The depth of sand may vary from 20 to 30cm.). Note Approximately 25cm space should be available for desludging. | | m³ | | 60 | |  |  |
| 16.2 | Drying Bed Sand Replacement (0.5-0.75mm) | | m³ | | 12 | |  |  |
| 16.3 | Transport, Removal & Replacement | | Sum | | 1 | |  |  |
| **16 Total** | | | | | | | |  |
| **17** | **Flow Meters** | | | | | | | |
| 17.1 | Supply – PVC 350mm/200mm FR:160l/s | | Each | | 2 | |  |  |
| 17.2 | Installation | | Each | | 2 | |  |  |
| 17.3 | Commission | | Sum | | 1 | |  |  |
| **17 Total** | | | | | | | |  |
| **18** | **Inter Stage Pumping Station (Transfer Pumps)** | | | | | | | |
| 18.1 | Design of new pumping station (new flow rate 4.84 Ml/day) - pump manifacturer to remain the same | | Sum | | 1 | |  |  |
| 18.2 | Supply – Motors, pumps, valves, piping & fittings, cabling | | Sum | | 1 | |  |  |
| 18.3 | Installation, including instruments and cabling (electrical and instrument) | | Sum | | 1 | |  |  |
| 18.4 | Commission | | Sum | | 1 | |  |  |
| **18 Total** | | | | | | | |  |
| **19** | **Analysers** | | | | | | | |
| 19.1 | MLSS Analyser | | Sum | | 1 | |  |  |
| 19.2 | Oxygen Level Analyser (aeration and balancing ponds) | | Each | | 2 | |  |  |
| 19.3 | BOD analyser | | Sum | | 1 | |  |  |
| 19.4 | PH Analyser (Aeration Pond and Contact Tank) | | Each | | 2 | |  |  |
| 19.5 | Residual Chlorine Analyser in Contact Pond | | Sum | | 1 | |  |  |
| 19.6 | Turbidity Meter in the Contact Tank | | Sum | | 1 | |  |  |
| 19.7 | Controls & Instrumentation | | Sum | | 1 | |  |  |
| 19.8 | Commission | | Sum | | 1 | |  |  |
| **19 Total** | | | | | | | |  |
|  | | | | | | | | |
| **20** | **Aeration Tank** | | | | | | | |
| 20.1 | Design of aeration control | | Sum | | 1 | |  |  |
| 20.2 | Supply of high speed mixers (motor, gearbox, epoxy coated drive shaft and propeller | | Each | | 2 | |  |  |
| 20.3 | Installation of mixers | | Sum | | 1 | |  |  |
| 20.4 | Control & Instrumentation | | Sum | | 1 | |  |  |
| 20.5 | Commissioning | | Sum | | 1 | |  |  |
| **20 Total** | | | | | | | |  |
| **21** | **Chlorine System** | | | | | | | |
| 21.1 | Supply and Install an Audiable Chlorine Detector and Alarm in the Cylinder Storage and Booster Pump Room | | Sum | | 1 | |  |  |
| 21.2 | Chlorine Dosing System Refurbishment - Automatic Switchover Gas Chlorinator (vacuum-operated system designed to automatically switch chlorine feed from an empty cylinder to a full cylinder) | | Sum | | 1 | |  |  |
| 21.3 | Controls & Instrumentation | | Sum | | 1 | |  |  |
| 21.4 | Commissioning | | Sum | | 1 | |  |  |
| **21 Total** | | | | | | | |  |
| **22** | **Alternative sewage handling and treatment** | | | | | | | |
| 22.1 | Provision of alternative sewage handling and treatment during works execution | | Sum | | 1 | |  |  |
| **22 Total** | | | | | | | |  |
| **23** | **Electrical System** | | | | | | | |
| 23.1 | Main MCC (Motor Control Centre) Design | | Sum | | 1 | |  |  |
| 23.2 | Main MCC Manufacturing | | Sum | | 1 | |  |  |
| 23.3 | Main MCC Installation | | Sum | | 1 | |  |  |
| 23.4 | Replace Chlorination MCC (Supply 1 x wall mounted starter panel as per drawing no. Q6752 (sheets 1 to 3) | | Sum | | 1 | |  |  |
| 23.5 | Replace Waste Water Treatment Plant MCC (Supply 1 x Floor standing unit as per drawing no. Q6752/1 (sheets 1 to 22) | | Sum | | 1 | |  |  |
| 23.6 | Controls & Instrumentation | | Sum | | 1 | |  |  |
| 23.7 | Cabling | | Sum | | 1 | |  |  |
| 23.8 | Earthing and lightning protection | | Sum | | 1 | |  |  |
| 23.9 | Material and sundries | | Sum | | 1 | |  |  |
| 23.10 | Certificate Of Compliance | | Sum | | 1 | |  |  |
| **23 Total** | | | | | | | |  |
| **24** | **Inlet Strainer** | | | | | | | |
| 24.1 | Supply | | Sum | | 1 | |  |  |
| 24.2 | Install | | Sum | | 1 | |  |  |
| 24.3 | Commission | | Sum | | 1 | |  |  |
| **24 Total** | | | | | | | |  |
| **25** | **Balancing Pond** | | | | | | | |
| 25.1 | Floating aerators Supply | | Each | | 2 | |  |  |
| 25.2 | Floating Aerators Installation | | Each | | 2 | |  |  |
| 25.3 | Motors | | Each | | 2 | |  |  |
| 25.4 | Float | | Each | | 2 | |  |  |
| 25.5 | Electric control panel with all required cabling and accessories | | Sum | | 1 | |  |  |
| 25.6 | Commission | | Sum | | 1 | |  |  |
| **25 Total** | | | | | | | |  |
| **26** | **Control and Instrumentation inclusive of trench from 220VAC cubicle to flow measuring instrument point (200m)** | | | | | | | |
| 26.1 | Underground Survey – Perform underground scans as per underground utility mapping survey. | | m² | | 1200 | |  |  |
| 26.2 | Site clearance – clear 2meter wide path along the cable route. Removal and disposal of all vegetation and shrubs. | | m² | | 600 | |  |  |
| 26.3 | Excavations - Excavate in natural ground a trench 300mm wide and 800mm deep | | m³ | | 72 | |  |  |
| 26.4 | Bedding - Suitable bedding material with 100mm bedding and 100mm coverage ontop of the cable. | | m³ | | 18 | |  |  |
| 26.5 | Backfilling - Backfilling with excavated material sifted to remove any stones bigger than 75mm | | m³ | | 54 | |  |  |
| 26.6 | Rehabilitation - Excavated area for the cable trenc to be made good to match the surrounding area | | m² | | 600 | |  |  |
| 26.7 | Supply and installation of junction box (orange in colour) with IP65 rating.( 500H x 400 W x 200 D) | | Each | | 3 | |  |  |
| 26.8 | Supply and install main circuit breakers (MCB) at the available power tapping points and at each instrument junction box (Amps rating as per instrument) | | Each | | 6 | |  |  |
| 26.9 | Supply and install 20mm diameter galvanized conduit piping for cables running from available 220VAC power sources' Junction box to the equipments junction box where cables are above ground. | | m | | 300 | |  |  |
| 26.10 | Supply and install 3-core 6mm power cables (220V) to specified instrument junction boxes. | | m | | 200 | |  |  |
| 26.11 | Supply cable termination accessories for all junction boxes | | Sum | | 1 | |  |  |
| 26.12 | Siemens SITOP PSU1005 24V/5A | | Each | | 3 | |  |  |
| 26.13 | Supply and install Din rails top Hat type (500mm x 35mm x 7.5mm) | | Each | | 6 | |  |  |
| 26.14 | Supply and install terminal blocks per Din rails size | | Each | | 3 | |  |  |
| 26.15 | Supply and install UVG24 instrumentation supply cable (200 meters) | | M | | 200 | |  |  |
| 26.16 | The cable glands for the UVG24 field cable shall be of a gland appropriate for the cable | | Each | | 12 | |  |  |
| 26.17 | Supply and install ultrasonic sensors (Level and Flow) | | Each | | 3 | |  |  |
| 26.18 | Supply, Install, setup and commision radios communication system | | Sum | | 1 | |  |  |
| 26.19 | Setup HMI (ABB 800xA) mimic of sewage plant | | Sum | | 1 | |  |  |
| 26.20 | 415U-2-C wireless I/O gateway Radio | | Each | | 5 | |  |  |
| 26.21 | 1m RG58 coaxial cable SMA male-N-Type Male | | Each | | 5 | |  |  |
| 26.22 | Coaxial inline RF surge arrestor N-Type M to M | | Each | | 5 | |  |  |
| 26.23 | 10m RG213 coaxial cable N-type Male to N-type Male | | Each | | 5 | |  |  |
| 26.24 | 2dBi Dipole Antenna N-type Female, 440MH | | Each | | 5 | |  |  |
| 26.25 | 6m Wall- mounted mast | | Each | | 5 | |  |  |
| 26.26 | Pump monitoring tranducers/sensors | | Each | | 4 | |  |  |
| 26.27 | S7 - 300 Binary input 32 channel module | | Each | | 4 | |  |  |
| 26.28 | Design, Supply and Install mounting brackets for ultrasonic sensors | | Each | | 4 | |  |  |
| 26.29 | Design, supply and Install mounting brackets for antennas for each Instrument | | Each | | 4 | |  |  |
| 26.30 | Design, Supply and installation of a housing frame for the junction boxe | | Each | | 1 | |  |  |
| 26.31 | Supply and installation of KKS labelling - Junction Box | | Each | | 3 | |  |  |
| 26.32 | Supply and installation of KKS labelling - Cable and instrument | | Each | | 5 | |  |  |
| 26.33 | LV cable indicators to indicate path of trench with LV cable | | Each | | 6 | |  |  |
| 26.34 | Drawings (P&ID drawings with site layout drawing) | | Sum | | 1 | |  |  |
| 26.35 | Operating and Maintenaince manuals | | Sum | | 3 | |  |  |
| 26.36 | Interfacing of all control instrumentation to Matimba Outside Plant HMI System | | Sum | | 1 | |  |  |
| **26 Total** | | | | | | | |  |
| **27** | **Pump Station Screens** | | | | | | | |
| 27.1 | Pump Station 3 & Sewage treatment plant | | Sum | | 1 | |  |  |
| 27.2 | Supply Automated Screens | | Sum | | 1 | |  |  |
| 27.3 | Installation of Automated Screens | | Sum | | 1 | |  |  |
| 27.4 | Electrical modifications | | Sum | | 1 | |  |  |
| 27.5 | Mechanical modifications | | Sum | | 1 | |  |  |
| 27.6 | Civil modifications | | Sum | | 1 | |  |  |
| 27.7 | Cleaning and repair of inlet chambers | | Sum | | 1 | |  |  |
| 27.8 | Supply and installation of new lids | | Sum | | 1 | |  |  |
| 27.9 | Commission | | Sum | | 1 | |  |  |
| **27 Total** | | | | | | | |  |
| **28** | **Pump Station 3 Works** | | | | | | | |
| 28.1 | Provision of alternative sewage handling during works execution. | | Sum | | 1 | |  |  |
| 28.2 | Guide bars – Supply | | Sum | | 1 | |  |  |
| 28.3 | Guide bars – Installation | | Sum | | 1 | |  |  |
| 28.4 | Guide bar holders – Supply | | Sum | | 1 | |  |  |
| 28.5 | Guide bar holders – Installation | | Sum | | 1 | |  |  |
| 28.6 | Sump Pressure cleaning | | Sum | | 1 | |  |  |
| 28.7 | Mercury float level control - Supply | | Sum | | 1 | |  |  |
| 28.8 | Mercury float level control - Installation | | Sum | | 1 | |  |  |
| 28.9 | Commission | | Sum | | 1 | |  |  |
| **28 Total** | | | | | | | |  |
| **29** | **Micro Strainers** | | | | | | | |
| 29.1 | Civil modification to accommodate strainer | | Sum | | 1 | |  |  |
| 29.2 | Supply of micro strainer | | Sum | | 1 | |  |  |
| 29.3 | Installation of micro strainer | | Sum | | 1 | |  |  |
| 29.4 | Control panel installation | | Sum | | 1 | |  |  |
| 29.5 | Supply and install ultrasonic level controller | | Sum | | 1 | |  |  |
| 29.6 | Supply and install water supply pump and pipework for Ro 9 | | Sum | | 1 | |  |  |
| 29.7 | Supply and install electrical cabling and switchgear | | Sum | | 1 | |  |  |
| 29.8 | Commissioning | | Sum | | 1 | |  |  |
| **29 Total** | | | | | | | |  |
| **30** | **Preliminary and General** | | | | | | | |
| 30.1 | Site Establishment | Sum | | 1 | |  | |  |
| 30.2 | Storage, handling and transport of material to site. | Sum | | 1 | |  | |  |
| 30.3 | Equipment | Sum | | 1 | |  | |  |
| 30.4 | Tools | Sum | | 1 | |  | |  |
| 30.5 | PPE | Sum | | 1 | |  | |  |
| 30.6 | Travel | Sum | | 1 | |  | |  |
| 30.7 | Accommodation | Sum | | 1 | |  | |  |
| 30.8 | Safety File (Inclusive of Medicals and Induction) | Sum | | 1 | |  | |  |
| 30.9 | Site De-establishment | Sum | | 1 | |  | |  |
| 30.10 | Other (Breakdown to be provided on additional sheet) | Sum | | 1 | |  | |  |
| **30 Total** | | | | | | | |  |
| **TOTAL** | | | | | | | |  |