

BILL No. 1 - PRELIMINARIES AND GENERAL					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>THE WHOLE OF THIS BILL IS PROVISIONAL</b>				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Contractual Requirements</b>				
A11	Performance Security	Sum	1		
A12*.1	Insurance of Works and Contractor's Equipment	Sum	1		
A12*.2	Third Party Insurance (including Employer's Property)	Sum	1		
A12*.3	Insurance against Accident to Workmen (WIBA)	Sum	1		
	<b>Specified Requirements</b>				
A211.1	Provide 1 No. fully furnished rented or hired Resident Engineer's office with space of not less than 200 square metres; Furnished as per list of minimum furniture in the contract specifications and as may otherwise be directed by the Engineer.	month	25		
A211.2	Provide maintenance and attendance of the Resident Engineer's Office as per the specification and directed by the Resident Engineer.	month	25		
A213	Provide 1 No. fully furnished residential accommodation for the Resident Engineer. Minimum 3 bedroomed self contained house of plinth area not less than 150m <sup>2</sup> and as may otherwise be directed by the Engineer. Furnished as per list of minimum furniture in the contract specifications (101 (f)) and as may otherwise be directed by the Engineer.	month	25		
A213.1	Ditto but 2No. houses each of area not less than 100m <sup>2</sup> for Assistant Resident Engineers.	month	25		
A213.2	Ditto but 4No. Houses each of area not less than 80m <sup>2</sup> for 3No. Resident Engineer's Staff - 3No. Inspectors and 1No. Engineering Surveyor.	month	25		
	<b>Services for Contract Administrators</b>				
A221.1	Allow a P.C. Sum of KES. 27,000,000 for supply of 3No. (Three) new 4WD Vehicles, Toyota Fortuner or approved equivalent, including road license, number plate, etc. The vehicles to revert to Employer after completion of contract. Minimum specifications include but not limited to the following: • Engine - 3.0 litres Turbo Diesel • Immobiliser and Alarm System • Fuel tank capacity between 80 litres and 100 litres	PC	3	9,000,000.00	27,000,000.00
A221.2	Ditto but KES.14,000,000 for the supply of 2No. (two) new 4WD double cab Toyota Pickup or approved equivalent pick-up vehicle of engine capacity larger than 2755cc and as may be directed by the Engineer. Ownership to revert to the Employer upon completion of contract.	PS	2	7,000,000.00	14,000,000.00
A221.3	Allow a provisional sum of KES. 6,150,000/- for provision of comprehensive insurance cover for for 3 years for each of the 5 No. vehicles under items A221.1 and A221.2 above.	PS	3	2,050,000.00	6,150,000.00
A221.4	Allow a provisional sum of KES.2,000,000/- for repair and Rehabilitation of Employers Vehicles to be utilised by the Employers Project Staff	PS	1	2,000,000.00	2,000,000.00
A221.5	Include percentage of items (A221.1, A221.2, A221.3, and A221.4) for profit, administration etc.	%			
A221.6	Allow for the fuel, maintenance, running and servicing of the vehicles under items A221.1 and A221.2 above. A minimum of 100 km per day per vehicle	veh-month	180		
A221.7	Provide alternative transport to Resident Engineer's staff before the acquisition of items A221.1 and A221.2 above. Vehicles to be as good as new and be equivalent to the vehicles in Item A221.1 and A221.2. Rate includes fuel maintenance running servicing and insurance	veh-month	12		
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A222.1	Provide monthly internet services to the Resident Engineer's Office. Internet services to office equivalent to Safaricom Fibre - Diamond package of 100Mbps or as may otherwise be directed by the Engineer.	month	25		
A222.2	Allow provisional sum of KES.30,000 per month for call airtime and internet data bundles to the Resident Engineer's Staff and CWWDA Project Management Staff mobile phones or as may otherwise be directed by the Engineer.	month	25	30,000.00	750,000.00
A222.3	Include percentage of item A222.2 for profit, administration etc.	%			
A231.1	Provide a digital camera for the exclusive use of the Resident Engineer as a Nikon D3500 DSLR Camera with 18-55mm Lens inclusive of bag or similar equivalent. Camera to revert to Employer upon completion of contract.	nr	1		
A231.2	Provide and connect in the Resident Engineer's office a "GENUINE" branded desktop computer with rating Intel core i7 11 <sup>th</sup> Generation 16GB Ram, DDR4 and hard disc of minimum 512SSD and a processor capacity of minimum 4.7GHz; with a dedicated graphics card of minimum 4GB, including Software. "GENUINE" Windows 11 Operating System, 64 bit and MS office 2021 Professional Plus; complete with one year warranty. Computer and printer to be used by the Engineer's staff and will revert to Employer upon completion of contract.	nr	4		
A231.3	Ditto but a "GENUINE" Laptop Computer; Core i7 11 <sup>th</sup> Generation 2.6GHz 1TB+500GB SSD+16GB, 15.6" (1920x1080) BT WIN11 Webcam NVIDIA® GTX 1650 4096MB; with a dedicated graphics card of minimum 4 GB.	nr	3		
A231.4	Provide "GENUINE" heavy duty printer with wireless capability, that is able to Print, Copy, Scan and Fax as Kyocera TASKalfa 2552ci or similar equivalent. Printer to be used exclusively by the Resident Engineer and revert to Contractor upon completion of contract.	nr	1		
A231.5	Provide Handheld GPS for the Resident Engineer's use as Garmin GPSMAP® 78sc Handheld or similar. GPS to revert to the Employer upon completion of contract.	nr	1		
A233	Equipment for use by the Resident Engineer's staff. Surveying equipment as specified in the specifications for the duration of the contract. Equipment reverts to Contractor at the end of the contract.	month	25		
<b>Attendance upon the Resident Engineer's staff</b>					
A241	Provisional sum of KES. 30,000 per month for each of the 4 No. qualified drivers; each of 5 years plus driving experience, include all possibilities of overtime, accommodation etc necessary for the drivers to perform their duties.	PS	1	3,000,000.00	3,000,000.00
A242.1	DITTO but KES. 15,000 per month for each of the 6 No. chainmen.	PS	1	2,250,000.00	2,250,000.00
A242.2	DITTO but KES. 35,000 per month for the 1 No. office secretary/receptionist.	PS	1	875,000.00	875,000.00
A242.3	DITTO but KES. 15,000 per month for each of the 2 No. subordinate staff as office cleaner/tea person, and office messenger.	PS	1	750,000.00	750,000.00
A242.4	DITTO but KES. 45,000 for each of the 3No. qualified data clerks for the exclusive assistance to the Resident Engineer, for GIS mapping, location, and enumeration of consumer water connections and identification and mapping of tertiary pipelines in conjunction with MOWASSCO.	PS	1	3,375,000.00	3,375,000.00
A242.5	DITTO but KES. 25,000 per month for the 3No. Civil / Water Engineering Interns.	PS	1	1,875,000.00	1,875,000.00
A242.6	DITTO but KES. 25,000 per month for the 3No. Environmentalist, HR, Finance Interns	PS	1	1,875,000.00	1,875,000.00
A242.7	DITTO but KES 45,000 per month for the 1No. Sociologist seconded to the project by the Employer (CWWDA).	PS	1	1,125,000.00	1,125,000.00
A242.8	Include percentage of items (A241, A242.1, A242.2, A242.3, A242.4, A242.5, A242.6 and A242.7) for profit, administration etc.	%			
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Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
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<b>Testing of Materials and Works</b>					
A25*.1	Allow a sum of KES. 450,000 for testing of construction materials as specified by the Resident Engineer. The Cost of witness testing materials outside the Country will be borne completely by the Contractor.	PC	1	450,000.00	450,000.00
A25*.2	Include for Contractor's superintendence, expenses, profits etc on item A25*.1	%			
A25*.3	Allow a provisional sum of KES. 1,000,000 for test running of the scheme: Allow for test running all the project components for a period of 4 weeks upon completion and official commissioning of the works. Test running to be carried out in close liaison with MOWASSCO's Staff. Contractor to allow for 'on job' training of Operation and Maintenance Staff, Tools, etc, and ensure that the operations are carried out full time on a 24 hour basis, all in accordance with Clause 137 Section 1 - General and Particular Specifications of the Bidding Document Volume II.	PS	1	1,000,000.00	1,000,000.00
A25*.4	Include for Contractor's superintendence, expenses, profits etc on item A25*.3	%			
<b>Temporary Works</b>					
A27.9	Provide, sign write, erect and maintain signboards at the Site of works as directed by the Project Manager and inclusive of removal after the completion of the maintenance period.	nr	8		
<b>Method Related Services</b>					
A372.1	Allow a provisional sum of KES. 10,000,000 to cover costs of the Employer's Counterpart Staff assigned to the Project including transport, communication, allowances. etc.	PS	1	10,000,000.00	10,000,000.00
A372.2	Allow a provisional sum of KES. 5,000,000 for training of Employer's / WSP Staff during Construction, Testing and Commissioning of the Works as specified in Clause 137 of Section I, General and Particular Specifications of Bidding Document Volume II. Includes procurement of necessary softwares	PS	1	5,000,000.00	5,000,000.00
A372.3	Add .....% for profit, administration, attendance upon, overheads, etc. for Item A372.1 and A372.2 above.	%			
A372.4	Allow a provisional sum of KES. 2,000,000 for Inspection and Witness Testing of Pipes, Fittings and Equipment at manufacturer's premises by the Employer, Engineer and their representatives. The Cost of witness testing materials outside the Country will be borne completely by the Contractor	PS	1	2,000,000.00	2,000,000.00
A372.5	Allow a provisional sum of KES. 1,000,000 for Third Party Inspection of Pipes and Fittings, Equipment, etc. during manufacture and construction works.	PS	1	1,000,000.00	1,000,000.00
A372.6	Add .....% for profit, administration, attendance upon, overheads, etc. for Items A372.4 and A372.5 above.	%			
A372.7	Allow a provisional sum of KES.15,000,000 for Payments demanded by the Authorities for relocation of existing services (water pipelines, sewer liners power cable telcom cables etc), Road crossings, etc., including any statutory levies to relevant Authorities. Liaison with the relevant Authorities shall be the responsibility of the Contractor for the timely execution of the works.	PS	1	15,000,000.00	15,000,000.00
A372.8	Add .....% for profit, administration, attendance upon, overheads, etc. for Items A372.7 above.	%			
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	<b>Defined Work</b>				
A42*.1	The Contractor shall set out below and fully describe and price, in the spaces provided, any or temporary work or obligation or anything in the Conditions of Contract or in the Specification not included by him in his rates elsewhere and for which he considers a separate charge is required. The prices inserted shall be considered to be fixed lump sums covering the whole of the work and as such will not be subjected to adjustment for any reason. If the Contractor makes no entry in the space provided then the rates inserted elsewhere in the Bill will be deemed to cover all his obligations under the Contract	Sum	1		
	i) Mobilisation				
	ii) Setting up of Contractor's Camp				
	<b>Environmental, Social, Health and Safety Requirements</b>				
A42*.2	Allow a provisional sum of KES.600,000/- for each Quarterly Environmental Audit of the implementation of the Contractor's ESMP by a registered NEMA Lead Expert.	PS	8	600,000.00	4,800,000.00
A42*.3	Allow a provisional sum of KES. 100,000/- per month for carrying out a training program including stakeholder engagement and consultation for HIV/AIDS awareness, Sexually Transmitted Infections (STI), Sexually Transmitted Diseases (STD), Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)	month	25	100,000.00	2,500,000.00
A42*.4	Allow a provisional sum of KES. 2,000,000 for Training of Employer's / Engineer's and Contractor's Staff on Environmental, Social, Health and Safety issues.	PS	1	2,000,000.00	2,000,000.00
A42*.5	Add .....% for profit, administration, attendance upon, overheads, etc. for Items A42*.3 and A42*.4 above.	%			
A42*.6	Air quality monitoring for 24 hours.	nr	40		
A42*.7	Noise and vibration, spot measurements of the parameters stipulated in Legal Notice No. 61 – The Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009 of the Republic of Kenya	nr	40		
A42*.8	Surface water quality, spot measurements of the parameters stipulated in Environmental Management and Coordination (Water Quality) Regulations of the Republic of Kenya published as Legal Notice No. 120 on 29 <sup>th</sup> September 2006 in the Kenya Gazette	nr	10		
A42*.9	Allow a sum for annual OSHA, FSA & risk assessments by a registered advisor/auditor.	Year	2		
A42*.10	Allow for any other costs associated with compliance with Environmental, Health and Safety Requirements as per the Particular Specifications of Bidding Document Volume II and the Environmental & Social Management Plan (ESMP) as required by Government Agencies and Prevailing Legislation. The cost under this item to include preparation of the relevant ESHS documents (ESMP, HSMP & Code of Conduct etc.)	L.S.	1		
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	<b>Other Costs</b>				
A42*.11	Allow a sum for provision of As-Built Drawings and Operation and Maintenance (O&M) Manuals in accordance with Clause 139 and 147 - General and Particular Specifications of Bidding Document Volume II.	L.S	1		
A42*.12	Allow for establishment of Level Datum Survey and Topographical Survey, Setting Out of the Works in accordance with Clauses 104 and 105 of Section I, General & Particular Specifications of Bidding Document, Volume II. This shall include pegging of pipeline routes and preparation of Setting Out Survey Report to the Engineer for approval. The Setting Out Works / Survey Works include the production of Survey Drawings to an agreed scale and will include the Engineering Survey of Water Distribution Mains, approximate length 75 km.	L.S	1		
A42*.13	Allow for all specific works related to working along active pipelines and within sites of other active installations e.g storage tanks, etc. and maintaining continuity of water supply including protection of supports etc. of existing pipelines during construction activity.	L.S	1		
	<b>Supply of Electro-Fusion and Butt-Fusion Jointing Machines</b>				
A42*.14	Supply and hand over to MOWASSCO a 4kW Butt Fusion Welding machine for HDPE pipe diameters ranging from 90mm to 355mm. The machines to be engraved with the word "MOWASSCO" or as directed by the Engineer.	set	2		
A42*.15	Supply and hand over to MOWASSCO an Electro-Fusion Jointing machine for HDPE pipe diameters ranging from 32mm to 90mm. The machine to be engraved with the word "MOWASSCO" or as directed by the Engineer.	set	1		
A42*.16	Supply, deliver to site, test, commission and handover to MOWASSCO a 5.5kVA portable petrol generator set for use with the machines above. Complete with inbuilt fuel tank (min tank capacity 19L), single phase, 50Hz, 240V, Rated Ampere 22Amps, air-cooled, full transistor ignition, dual element air cleaner, minimum running time on full tank of 6.5 hrs, with wheel-mounted full anti-vibration frame and pneumatic tyred wheels for ease of mobility and quiet running (72db at 7m) or an approved equivalent. Rate to include 50m electric cable and with extension sockets / plugs.	nr	1		
A42*.17	Supply a Steel Fuel Jerry Can, 10L carrying capacity; complete with positive locking cap with rubber seal and fixed spout.	nr	2		
	<b>Spare Parts, Repair Kits, Tools and Equipment for Operation &amp; Maintenance Activities.</b>				
A42*.18	Allow a provisional sum of KES. 2,000,000 for use in the Procurement of Spare Parts, Repair Kits, Tools and Equipment for the Operation and Maintenance Activities by the Water Company. This includes all necessary Jointing Materials/Fittings. List of items to be procured will be issued by the Engineer in consultation with the Water Company.	PS	1	2,000,000.00	2,000,000.00
A42*.19	Add .....% for profit, administration, attendance upon, overheads, etc. for Item A42*.17 above.	%			
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<b>BILL No. 2.1 - LINE SB01</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,940		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,940		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.58		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. HDPE PN10 pipes.</b>				
I711.1	DN450mm	m	1,940		
I711.2	DN200mm	m	12		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I432	DN450mm, depth not exceeding 1.5m	m	1,310		
I433	Ditto but depth exceeding 1.5m	m	630		
	<b>Transport from site store, lay and joint pipes in trench, include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. HDPE PN10 pipes</b>				
I712.1	DN200mm for draining of washouts (Provisional)	m	12		
I712.2	DN90mm for connecting fire hydrant (Provisional)	m	8		
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<b>BILL No. 2.1 - LINE SB01</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
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	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable. Steel pipe fittings - epoxy FBE coated and lined.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	4		
J313.1	DN400mm, 11.25°	nr	1		
J313.2	Ditto but 22.5°	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN200mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 200mm x 200mm	nr	1		
J323.1	Ditto but 400mm x 50mm (for air valves)	nr	1		
J323.2	Ditto but 400mm x 80mm (for fire hydrants)	nr	4		
J323.3	Ditto but 400mm x 150mm	nr	1		
J323.4	Ditto but 400mm x 200mm	nr	7		
J323.5	Ditto but 400mm x 400mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J323.6	DN400mm x 200mm	nr	1		
	<b>Tapers</b>				
J331.1	DN200mm x 100mm, all flanged concentric taper	nr	3		
J333.1	Ditto but 400mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	16		
J351.2	Ditto but 150mm	nr	1		
J351.3	Ditto but 200mm	nr	2		
J353.1	DN450/400mm stepped coupling	nr	37		
J351.4	Ditto but 110/100mm	nr	3		
J351.5	Ditto but 160/150mm	nr	1		
J351.6	Ditto but 200/200mm	nr	7		
J351.7	DN80mm flange adaptor	nr	8		
J351.8	Ditto but 100mm	nr	3		
J351.9	Ditto but 150mm	nr	1		
J351.10	Ditto but 200mm	nr	9		
J353.2	Ditto but 400mm	nr	14		
	<b>Straight specials</b>				
J383.1	DN400mm, 2.0m long all flanged pipe with puddle flange	nr	3		
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	8		
J381.2	Ditto but 100mm, 1.2m long	nr	3		
J381.3	Ditto but 200mm, 0.5m long	nr	1		
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<b>BILL No. 2.1 - LINE SB01</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J381.4	Ditto but 200mm, 1.2m long	nr	2		
J383.2	Ditto but 400mm, 1.2m long	nr	17		
J381.5	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	8		
J381.6	Ditto but 200mm, 1.2m long	nr	4		
J381.7	Ditto but 200mm, 1.2m long	nr	5		
J381.8	Ditto but 200mm HDPE Pipe 13.0m long inside epoxy coated steel road crossing pipe sleeve of appropriate diameter fabricated to suit on site.	nr	1		
J383.3	Ditto but 400mm, 1.2m long	nr	13		
	<b>Blank flange</b>				
J391*.1	DN400mm blank flange	nr	2		
	<b>HDPE fittings</b>				
	<b>Bends</b>				
J661.1	DN450mm, all bends, PN10	nr	9		
J661.2	DN200mm, 90° Bend, PN10 (for washouts)	nr	2		
J661.3	Ditto but 45°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	1		
J811.2	Ditto but 80mm	nr	4		
J811.3	Ditto but 100mm	nr	3		
J811.4	Ditto but 150mm	nr	3		
J811.5	Ditto but 200mm	nr	5		
J813*.1	Ditto but 400mm	nr	12		
	<b>Air valves</b>				
J861*.1	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN200mm flap valve, PN10	nr	2		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	4		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	4		
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<b>BILL No. 2.1 - LINE SB01</b>					
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	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	4		
J313.3	DN400mm, 11.25°	nr	9		
J313.4	Ditto but 22.5°	nr	2		
	<b>Junctions and branches</b>				
J321.3	DN200mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.4	Ditto but 200mm x 200mm	nr	1		
J323.7	Ditto but 400mm x 50mm (for air valves)	nr	3		
J323.8	Ditto but 400mm x 80mm (for fire hydrants)	nr	4		
J323.9	Ditto but 400mm x 150mm	nr	1		
J323.10	Ditto but 400mm x 200mm	nr	7		
J323.11	Ditto but 400mm x 400mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J323.12	DN400mm x 200mm	nr	2		
	<b>Tapers</b>				
J331.2	DN200mm x 100mm, all flanged concentric taper	nr	3		
J333.2	Ditto but 400mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.11	DN80/90mm stepped coupling	nr	16		
J351.12	Ditto but 150mm	nr	2		
J351.13	Ditto but 200mm	nr	2		
J353.3	DN450/400mm stepped coupling	nr	37		
J351.14	Ditto but 110/100mm	nr	3		
J351.15	Ditto but 160/150mm	nr	2		
J351.16	Ditto but 200/200mm	nr	7		
J351.17	DN80mm flange adaptor	nr	8		
J813*.2	Ditto but 400mm	nr	11		
J351.19	Ditto but 150mm	nr	4		
J351.20	Ditto but 200mm	nr	5		
J353.4	Ditto but 400mm	nr	16		
	<b>Straight specials</b>				
J383.4	DN400mm, 2.0m long all flanged pipe with puddle flange	nr	3		
J381.9	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	8		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.1 - LINE SB01</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J381.10	Ditto but 100mm, 1.2m long	nr	3		
J381.11	Ditto but 200mm, 0.5m long	nr	2		
J381.12	Ditto but 200mm, 1.2m long	nr	4		
J383.5	Ditto but 400mm, 1.2m long	nr	17		
J381.13	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	8		
J381.14	Ditto but 200mm, 1.2m long	nr	4		
J381.15	Ditto but 200mm, 1.2m long	nr	3		
J381.16	Ditto but 200mm, 13.0m long with coupling	nr	1		
J383.6	Ditto but 400mm, 1.2m long	nr	16		
<b>Blank flange</b>					
J391*.2	DN400mm blank flange	nr	2		
<b>HDPE fittings</b>					
<b>Bends</b>					
J661.1	DN450mm, all bends, PN10	nr	9		
J661.3	DN200mm, 90° Bend, PN10 (for washouts)	nr	2		
J661.4	Ditto but 45°	nr	1		
<b>Valves and penstocks</b>					
<b>Valves to be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. NB: Air valve isolating valves to be supplied with wheel only.</b>					
J811.6	DN50mm all flanged sluice valve, PN10	nr	2		
J811.7	Ditto but 80mm	nr	4		
J811.8	Ditto but 100mm	nr	3		
J811.9	Ditto but 150mm	nr	1		
J811.10	Ditto but 200mm	nr	9		
J813*.2	Ditto but 400mm	nr	12		
<b>Air Valves</b>					
J861*.2	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN200mm flap valve, PN10	nr	2		
<b>Bulk Water Meters</b>					
<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	4		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	4		
<b>Hydrant</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
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<b>BILL No. 2.1 - LINE SB01</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
Sum carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	9		
K21*.2	Chamber of internal dimensions 1500mm x 1500mm.	nr	13		
K21*.3	Chamber of internal dimensions 1800mm x 1200mm.	nr	14		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction.	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	30		
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	30		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of footpaths as per details in standard drawings i.e tarmac, murram, concrete and concrete block paved surfaces.	m	10		
	<b>Other pipework ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	34		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
Page total carried forward to next page					

<b>BILL No. 2.1 - LINE SB01</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
Sum carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	1,280		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	291		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	58		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN450mm HDPE pipe and a DN600mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	30		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,358		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	70		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	485		
L53*	Ditto but imported selected fill.	m	291		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	97		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	41		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	10		
L7**.3	Ditto but 0.2 - 0.5 m <sup>3</sup>	nr	11		
L7**.4	Ditto but exceeding 0.5 m <sup>3</sup>	nr	21		
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BILL No. 2.2 - LINE SB04					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>Bends</b>				
J661.1	DN160mm, 90° Bend, PN10 (for washouts)	nr	4		
J661.2	Ditto but 45°	nr	2		
J613.1	DN315mm, 11.25°	nr	1		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 150mm	nr	2		
J811.4	Ditto but 200mm	nr	3		
J813.1	Ditto but 300mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN150mm flap valve, PN10	nr	2		
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.2	DN150mm x 50mm, all flanged tee (for washouts)	nr	2		
J322.4	Ditto but 300mm x 50mm	nr	1		
J322.5	Ditto but 300mm x 80mm	nr	2		
Page total carried forward to next page					

<b>BILL No. 2.2 - LINE SB04</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J323.3	Ditto but 300mm x 200mm	nr	1		
J323.4	Ditto but 300mm x 300mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J322.6	DN300mm x 150mm	nr	2		
	<b>Tapers</b>				
J333.2	Ditto but 300mm x 200mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.8	DN80/90mm stepped coupling	nr	8		
J351.9	Ditto but DN160/150mm (Mark 11 on washout)	nr	4		
J351.10	Ditto but DN200/200mm	nr	3		
J353.1	Ditto but 315/300mm	nr	4		
J351.11	DN200/200mm stepped coupling	nr	2		
J353.3	Ditto but 315/300mm	nr	4		
J351.12	DN80mm flange adaptor	nr	4		
J351.13	Ditto but 150mm	nr	2		
J351.14	Ditto but 200mm	nr	3		
J352.4	Ditto but 300mm	nr	7		
	<b>Straight specials</b>				
J381.6	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.7	Ditto but 150mm, 0.5m long	nr	2		
J382.3	Ditto but 300mm, 1.2m long with puddle flange	nr	7		
J381.8	DN80mm, 1.2m long plain ended pipe	nr	4		
J381.9	Ditto but 150mm, 1.2m long with puddle flange	nr	2		
J381.10	Ditto but 200mm, 1.2m long	nr	3		
J382.4	Ditto but 300mm, 1.2m long with puddle flange	nr	5		
	<b>Blank flange</b>				
J391*.2	DN300mm blank flange	nr	2		
	<b>HDPE Bends</b>				
J661.3	DN160mm, 90° Bend, PN10 (for washouts)	nr	4		
J661.4	Ditto but 45°	nr	2		
J613.2	DN315mm, 11.25°	nr	1		
	<b>Valves and penstocks</b>				
J811.5	DN50mm all flanged sluice valve, PN10	nr	2		
J811.6	Ditto but 80mm	nr	2		
J811.7	Ditto but 150mm	nr	2		
J811.8	Ditto but 200mm	nr	3		
J813.2	Ditto but 300mm	nr	4		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.2 - LINE SB04</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Air Valves</b>				
J861*.2	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.2	DN150mm flap valve, PN10	nr	2		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	2		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> <b>Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries</b>				
	<b>In Situ Chambers</b> <b>Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.</b>				
K21*.1	Chamber of internal dimensions 1500mm x 1200mm.	nr	9		
K21*.2	Chamber of internal dimensions 1500mm x 1500mm.	nr	3		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	25		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	15		
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	15		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.2 - LINE SB04</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	14		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	2		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	604		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	137		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	27		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN315mm HDPE pipe and a DN400mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	641		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	40		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	595		
L53*	Ditto but imported selected fill.	m	320		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	22		
L7**.2	Ditto but exceeding 0.1 m <sup>3</sup>	nr	12		
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<b>BILL No. 2.3 - LINE SB06</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	430		
A26*.2	Disinfection of pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	430		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.11		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I73*.1	DN315mm	m	430		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I73*.2	DN315mm, depth not exceeding 1.5m	m	300		
I73*.3	Ditto but depth exceeding 1.5m	m	130		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.</b>				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.3 - LINE SB06</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Junctions and branches</b>				
J321.1	DN150mm x 80mm, all flanged tee	nr	1		
J322.1	Ditto but 250mm x 50mm	nr	1		
J322.2	Ditto but 250mm x 80mm	nr	1		
J322.3	Ditto but 250mm x 150mm	nr	1		
	<b>Tapers</b>				
J331.1	DN150mm x 80mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	4		
J351.2	DN75/80mm stepped coupling	nr	2		
J353.1	Ditto but 315/250mm	nr	6		
J351.3	DN80mm flange adaptor	nr	4		
J352.1	Ditto but 250mm	nr	3		
	<b>Straight specials</b>				
J381.1	DN150mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.2	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J382.1	Ditto but 250mm, 1.2m long with puddle flange	nr	3		
J381.3	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J382.2	Ditto but 250mm, 1.2m long with puddle flange	nr	3		
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J613.1	DN315mm, 11.25°	nr	4		
J613.2	Ditto but 22.5°	nr	2		
J613.3	Ditto but 45°	nr	3		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN80mm All flanged sluice valve, PN10	nr	3		
J812.1	Ditto but 250mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
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BILL No. 2.3 - LINE SB06					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.2	DN150mm x 80mm, all flanged tee	nr	1		
J322.4	Ditto but 250mm x 50mm	nr	1		
J322.5	Ditto but 250mm x 80mm	nr	1		
J322.6	Ditto but 250mm x 150mm	nr	1		
	<b>Tapers</b>				
J331.3	DN150mm x 80mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN80/90mm stepped coupling	nr	4		
J351.6	DN75/80mm stepped coupling	nr	2		
J353.2	Ditto but 315/250mm	nr	6		
J351.7	DN80mm flange adaptor	nr	4		
J352.2	Ditto but 250mm	nr	3		
	<b>Straight specials</b>				
J381.4	DN150mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.5	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J382.3	Ditto but 250mm, 1.2m long with puddle flange	nr	3		
J381.6	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J382.4	Ditto but 250mm, 1.2m long with puddle flange	nr	3		
	<b>HDPE Bends</b>				
J613.4	DN315mm, 11.25°	nr	4		
J613.5	Ditto but 22.5°	nr	2		
J613.6	Ditto but 45°	nr	3		
Page total carried forward to next page					

BILL No. 2.3 - LINE SB06					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Valves and penstocks</b>				
J811.2	DN80mm All flanged sluice valve, PN10	nr	3		
J812.2	Ditto but 250mm	nr	2		
	<b>Air Valves</b>				
J861*.2	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Ditto but internal dimensions 1200mm x 1200mm.	nr	4		
K21*.2	Ditto but internal dimensions 1500mm x 1200mm.	nr	4		
K21*.3	Ditto but internal dimensions 1500mm x 1500mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	nr	4		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction.	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	item	L.S		
	<b>Reinstatement of Roads</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	5		
Page total carried forward to next page					

<b>BILL No. 2.3 - LINE SB06</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.3	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of footpaths as per details in standard drawings i.e tarmac, murram, concrete and concrete block paved surfaces.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	13		
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	284		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	65		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	13		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	301		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	20		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	280		
L53*	Ditto but imported selected fill.	m	151		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	19		
L7**.2	Ditto but exceeding 0.1 m <sup>3</sup>	nr	3		
<b>PAGE TOTAL CARRIED TO SOUTH MAINLAND 2A COLLECTION PAGE</b>					

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BILL No. 2.4 - LINE SB07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.2	Ditto but 200mm x 25mm	nr	2		
J321.3	Ditto but 200mm x 80mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.4	DN200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.1	DN200mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	8		
J351.2	Ditto but 100mm	nr	4		
J351.3	DN90/100mm stepped coupling	nr	4		
J351.4	Ditto but 200/200mm	nr	13		
J351.5	DN80mm flange adaptor	nr	4		
J351.6	Ditto but 100mm	nr	5		
J351.7	Ditto but 200mm	nr	6		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 100mm, 0.5m long	nr	2		
J381.3	Ditto but 200mm, 1.2m long	nr	7		
J381.4	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.5	Ditto but 100mm, 1.2m long	nr	3		
J381.6	Ditto but 200mm, 1.2m long	nr	6		
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>Bends</b>				
J611.1	DN90mm, 90° Bend, PN10 (for washouts)	nr	4		
J611.2	Ditto but 45°	nr	2		
J611.3	DN200mm, 11.25°	nr	12		
J611.4	Ditto but 22.5°	nr	5		
J611.5	Ditto but 45°	nr	1		
J611.6	Ditto but 60°	nr	2		
J611.7	Ditto but 90°	nr	4		
Page total carried forward to next page					

BILL No. 2.4 - LINE SB07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 100mm	nr	3		
J811.4	Ditto but 200mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN10	nr	2		
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.5	DN100mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.6	Ditto but 200mm x 25mm	nr	2		
J321.7	Ditto but 200mm x 80mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.8	DN200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.2	DN200mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.8	DN80/90mm stepped coupling	nr	8		
J351.9	Ditto but 100mm	nr	4		
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<b>BILL No. 2.4 - LINE SB07</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J351.10	DN90/100mm stepped coupling	nr	4		
J351.11	Ditto but 200/200mm	nr	13		
J351.12	DN80mm flange adaptor	nr	4		
J351.13	Ditto but 100mm	nr	5		
J351.14	Ditto but 200mm	nr	6		
<b>Straight specials</b>					
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.8	Ditto but 100mm, 0.5m long	nr	2		
J381.9	Ditto but 200mm, 1.2m long	nr	7		
J381.10	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.11	Ditto but 100mm, 1.2m long	nr	3		
J381.12	Ditto but 200mm, 1.2m long	nr	6		
<b>HDPE Bends</b>					
J611.8	DN90mm, 90° Bend, PN10 (for washouts)	nr	4		
J611.9	Ditto but 45°	nr	2		
J611.10	DN200mm, 11.25°	nr	12		
J611.11	Ditto but 22.5°	nr	5		
J611.12	Ditto but 45°	nr	1		
J611.13	Ditto but 60°	nr	2		
J611.14	Ditto but 90°	nr	4		
<b>Valves and penstocks</b>					
J811.5	DN50mm all flanged sluice valve	nr	2		
J811.6	Ditto but 80mm	nr	2		
J811.7	Ditto but 100mm	nr	3		
J811.8	Ditto but 200mm	nr	2		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN100mm flap valve, PN10	nr	2		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
<b>Page total carried forward to next page</b>					

BILL No. 2.4 - LINE SB07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	10		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	25		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	20		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	45		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	30		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	2		
Page total carried forward to next page					

BILL No. 2.4 - LINE SB07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	706		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	161		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	32		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	749		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	75		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	696		
L53*	Ditto but imported selected fill.	m	375		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	37		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	13		
L7**.3	Ditto but exceeding 0.2 m <sup>3</sup>	nr	3		
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BILL No. 2.5 - LINE SB10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	Transport from site store, lay and joint pipes in trench, include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. HDPE PN10 pipes for draining of washouts (Provisional)				
I712	DN160mm	m	12		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable. Steel pipe fittings - enoxv FBE coated and lined.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	4		
	<b>Junctions and Branches</b>				
J321.1	DN150mm x 50mm, all flanged tee (for washouts)	nr	2		
J323.1	Ditto but 400mm x 50mm (for air valves)	nr	2		
J323.2	Ditto but 400mm x 80mm (for fire hydrants)	nr	4		
J323.3	Ditto but 400mm x 150mm	nr	4		
J323.4	Ditto but 400mm x 200mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J323.5	DN400mm x 150mm	nr	2		
	<b>Tapers</b>				
J331.1	DN200mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	16		
J353.1	DN450/400mm stepped coupling	nr	16		
J351.3	DN110/100mm stepped coupling	nr	1		
J351.4	Ditto but 160/150mm	nr	6		
J351.5	DN80mm flange adaptor	nr	8		
J351.6	Ditto but 150mm	nr	6		
J353.2	Ditto but 400mm	nr	10		
	<b>Straight specials</b>				
J381.1	DN150mm, 1.2m long all flanged pipe	nr	1		
J383.1	Ditto but 400mm, 1.2m long with puddle flange	nr	1		
J383.2	Ditto but 400mm, 2.0m long with puddle flange	nr	1		
J381.2	DN80mm, 1.2m long flanged spigot pipe	nr	8		
J381.3	Ditto but 100mm, 1.2m long	nr	1		
J381.4	Ditto but 150mm, 0.5m long with puddle flange	nr	2		
J383.3	Ditto but 400mm, 1.2m long with puddle flange	nr	10		
Page total carried forward to next page					

BILL No. 2.5 - LINE SB10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J381.5	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	12		
J381.6	Ditto but 150mm, 1.2m long with puddle flange	nr	6		
J383.4	Ditto but 400mm, 1.2m long	nr	10		
	<b>HDPE fittings</b>				
	<b>Bends</b>				
J661.1	DN450mm, all bends	nr	3		
J661.2	DN160mm, 90° Bend, PN10 (for washouts)	nr	2		
J661.3	Ditto but 45°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	4		
J811.3	Ditto but 150mm	nr	6		
J813*.1	Ditto but 400mm	nr	6		
	<b>Air Valves</b>				
J861*.1	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN150mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	4		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	4		
	<b>Hydrant</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	4		
J313.3	Ditto but 22.5°	nr	1		
Page total carried forward to next page					

BILL No. 2.5 - LINE SB10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
<b>Junction and Branches</b>					
J321.2	DN150mm x 50mm, all flanged tee (for washouts)	nr	2		
J323.6	Ditto but 400mm x 50mm (for air valves)	nr	2		
J323.7	Ditto but 400mm x 80mm (for fire hydrants)	nr	4		
J323.8	Ditto but 400mm x 150mm	nr	4		
J323.9	Ditto but 400mm x 200mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J323.10	DN400mm x 150mm	nr	2		
<b>Tapers</b>					
J331.2	DN200mm x 100mm, all flanged concentric taper	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.7	DN80/90mm stepped coupling	nr	16		
J353.3	DN450/400mm stepped coupling	nr	16		
J351.9	DN110/100mm stepped coupling	nr	1		
J351.10	Ditto but 160/150mm	nr	6		
J351.11	DN80mm flange adaptor	nr	8		
J351.12	Ditto but 150mm	nr	6		
J353.4	Ditto but 400mm	nr	10		
<b>Straight specials</b>					
J381.7	DN150mm, 1.2m long all flanged pipe	nr	1		
J383.5	Ditto but 400mm, 1.2m long with puddle flange	nr	1		
J383.6	Ditto but 400mm, 2.0m long with puddle flange	nr	1		
J381.8	DN80mm, 1.2m long flanged spigot pipe	nr	8		
J381.9	Ditto but 100mm, 1.2m long	nr	1		
J381.10	Ditto but 150mm, 0.5m long with puddle flange	nr	2		
J383.7	Ditto but 400mm, 1.2m long with puddle flange	nr	10		
J381.11	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	12		
J381.12	Ditto but 150mm, 1.2m long with puddle flange	nr	6		
J383.8	Ditto but 400mm, 1.2m long	nr	10		
<b>HDPE fittings</b>					
<b>Bends</b>					
J661.4	DN450mm, all bends	nr	3		
J661.5	DN160mm, 90° Bend, PN10 (for washouts)	nr	2		
J661.6	Ditto but 45°	nr	1		
Page total carried forward to next page					

BILL No. 2.5 - LINE SB10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Valves to be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. NB: Air valve isolating valves to be supplied with wheel only.</b>				
J811.4	DN50mm all flanged sluice valve, PN10	nr	2		
J811.5	Ditto but 80mm	nr	4		
J811.6	Ditto but 150mm	nr	6		
J813*.2	Ditto but 400mm	nr	6		
	<b>Air Valves</b>				
J861*.2	DN50mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.2	DN150mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	4		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	4		
	<b>Hvdrant</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> <b>Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries</b>				
	<b>In Situ Chambers</b> <b>Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.</b>				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	9		
K21*.2	Chamber of internal dimensions 1800mm x 1200mm.	nr	9		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
Page total carried forward to next page					



BILL No. 2.5 - LINE SB10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	20		
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	21		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	1108.8		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	252		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	50		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN400mm steel pipe and a DN600mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	20		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,176		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	35		
Page total carried forward to next page					

BILL No. 2.5 - LINE SB10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,092		
L53*	Ditto but imported selected fill.	m	588		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	84		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	30		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	0		
L7**.3	Ditto but 0.2 - 0.5 m <sup>3</sup>	nr	2		
L7**.4	Ditto but exceeding 0.5 m <sup>3</sup>	nr	21		
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BILL No. 2.6 - LINE SB12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	4		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	4		
J321.2	Ditto but 100mm x 25mm	nr	4		
J321.3	Ditto but 100mm x 80mm	nr	4		
	<b>All flanged level invert tee (for washouts)</b>				
J321.4	DN100mm x 50mm	nr	3		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN63/50mm straight coupling	nr	6		
J351.2	DN80/90mm stepped coupling	nr	16		
J351.3	DN110/100mm stepped coupling	nr	22		
J351.4	DN50mm flange adaptor	nr	6		
J351.5	Ditto but 80mm	nr	8		
J351.6	Ditto but 100mm	nr	11		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	8		
J381.2	Ditto but 50mm, 0.5m long	nr	3		
J381.3	Ditto but 100mm, 1.2m long	nr	11		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.5	Ditto but 80mm, 1.2m long	nr	8		
J381.6	Ditto but 100mm, 1.2m long	nr	11		
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>Bends</b>				
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.2	Ditto but 45°	nr	3		
J611.3	DN110mm, 11.25°	nr	10		
J611.4	Ditto but 22.5°	nr	9		
J611.5	Ditto but 45°	nr	2		
J611.6	Ditto but 90°	nr	1		
Page total carried forward to next page					

<b>BILL No. 2.6 - LINE SB12</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN10	nr	6		
J811.2	Ditto but 80mm	nr	4		
J811.3	Ditto but 100mm	nr	4		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	4		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN10	nr	3		
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	4		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	4		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	4		
	<b>Junctions and branches</b>				
J321.5	DN50mm x 50mm, all flanged tee (for washouts)	nr	4		
J321.6	Ditto but 100mm x 25mm	nr	4		
J321.7	Ditto but 100mm x 80mm	nr	4		
	<b>All flanged level invert tee (for washouts)</b>				
J321.8	DN100mm x 50mm	nr	3		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN63/50mm straight coupling	nr	6		
J351.8	DN80/90mm stepped coupling	nr	16		
J351.9	DN110/100mm stepped coupling	nr	22		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.6 - LINE SB12</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J351.10	DN50mm flange adaptor	nr	6		
J351.11	Ditto but 80mm	nr	8		
J351.12	Ditto but 100mm	nr	11		
	<b>Straight specials</b>				
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	8		
J381.8	Ditto but 50mm, 0.5m long	nr	3		
J381.9	Ditto but 100mm, 1.2m long	nr	11		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.11	Ditto but 80mm x 1.2m long	nr	8		
J381.12	Ditto but 100mm x 1.2m long	nr	11		
	<b>HDPE Bends</b>				
J611.7	DN50mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.8	Ditto but 45°	nr	3		
J611.9	DN110mm, 11.25°	nr	10		
J611.10	Ditto but 22.5°	nr	9		
J611.11	Ditto but 45°	nr	2		
J611.12	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
J811.4	DN50mm all flanged sluice valve, PN10	nr	6		
J811.5	Ditto but 80mm	nr	4		
J811.6	Ditto but 100mm	nr	4		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	4		
	<b>Flap valves</b>				
J88*.2	DN50mm flap valve, PN10	nr	3		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	4		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	4		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	19		
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<b>BILL No. 2.6 - LINE SB12</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	15		
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	42		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	3		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	1,181		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	269		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	54		
<b>Page total carried forward to next page</b>					

BILL No. 2.6 - LINE SB12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,253		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	30		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,164		
L53*	Ditto but imported selected fill.	m	627		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	90		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	62		
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BILL No. 2.7 - LINE SB13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	2,305		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	2,305		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.69		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN90mm for washouts	m	24		
I71*.3	DN110mm	m	335		
I71*.4	DN160mm	m	1175		
I72*.1	DN200mm	m	795		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.5	DN50mm for washouts	m	12		
I71*.6	DN90mm for washouts	m	24		
I71*.7	DN110mm	m	335		
I71*.8	DN160mm	m	1175		
Page total carried forward to next page					

BILL No. 2.7 - LINE SB13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
I72*.2	DN200mm	m	795		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	5		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but DN80mm x 50mm	nr	2		
J321.3	All flanged tee 100mm x 25mm	nr	1		
J321.4	Ditto but 100mm x 80mm	nr	3		
J321.5	Ditto but 100mm x 100mm	nr	1		
J321.6	Ditto but 150mm x 25mm	nr	1		
J321.7	Ditto but 150mm x 80mm	nr	3		
J321.8	Ditto but 200mm x 80mm	nr	2		
J321.9	Ditto but 200mm x 150mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	1		
J321.11	DN150mm x 80mm	nr	2		
	<b>Tapers</b>				
J331.1	DN150mm x 100mm, all flanged concentric taper	nr	1		
J331.2	Ditto but 200mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN63/50mm stepped coupling	nr	6		
J351.2	DN80/90mm stepped coupling	nr	23		
J351.3	Ditto but 100mm	nr	6		
J351.4	DN75/80mm stepped coupling	nr	3		
J351.5	Ditto but 110/100mm	nr	7		
J351.6	Ditto but 160/150mm	nr	10		
J351.7	Ditto but 200/200mm	nr	6		
J351.8	DN50mm flange adaptor	nr	1		
J351.9	Ditto but 80mm	nr	10		
J351.10	Ditto but 100mm	nr	11		
J351.11	Ditto but 150mm	nr	7		
J351.12	Ditto but 200mm	nr	2		
	<b>Straight specials</b>				
J381.1	DN150mm, 2m long all flanged spigot pipe with puddle flange	nr	1		
J381.2	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	10		
J381.3	Ditto but 50mm, 0.5m long	nr	1		
Page total carried forward to next page					

<b>BILL No. 2.7 - LINE SB13</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J381.4	Ditto but 100mm, 0.5m long	nr	2		
J381.5	Ditto but 50mm, 1.2m long	nr	1		
J381.6	Ditto but 100mm, 1.2m long	nr	4		
J381.7	Ditto but 150mm, 1.2m long	nr	7		
J381.8	Ditto but 200mm, 1.2m long	nr	4		
J381.9	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	16		
J381.10	Ditto but 100mm, 1.2m long	nr	5		
J381.11	Ditto but 150mm, 1.2m long	nr	7		
J381.12	Ditto but 200mm, 1.2m long	nr	2		
	<b>Blank flange</b>				
J391*.1	DN100mm blank flange	nr	1		
J391*.2	Ditto but 200mm	nr	1		
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN63mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.2	Ditto but 45°	nr	3		
J611.3	DN90mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.4	Ditto but 45°	nr	3		
J611.5	DN110mm, 11.25°	nr	2		
J611.6	Ditto but 22.5°	nr	3		
J611.7	Ditto but 60°	nr	1		
J611.8	DN160mm, 11.25°	nr	10		
J611.9	Ditto but 22.5°	nr	3		
J611.10	Ditto but 45°	nr	5		
J611.11	Ditto but 90°	nr	1		
J611.12	DN200mm, 11.25°	nr	4		
J611.13	Ditto but 22.5°	nr	3		
J611.14	Ditto but 45°	nr	1		
J611.15	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	4		
J811.2	Ditto but 80mm	nr	8		
J811.3	Ditto but 100mm	nr	5		
J811.4	Ditto but 150mm	nr	2		
J811.5	Ditto but 200mm	nr	5		
<b>Page total carried forward to next page</b>					

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BILL No. 2.7 - LINE SB13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.13	DN63/50mm stepped coupling	nr	6		
J351.14	DN80/90mm stepped coupling	nr	23		
J351.15	Ditto but 100mm	nr	6		
J351.16	DN75/80mm stepped coupling	nr	3		
J351.17	Ditto but 110/100mm	nr	7		
J351.18	Ditto but 160/150mm	nr	10		
J351.19	Ditto but 200/200mm	nr	6		
J351.20	DN50mm flange adaptor	nr	1		
J351.21	Ditto but 80mm	nr	10		
J351.22	Ditto but 100mm	nr	11		
J351.23	Ditto but 150mm	nr	7		
J351.24	Ditto but 200mm	nr	2		
	<b>Straight specials</b>				
J381.13	DN150mm, 2m long all flanged spigot pipe with puddle flange	nr	1		
J381.14	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	10		
J381.15	Ditto but 50mm, 0.5m long	nr	1		
J381.16	Ditto but 100mm, 0.5m long	nr	3		
J381.17	Ditto but 50mm, 1.2m long	nr	1		
J381.18	Ditto but 100mm, 1.2m long	nr	4		
J381.19	Ditto but 150mm, 1.2m long	nr	7		
J381.20	Ditto but 200mm, 1.2m long	nr	4		
J381.21	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	16		
J381.22	Ditto but 100mm, 1.2m long	nr	5		
J381.23	Ditto but 150mm, 1.2m long	nr	7		
J381.24	Ditto but 200mm, 1.2m long	nr	2		
	<b>Blank flange</b>				
J391*.3	DN100mm blank flange	nr	1		
J391*.4	Ditto but 200mm	nr	1		
	<b>HDPE Bends</b>				
J611.16	DN63mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.17	Ditto but 45°	nr	3		
J611.18	DN90mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.19	Ditto but 45°	nr	3		
J611.20	DN110mm, 11.25°	nr	2		
J611.21	Ditto but 22.5°	nr	3		
J611.22	Ditto but 60°	nr	1		
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BILL No. 2.7 - LINE SB13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J611.23	DN160mm, 11.25°	nr	10		
J611.24	Ditto but 22.5°	nr	3		
J611.25	Ditto but 45°	nr	5		
J611.26	Ditto but 90°	nr	1		
J611.27	DN200mm, 11.25°	nr	4		
J611.28	Ditto but 22.5°	nr	3		
J611.29	Ditto but 45°	nr	1		
J611.30	Ditto but 90°	nr	1		
<b>Valves and penstocks</b>					
J811.6	DN50mm all flanged sluice valve, PN10	nr	4		
J811.7	Ditto but 80mm	nr	8		
J811.8	Ditto but 100mm	nr	5		
J811.9	Ditto but 150mm	nr	2		
J811.10	Ditto but 200mm	nr	5		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Flap valves</b>					
J88*.3	DN80mm flap valve, PN10	nr	3		
J88*.4	Ditto but DN50	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	5		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	5		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	5		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	21		
K21*.2	Chamber of internal dimensions 1500mm x 1200mm.	nr	3		
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BILL No. 2.7 - LINE SB13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b>				
	<b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	34		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	25		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	55		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	3		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	1,521		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	346		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	69		
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BILL No. 2.7 - LINE SB13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,614		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	69		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,498		
L53*	Ditto but imported selected fill.	m	807		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	59		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	95		
L7**2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	6		
L7**3	Ditto but exceeding 0.2 m <sup>3</sup>	nr	1		
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Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	880		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	880		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.27		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN90mm for washouts	m	12		
I71*.2	DN200mm	m	880		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.3	DN90mm for washouts	m	12		
I71*.4	DN200mm, depth not exceeding 1.5m	m	750		
I71*.5	Ditto but depth exceeding 1.5m	m	130		
<b>Page total carried forward to next page</b>					

BILL No. 2.8 - LINE SB15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 200mm x 25mm	nr	1		
J321.3	Ditto but 200mm x 80mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.4	DN200mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	4		
J351.2	Ditto but 110/100mm	nr	2		
J351.3	DN200/200mm stepped coupling	nr	6		
J351.4	DN80mm flange adaptor	nr	2		
J351.5	Ditto but 100mm	nr	2		
J351.6	Ditto but 200mm	nr	3		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 100mm, 0.5m long	nr	1		
J381.3	Ditto but 200mm, 1.2m long	nr	3		
J381.4	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.5	Ditto but 100mm, 1.2m long	nr	1		
J381.6	Ditto but 200mm, 1.2m long	nr	3		
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>Bends</b>				
J611.1	DN90mm, 90° Bend, PN10 (for washouts)	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN200mm, 22.5°	nr	5		
J611.4	Ditto but 45°	nr	4		
J611.5	Ditto but 60°	nr	4		
J611.6	Ditto but 90°	nr	4		
Page total carried forward to next page					

BILL No. 2.8 - LINE SB15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN10	nr	1		
J811.2	Ditto but 80mm	nr	1		
J811.3	Ditto but 100mm	nr	1		
J811.4	Ditto but 200mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.5	DN100mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.6	Ditto but 200mm x 25mm	nr	1		
J321.7	Ditto but 200mm x 80mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.8	DN200mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN80/90mm stepped coupling	nr	4		
J351.8	Ditto but 110/100mm	nr	2		
J351.9	DN200/200mm stepped coupling	nr	6		
Page total carried forward to next page					

<b>BILL No. 2.8 - LINE SB15</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J351.10	DN80mm flange adaptor	nr	2		
J351.11	Ditto but 100mm	nr	2		
J351.12	Ditto but 200mm	nr	3		
<b>Straight specials</b>					
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.8	Ditto but 100mm, 0.5m long	nr	1		
J381.9	Ditto but 200mm, 1.2m long	nr	3		
J381.10	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.11	Ditto but 100mm, 1.2m long	nr	1		
J381.12	Ditto but 200mm, 1.2m long	nr	3		
<b>HDPE Bends</b>					
J611.1	DN90mm, 90° Bend, PN10 (for washouts)	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN200mm, 22.5°	nr	5		
J611.4	Ditto but 45°	nr	4		
J611.5	Ditto but 60°	nr	4		
J611.6	Ditto but 90°	nr	4		
<b>Valves and penstocks</b>					
J811.5	DN50mm all flanged sluice valve, PN10	nr	1		
J811.6	Ditto but 80mm	nr	1		
J811.7	Ditto but 100mm	nr	1		
J811.8	Ditto but 200mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN100mm flap valve, PN10	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	1		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	5		
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<b>BILL No. 2.8 - LINE SB15</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	25		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	24		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	581		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	132		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	26		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	616		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
<b>Page total carried forward to next page</b>					

BILL No. 2.8 - LINE SB15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	572		
L53*	Ditto but imported selected fill.	m	308		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	27		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	15		
L7**.3	Ditto but exceeding 0.2m <sup>3</sup>	nr	2		
PAGE TOTAL CARRIED TO SOUTH MAINLAND 2A COLLECTION PAGE					

BILL No. 2.9 - LINE SB16					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	2,090		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	2,090		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.63		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN50mm for washouts	m	36		
I71*.2	DN110mm	m	2,090		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.3	DN50mm for washouts	m	36		
I71*.4	DN110mm, depth not exceeding 1.5m	m	1,380		
I71*.5	Ditto but depth exceeding 1.5m	m	710		
Page total carried forward to next page					

BILL No. 2.9 - LINE SB16					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>					
Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.					
<b>Bends</b>					
J311.1	DN80mm, 90° Bend	nr	4		
<b>Junctions and branches</b>					
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	3		
J321.2	Ditto but 100mm x 25mm	nr	2		
J321.3	Ditto but 100mm x 80mm	nr	4		
J321.4	Ditto but 100mm x 100mm	nr	3		
J321.5	Ditto but 200mm x 100mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.6	DN100mm x 50mm	nr	3		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN50mm straight coupling	nr	6		
J351.2	DN80/90mm stepped coupling	nr	16		
J351.3	DN110/100mm stepped coupling	nr	25		
J351.4	Ditto but 200/200mm	nr	2		
J351.5	DN50mm flange adaptor	nr	6		
J351.6	Ditto but 80mm	nr	8		
J351.7	Ditto but 100mm	nr	16		
J351.8	Ditto but 200mm	nr	1		
<b>Straight specials</b>					
J381.1	DN100mm, 1.2m long all flanged pipe with puddle flange	nr	1		
J381.2	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	8		
J381.3	Ditto but 50mm, 0.5m long	nr	3		
J381.4	Ditto but 100mm, 1.2m long	nr	9		
J381.5	Ditto but 200mm, 1.2m long with puddle flange	nr	1		
J381.6	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.7	Ditto but 80mm, 1.2m long	nr	8		
J381.8	Ditto but 100mm, 1.2m long	nr	16		
J381.9	Ditto but 200mm, 1.2m long	nr	1		
Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.					
<b>Bends</b>					
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.2	Ditto but 45°	nr	3		
J611.3	DN110mm, 11.25°	nr	16		
J611.4	Ditto but 22.5°	nr	10		
J611.5	Ditto but 45°	nr	5		
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BILL No. 2.9 - LINE SB16					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J611.6	Ditto but 60°	nr	4		
J611.7	Ditto but 90°	nr	2		
<b>Valves and penstocks</b>					
<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent</b>					
J811.1	DN50mm all flanged sluice valve, PN10	nr	6		
J811.2	Ditto but 80mm	nr	4		
J811.3	Ditto but 100mm	nr	11		
J811.4	Ditto but 200mm	nr	1		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Flap valves</b>					
J88*.1	DN50mm flap valve, PN10	nr	3		
<b>Bulk Water Meters</b>					
<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>					
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	4		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	4		
<b>Hydrants</b>					
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>					
<b>Steel Bends</b>					
J311.2	DN80mm, 90° Bend	nr	4		
<b>Junctions and branches</b>					
J321.7	DN50mm x 50mm, all flanged tee (for washouts)	nr	3		
J321.8	Ditto but 100mm x 25mm	nr	2		
J321.9	Ditto but 100mm x 80mm	nr	4		
J321.10	Ditto but 100mm x 100mm	nr	3		
J321.11	Ditto but 200mm x 100mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.12	DN100mm x 50mm	nr	3		
Page total carried forward to next page					

<b>BILL No. 2.9 - LINE SB16</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.9	DN50mm straight coupling	nr	6		
J351.10	DN80/90mm stepped coupling	nr	16		
J351.11	DN110/100mm stepped coupling	nr	25		
J351.12	Ditto but 200/200mm	nr	2		
J351.13	DN50mm flange adaptor	nr	6		
J351.14	Ditto but 80mm	nr	8		
J351.15	Ditto but 100mm	nr	16		
J351.16	Ditto but 200mm	nr	1		
	<b>Straight specials</b>				
J381.10	DN100mm, 1.2m long all flanged pipe with puddle flange	nr	1		
J381.11	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	8		
J381.12	Ditto but 50mm, 0.5m long	nr	3		
J381.13	Ditto but 100mm, 1.2m long	nr	9		
J381.14	Ditto but 200mm, 1.2m long with puddle flange	nr	1		
J381.15	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.16	Ditto but 80mm, 1.2m long	nr	8		
J381.17	Ditto but 100mm, 1.2m long	nr	16		
J381.18	Ditto but 200mm, 1.2m long	nr	1		
	<b>HDPE Bends</b>				
J611.8	DN50mm, 90° Bend, PN10 (for washouts)	nr	6		
J611.9	Ditto but 45°	nr	3		
J611.10	DN110mm, 11.25°	nr	16		
J611.11	Ditto but 22.5°	nr	10		
J611.12	Ditto but 45°	nr	5		
J611.13	Ditto but 60°	nr	4		
J611.14	Ditto but 90°	nr	2		
	<b>Valves and penstocks</b>				
J811.5	DN50mm all flanged sluice valve, PN10	nr	6		
J811.6	Ditto but 80mm	nr	4		
J811.7	Ditto but 100mm	nr	11		
J811.8	Ditto but 200mm	nr	1		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.2	DN50mm flap valve, PN10	nr	3		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	4		
<b>Page total carried forward to next page</b>					

BILL No. 2.9 - LINE SB16					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	4		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	17		
K21*.2	Chamber of internal dimensions 1500mm x 1200mm.	nr	1		
K21*.3	Chamber of internal dimensions 1800mm x 1200mm.	nr	1		
K21*.4	Chamber of internal dimensions 2000mm x 1200mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	30		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	58		
Page total carried forward to next page					

BILL No. 2.9 - LINE SB16					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	3		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	1,379		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	314		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	63		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,463		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	50		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,359		
L53*	Ditto but imported selected fill.	m	732		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	105		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	94		
L7**.2	Ditto but exceeding 0.1 m <sup>3</sup>	nr	1		
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BILL No. 2.10 - LINE SB18					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>					
Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.					
<b>Junctions and branches</b>					
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 100mm	nr	1		
J323.1	Ditto but 400mm x 200mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.4	DN100mm x 50mm	nr	2		
<b>Tapers</b>					
J331.1	DN200mm x 100mm, all flanged concentric taper	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN50mm coupling	nr	4		
J351.2	Ditto but 400mm	nr	2		
J351.3	DN110/100mm stepped coupling	nr	10		
J351.4	DN50mm flange adaptor	nr	4		
J351.5	Ditto but 100mm	nr	7		
J353.1	Ditto but 400mm	nr	2		
<b>Straight specials</b>					
J381.1	DN50mm, 0.5m long all flanged pipe	nr	2		
J381.2	Ditto but 100mm, 1.2m long	nr	3		
J381.3	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.4	Ditto but 100mm, 1.2m long	nr	7		
J383.1	Ditto but 400mm, 1.2m long	nr	2		
Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.					
<b>Bends</b>					
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	4		
J611.2	Ditto but 45°	nr	2		
J611.3	DN110mm, 11.25°	nr	4		
J611.4	Ditto but 22.5°	nr	4		
J611.5	Ditto but 60°	nr	8		
<b>Valves and penstocks</b>					
Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and test key. As AVK or similar equivalent					
J811.1	DN50mm all flanged sluice valve, PN10	nr	4		
Page total carried forward to next page					

<b>BILL No. 2.10 - LINE SB18</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J811.2	Ditto but 100mm	nr	4		
J811.3	Ditto but 400mm	nr	2		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.1	DN50mm flap valve, PN10	nr	2		
<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>					
<b>Junctions and branches</b>					
J321.5	DN50mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.6	Ditto but 100mm x 25mm	nr	1		
J321.7	Ditto but 100mm x 100mm	nr	1		
J323.2	Ditto but 400mm x 200mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.6	DN100mm x 50mm	nr	2		
<b>Tapers</b>					
J331.2	DN200mm x 100mm, all flanged concentric taper	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.6	DN50mm coupling	nr	4		
J351.7	Ditto but 400mm	nr	2		
J351.8	DN110/100mm stepped coupling	nr	10		
J351.9	DN50mm flange adaptor	nr	4		
J351.10	Ditto but 100mm	nr	7		
J353.2	Ditto but 400mm	nr	2		
<b>Straight specials</b>					
J381.5	DN50mm, 0.5m long all flanged pipe	nr	2		
J381.6	Ditto but 100mm, 1.2m long	nr	3		
J381.7	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.8	Ditto but 100mm, 1.2m long	nr	7		
J383.2	Ditto but 400mm, 1.2m long	nr	2		
<b>HDPE Bends</b>					
J611.6	DN50mm, 90° Bend, PN10 (for washouts)	nr	4		
J611.7	Ditto but 45°	nr	2		
J611.8	DN110mm, 11.25°	nr	4		
J611.9	Ditto but 22.5°	nr	4		
J611.10	Ditto but 60°	nr	8		
<b>Page total carried forward to next page</b>					

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BILL No. 2.10 - LINE SB18					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	20		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	2		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	472		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	107		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	21		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	501		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	40		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	465		
L53*	Ditto but imported selected fill.	m	250		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	36		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	42		
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BILL No. 2.11 - LINE SB19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	577		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	577		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.18		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN160mm	m	577		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.2	DN160mm, depth not exceeding 1.5m	m	325		
I71*.3	Ditto but depth exceeding 1.5m	m	252		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.</b>				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
Page total carried forward to next page					

BILL No. 2.11 - LINE SB19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Junctions and branches</b>				
J321.1	DN150mm x 80mm, all flanged tee	nr	1		
J321.2	Ditto but 150mm x 100mm	nr	1		
J323.1	Ditto but 400mm x 200mm	nr	1		
	<b>Tapers</b>				
J331.1	DN200mm x 150mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	4		
J353.1	Ditto but 400mm	nr	2		
J351.2	DN110/100mm stepped coupling	nr	1		
J351.3	Ditto but 160/150mm	nr	5		
J351.4	DN80mm flange adaptor	nr	2		
J351.5	Ditto but 100mm	nr	1		
J351.6	Ditto but 150mm	nr	3		
J353.2	Ditto but 400mm	nr	1		
	<b>Straight specials</b>				
J383.1	DN400mm, 2.0m long single flanged pipe with puddle flange	nr	1		
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 150mm, 1.2m long	nr	2		
J383.2	Ditto but 400mm, 1.2m long	nr	1		
J381.3	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.4	Ditto but 100mm, 1.2m long	nr	1		
J381.5	Ditto but 150mm, 1.2m long	nr	3		
J383.3	Ditto but 400mm, 1.2m long	nr	2		
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN160mm, 11.25°	nr	4		
J611.2	Ditto but 22.5°	nr	1		
J611.3	Ditto but 45°	nr	5		
J611.4	Ditto but 60°	nr	5		
J611.5	Ditto but 90°	nr	2		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN80mm all flanged sluice valve, PN10	nr	1		
J811.2	Ditto but 100mm	nr	1		
Page total carried forward to next page					

BILL No. 2.11 - LINE SB19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J811.3	Ditto but 150mm	nr	3		
J813.1	Ditto but 400mm	nr	1		
<b>Bulk Water Meters</b>					
To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.					
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
<b>Hydrants</b>					
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.					
<b>Steel Bends</b>					
J311.2	DN80mm, 90° Bend	nr	1		
<b>Junctions and branches</b>					
J321.3	DN150mm x 80mm, all flanged tee	nr	1		
J321.4	Ditto but 150mm x 100mm	nr	1		
J323.2	Ditto but 400mm x 200mm	nr	1		
<b>Tapers</b>					
J331.2	DN200mm x 150mm, all flanged concentric taper	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.7	DN80/90mm stepped coupling	nr	4		
J353.3	Ditto but 400mm	nr	2		
J351.8	DN110/100mm stepped coupling	nr	1		
J351.9	Ditto but 160/150mm	nr	5		
J351.10	DN80mm flange adaptor	nr	2		
J351.11	Ditto but 100mm	nr	1		
J351.12	Ditto but 150mm	nr	3		
J353.4	Ditto but 400mm	nr	1		
<b>Straight specials</b>					
J383.4	DN400mm, 2.0m long single flanged pipe with puddle flange	nr	1		
J381.6	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.7	Ditto but 150mm, 1.2m long	nr	2		
J383.5	Ditto but 400mm, 1.2m long	nr	1		
J381.8	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.9	Ditto but 100mm, 1.2m long	nr	1		
J381.10	Ditto but 150mm, 1.2m long	nr	3		
J383.6	Ditto but 400mm, 1.2m long	nr	1		
Page total carried forward to next page					

BILL No. 2.11 - LINE SB19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>HDPE Bends</b>				
J611.6	DN160mm, 11.25°	nr	4		
J611.7	Ditto but 22.5°	nr	1		
J611.8	Ditto but 45°	nr	5		
J611.9	Ditto but 60°	nr	5		
J611.10	Ditto but 90°	nr	2		
	<b>Valves and penstocks</b>				
J811.4	DN80mm all flanged sluice valve, PN10	nr	1		
J811.5	Ditto but 100mm	nr	1		
J811.6	Ditto but 150mm	nr	3		
J813.2	Ditto but 400mm	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	4		
K21*.2	Chamber of internal dimensions 2000mm x 2000mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	15		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
Page total carried forward to next page					

BILL No. 2.11 - LINE SB19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum carried forward from previous page</b>					
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	15		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	22		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	381		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	87		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	17		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	404		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	25		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	375		
L53*	Ditto but imported selected fill.	m	202		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	29		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	44		
L7**2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	1		
L7**3	Ditto but exceeding 0.2m <sup>3</sup>	nr	1		
<b>PAGE TOTAL CARRIED TO SOUTH MAINLAND 2A COLLECTION PAGE</b>					

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BILL No. 2.12 - LINE SB20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>					
Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.					
<b>Bends</b>					
J311.1	DN80mm, 90° Bend	nr	2		
<b>Junctions and branches</b>					
J321.1	Ditto but 150mm x 25mm all flanged tee	nr	1		
J321.2	Ditto but 150mm x 80mm	nr	1		
J321.3	Ditto but 150mm x 100mm	nr	2		
J321.4	Ditto but 150mm x 150mm	nr	1		
J321.5	DN200mm x 80mm.	nr	1		
<b>Tapers</b>					
J331.1	DN200mm x 150mm, all flanged concentric taper	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN80/90mm stepped coupling	nr	8		
J351.2	DN110/100mm stepped coupling	nr	2		
J351.3	Ditto but 160/150mm	nr	15		
J351.4	Ditto but 200/200mm	nr	2		
J351.5	DN80mm flange adaptor	nr	6		
J351.6	Ditto but 100mm	nr	2		
J351.7	Ditto but 150mm	nr	6		
J351.8	Ditto but 200mm	nr	1		
<b>Straight specials</b>					
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 150mm, 1.2m long	nr	6		
J381.3	Ditto but 200mm, 1.2m long	nr	3		
J381.4	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.5	Ditto but 100mm, 1.2m long	nr	2		
J381.6	Ditto but 150mm, 1.2m long	nr	3		
J381.7	Ditto but 200mm, 1.2m long	nr	1		
<b>Blank flange</b>					
J391*.1	DN150mm blank flange	nr	1		
Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.					
<b>Bends</b>					
J611.1	DN160mm, 11.25°	nr	8		
J611.2	Ditto but 22.5°	nr	5		
J611.3	Ditto but 45°	nr	4		
J611.4	Ditto but 60°	nr	1		
J611.5	Ditto but 90°	nr	7		
Page total carried forward to next page					



<b>BILL No. 2.12 - LINE SB20</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J611.6	DN200mm, 60°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.2	Ditto but 80mm all flanged sluice valve, PN10	nr	3		
J811.3	Ditto but 100mm	nr	2		
J811.4	Ditto but 150mm	nr	4		
J811.5	Ditto but 200mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.6	Ditto but 150mm x 25mm all flanged tee	nr	1		
J321.7	Ditto but 150mm x 80mm	nr	1		
J321.8	Ditto but 150mm x 100mm	nr	2		
J321.9	Ditto but 150mm x 150mm	nr	1		
J321.10	DN200mm x 80mm,	nr	1		
	<b>Tapers</b>				
J332.2	DN200mm x 150mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.9	DN80/90mm stepped coupling	nr	8		
J351.10	DN110/100mm stepped coupling	nr	2		
J351.11	Ditto but 160/150mm	nr	15		
J351.12	Ditto but 200/200mm	nr	2		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.12 - LINE SB20</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J351.13	DN80mm flange adaptor	nr	6		
J351.14	Ditto but 100mm	nr	2		
J351.15	Ditto but 150mm	nr	6		
J351.16	Ditto but 200mm	nr	1		
<b>Straight specials</b>					
J381.8	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.10	Ditto but 150mm, 1.2m long	nr	6		
J381.11	Ditto but 200mm, 1.2m long	nr	3		
J381.12	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.13	Ditto but 100mm, 1.2m long	nr	2		
J381.14	Ditto but 150mm, 1.2m long	nr	3		
J381.15	Ditto but 200mm, 1.2m long	nr	1		
<b>Blank flange</b>					
J391*.2	DN150mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.7	DN160mm, 11.25°	nr	8		
J611.8	Ditto but 22.5°	nr	5		
J611.9	Ditto but 45°	nr	4		
J611.10	Ditto but 60°	nr	1		
J611.11	Ditto but 90°	nr	7		
J611.12	DN200mm, 60°	nr	1		
<b>Valves and penstocks</b>					
J811.6	Ditto but 80mm all flanged sluice valve, PN10	nr	3		
J811.7	Ditto but 100mm	nr	2		
J811.8	Ditto but 150mm	nr	4		
J811.9	Ditto but 200mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
<b>Page total carried forward to next page</b>					

BILL No. 2.12 - LINE SB20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	7		
K21*.2	Chamber of internal dimensions 1500mm x 1500mm.	nr	2		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	35		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	70		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	30		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	32		
Page total carried forward to next page					

BILL No. 2.12 - LINE SB20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	686		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	156		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	31		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	728		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	135		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	676		
L53*	Ditto but imported selected fill.	m	364		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	46		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	63		
L7**2	Ditto but exceeding 0.1m <sup>3</sup>	nr	4		
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BILL No. 2.13 - LINE SB23					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 100mm x 80mm	nr	1		
J321.3	Ditto but 200mm x 100mm	nr	2		
J321.4	Ditto but 200mm x 200mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	4		
J351.3	Ditto but 200mm	nr	4		
J351.4	DN110/100mm stepped coupling	nr	6		
J351.5	DN50mm flange adaptor	nr	2		
J351.6	Ditto but 80mm	nr	2		
J351.7	Ditto but 100mm	nr	4		
J351.8	Ditto but 200mm	nr	3		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 50mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	3		
J381.4	Ditto but 200mm, 1.2m long	nr	1		
J381.5	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.6	Ditto but 80mm, 1.2m long	nr	2		
J381.7	Ditto but 100mm, 1.2m long	nr	3		
J381.8	Ditto but 200mm, 1.2m long	nr	3		
	<b>Blank flange</b>				
J391*.1	DN200mm blank flange	nr	1		
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>Bends</b>				
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	2		
J611.4	Ditto but 22.5°	nr	4		
J611.5	Ditto but 45°	nr	2		
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<b>BILL No. 2.13 - LINE SB23</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J611.6	Ditto but 60°	nr	3		
J611.7	Ditto but 90°	nr	1		
<b>Valves and penstocks</b>					
<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent</b>					
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	1		
J811.3	Ditto but 100mm	nr	5		
J811.4	Ditto but 200mm	nr	3		
<b>Flap valves</b>					
J88*.1	DN50mm flap valve, PN10	nr	1		
<b>Bulk Water Meters</b>					
<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>					
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
<b>Hydrants</b>					
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>					
<b>Steel Bends</b>					
J311.2	DN80mm, 90° Bend	nr	1		
<b>Junctions and branches</b>					
J321.6	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.7	Ditto but 100mm x 80mm	nr	1		
J321.8	Ditto but 200mm x 100mm	nr	2		
J321.9	Ditto but 200mm x 200mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.10	DN100mm x 50mm	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.9	DN50mm coupling	nr	2		
J351.10	DN80/90mm stepped coupling	nr	4		
J351.11	Ditto but 200mm	nr	4		
J351.12	DN110/100mm stepped coupling	nr	6		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.13 - LINE SB23</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J351.13	DN50mm flange adaptor	nr	2		
J351.14	Ditto but 80mm	nr	2		
J351.15	Ditto but 100mm	nr	4		
J351.16	Ditto but 200mm	nr	3		
	<b>Straight specials</b>				
J381.9	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
	Ditto but 50mm, 0.5m long	nr	1		
J381.11	Ditto but 100mm, 1.2m long	nr	3		
J381.12	Ditto but 200mm, 1.2m long	nr	1		
J381.13	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.14	Ditto but 80mm, 1.2m long	nr	2		
J381.15	Ditto but 100mm, 1.2m long	nr	3		
J381.16	Ditto but 200mm, 1.2m long	nr	3		
	<b>Blank flange</b>				
J391*.2	DN200mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.8	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.9	Ditto but 45°	nr	1		
J611.10	DN110mm, 11.25°	nr	2		
J611.11	Ditto but 22.5°	nr	4		
J611.12	Ditto but 45°	nr	2		
J611.13	Ditto but 60°	nr	3		
J611.14	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.5	DN50mm all flanged sluice valve, PN10	nr	2		
J811.6	Ditto but 80mm	nr	1		
J811.7	Ditto but 100mm	nr	5		
J811.8	Ditto but 200mm	nr	3		
	<b>Flap valves</b>				
J88*.2	DN50mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hvdrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
<b>Page total carried forward to next page</b>					



BILL No. 2.13 - LINE SB23					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	4		
K21*.2	Ditto but internal dimensions 1500mm x 1500mm.	nr	2		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	20		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	17		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	16		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
Page total carried forward to next page					

BILL No. 2.13 - LINE SB23					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	297		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	68		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	14		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	315		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	37		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	293		
L53*	Ditto but imported selected fill.	m	158		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	23		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	30		
L7**.2	Ditto but exceeding 0.1m <sup>3</sup>	nr	5		
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BILL No. 2.14 - LINE SB24					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	831		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	831		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.25		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN110mm	m	831		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.3	DN50mm for washouts	m	12		
I71*.4	DN110mm, depth not exceeding 1.5m	m	564		
I71*.5	Ditto but depth exceeding 1.5m	m	267		
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BILL No. 2.14 - LINE SB24					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	2		
J321.4	Ditto but 100mm x 100mm	nr	3		
J321.5	Ditto but 150mm x 100mm	nr	1		
J321.6	Ditto but 150mm x 150mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.7	DN100mm x 50mm	nr	1		
	<b>Tapers</b>				
J331.1	DN200mm x 150mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	8		
J351.3	Ditto but 200mm	nr	1		
J351.4	DN110/100mm stepped coupling	nr	16		
J351.5	Ditto but 160/150mm	nr	2		
J351.7	DN50mm flange adaptor	nr	2		
J351.8	Ditto but 80mm	nr	4		
J351.9	Ditto but 100mm	nr	11		
J351.10	Ditto but 150mm	nr	2		
J351.11	Ditto but 200mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN150mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.2	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.3	Ditto but 100mm, 0.5m long	nr	1		
J381.4	Ditto but 100mm, 1.2m long	nr	8		
J381.5	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.6	Ditto but 80mm, 1.2m long	nr	4		
J381.7	Ditto but 100mm, 1.2m long	nr	9		
J381.8	Ditto but 150mm, 1.2m long	nr	2		
J381.9	Ditto but 200mm, 1.2m long	nr	1		
Page total carried forward to next page					

<b>BILL No. 2.14 - LINE SB24</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	2		
J611.4	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 100mm	nr	9		
J811.4	Ditto but 150mm	nr	2		
J811.5	Ditto but 200mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	2		
	<b>Hvdrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.8	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.9	Ditto but 100mm x 25mm	nr	1		
<b>Page total carried forward to next page</b>					

BILL No. 2.14 - LINE SB24					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J321.10	Ditto but 100mm x 80mm	nr	2		
J321.11	Ditto but 100mm x 100mm	nr	3		
J321.12	Ditto but 150mm x 100mm	nr	1		
J321.13	Ditto but 150mm x 150mm	nr	1		
All flanged level invert tee (for washouts)					
J321.14	DN100mm x 50mm	nr	1		
Tapers					
J331.2	DN200mm x 150mm, all flanged concentric taper	nr	1		
Adaptors/Couplings/Stepped couplings					
J351.12	DN50mm coupling	nr	2		
J351.13	DN80/90mm stepped coupling	nr	8		
J351.14	Ditto but 200mm	nr	1		
J351.15	DN110/100mm stepped coupling	nr	16		
J351.16	Ditto but 160/150mm	nr	2		
J351.17	DN50mm flange adaptor	nr	2		
J351.18	Ditto but 80mm	nr	4		
J351.19	Ditto but 100mm	nr	11		
J351.20	Ditto but 150mm	nr	2		
J351.21	Ditto but 200mm	nr	1		
Straight specials					
J381.10	DN150mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.11	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.12	Ditto but 100mm, 0.5m long	nr	1		
J381.13	Ditto but 100mm, 1.2m long	nr	8		
J381.14	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.15	Ditto but 80mm, 1.2m long	nr	4		
J381.16	Ditto but 100mm, 1.2m long	nr	9		
J381.17	Ditto but 150mm, 1.2m long	nr	2		
J381.18	Ditto but 200mm, 1.2m long	nr	1		
HDPE Bends					
J611.5	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.6	Ditto but 45°	nr	1		
J611.7	DN110mm, 11.25°	nr	2		
J611.8	Ditto but 90°	nr	1		
Valves and penstocks					
J811.6	DN50mm all flanged sluice valve, PN10	nr	2		
J811.7	Ditto but 80mm	nr	2		
J811.8	Ditto but 100mm	nr	9		
Page total carried forward to next page					

BILL No. 2.14 - LINE SB24					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J811.9	Ditto but 150mm	nr	2		
J811.10	Ditto but 200mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN50mm flap valve, PN10	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	10		
K21*.2	Ditto but internal dimensions 1500mm x 1500mm.	nr	3		
<b>Crossings</b>					
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.					
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	20		
K73*.2	Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
Page total carried forward to next page					

BILL No. 2.14 - LINE SB24					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	18		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	548		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	125		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	25		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	582		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	35		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	540		
L53*	Ditto but imported selected fill.	m	291		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	42		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	35		
L7**2	Ditto but exceeding 0.1m <sup>3</sup>	nr	1		
PAGE TOTAL CARRIED TO SOUTH MAINLAND 2A COLLECTION PAGE					



BILL No. 2.15 - LINE SB26					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	843		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	843		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.25		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN110mm	m	843		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.2	DN110mm, depth not exceeding 1.5m	m	746		
I71*.3	Ditto but depth exceeding 1.5m	m	97		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.</b>				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
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BILL No. 2.15 - LINE SB26					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Junctions and branches</b>				
J321.1	DN100mm x 25mm	nr	1		
J321.2	Ditto but 100mm x 80mm	nr	2		
J321.3	Ditto but 150mm x 100mm	nr	1		
J322.1	Ditto but 250mm x 250mm	nr	1		
	<b>Tapers</b>				
J332.1	DN250mm x 100mm, all flanged concentric taper	nr	1		
J332.2	Ditto but 250mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	8		
J351.2	DN110/100mm stepped coupling	nr	10		
J351.3	Ditto but 160/150mm	nr	1		
J352.1	Ditto but 250/250mm	nr	1		
J351.4	DN80mm flange adaptor	nr	4		
J351.5	Ditto but 100mm	nr	6		
J351.6	Ditto but 150mm	nr	1		
J352.2	Ditto but 250mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN100mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.2	Ditto but 150mm, 2.0m long	nr	2		
J382.1	Ditto but 250mm, 2.0m long	nr	1		
J381.3	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.4	Ditto but 100mm, 1.2m long	nr	4		
J381.5	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.6	Ditto but 80mm, 1.2m long	nr	4		
J381.7	Ditto but 100mm, 1.2m long	nr	6		
J381.8	Ditto but 150mm, 1.2m long	nr	1		
J382.2	Ditto but 250mm, 1.2m long	nr	1		
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN110mm, 11.25°	nr	7		
J611.2	Ditto but 22.5°	nr	2		
J611.3	Ditto but 90°	nr	2		
Page total carried forward to next page					

BILL No. 2.15 - LINE SB26					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent				
J811.1	DN80mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 100mm	nr	4		
J811.3	Ditto but 150mm	nr	1		
J812.1	Ditto but 250mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.5	DN100mm x 25mm	nr	1		
J321.6	Ditto but 100mm x 80mm	nr	2		
J321.7	Ditto but 150mm x 100mm	nr	1		
J322.8	Ditto but 250mm x 250mm	nr	1		
	<b>Tapers</b>				
J332.3	DN250mm x 100mm, all flanged concentric taper	nr	1		
J332.4	Ditto but 250mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.8	DN80/90mm stepped coupling	nr	8		
J351.9	DN110/100mm stepped coupling	nr	10		
J351.10	Ditto but 160/150mm	nr	1		
Page total carried forward to next page					

BILL No. 2.15 - LINE SB26					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J352.3	Ditto but 250/250mm	nr	1		
J351.11	DN80mm flange adaptor	nr	4		
J351.12	Ditto but 100mm	nr	6		
J351.13	Ditto but 150mm	nr	1		
J352.4	Ditto but 250mm	nr	1		
<b>Straight specials</b>					
J381.10	DN100mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.11	Ditto but 150mm, 2.0m long	nr	2		
J382.3	Ditto but 250mm, 2.0m long	nr	1		
J381.12	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.13	Ditto but 100mm, 1.2m long	nr	4		
J381.14	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.15	Ditto but 80mm, 1.2m long	nr	4		
J381.16	Ditto but 100mm, 1.2m long	nr	6		
J381.17	Ditto but 150mm, 1.2m long	nr	1		
J382.4	Ditto but 250mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J611.4	DN110mm, 11.25°	nr	7		
J611.5	Ditto but 22.5°	nr	2		
J611.6	Ditto but 90°	nr	2		
<b>Valves and penstocks</b>					
J811.4	DN80mm all flanged sluice valve, PN10	nr	2		
J811.5	Ditto but 100mm	nr	4		
J811.6	Ditto but 150mm	nr	1		
J812.2	Ditto but 250mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
Page total carried forward to next page					

BILL No. 2.15 - LINE SB26					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	10		
K21*.2	Ditto but internal dimensions 1500mm x 1500mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	50		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	30		
K73*.2	Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	26		
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BILL No. 2.15 - LINE SB26					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	556		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	126		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	25		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	590		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	50		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	548		
L53*	Ditto but imported selected fill.	m	295		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	42		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	37		
L7**.2	Ditto but exceeding 0.1m <sup>3</sup>	nr	3		
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BILL No. 2.16 - LINE SB27					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.</b>				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	1		
J321.4	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	4		
J351.3	DN110/100mm stepped coupling	nr	9		
J351.4	DN50mm flange adaptor	nr	2		
J351.5	Ditto but 80mm	nr	2		
J351.6	Ditto but 100mm	nr	6		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 50mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	3		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.5	Ditto but 80mm, 1.2m long	nr	2		
J381.6	Ditto but 100mm, 1.2m long	nr	6		
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	4		
J611.4	Ditto but 22.5°	nr	2		
J611.5	Ditto but 45°	nr	1		
J611.6	Ditto but 60°	nr	1		
J611.7	Ditto but 90°	nr	3		
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BILL No. 2.16 - LINE SB27					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	1		
J811.3	Ditto but 100mm	nr	4		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.7	Ditto but 100mm x 25mm	nr	1		
J321.8	Ditto but 100mm x 80mm	nr	1		
J321.9	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN50mm coupling	nr	2		
J351.8	DN80/90mm stepped coupling	nr	4		
J351.9	DN110/100mm stepped coupling	nr	9		
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<b>BILL No. 2.16 - LINE SB27</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J351.10	DN50mm flange adaptor	nr	2		
J351.11	Ditto but 80mm	nr	2		
J351.12	Ditto but 100mm	nr	6		
	<b>Straight specials</b>				
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.8	Ditto but 50mm, 0.5m long	nr	1		
J381.9	Ditto but 100mm, 1.2m long	nr	3		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.11	Ditto but 80mm, 1.2m long	nr	2		
J381.12	Ditto but 100mm, 1.2m long	nr	6		
	<b>HDPE Bends</b>				
J611.8	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.9	Ditto but 45°	nr	1		
J611.10	DN110mm, 11.25°	nr	4		
J611.11	Ditto but 22.5°	nr	2		
J611.12	Ditto but 45°	nr	1		
J611.13	Ditto but 60°	nr	1		
J611.14	Ditto but 90°	nr	3		
	<b>Valves and penstocks</b>				
J811.4	DN50mm all flanged sluice valve, PN10	nr	2		
J811.5	Ditto but 80mm	nr	1		
J811.6	Ditto but 100mm	nr	4		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.2	DN50mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	6		
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BILL No. 2.16 - LINE SB27					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	17		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	18		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	320		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	73		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	15		
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BILL No. 2.16 - LINE SB27					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	340		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	22		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	315		
L53*	Ditto but imported selected fill.	m	170		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	24		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	33		
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<b>BILL No. 2.17 - LINE SB28</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,187		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,187		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.36		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN110mm	m	1,187		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.2	DN110mm, depth not exceeding 1.5m	m	809		
I71*.3	Ditto but depth exceeding 1.5m	m	378		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.</b>				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	3		
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BILL No. 2.17 - LINE SB28					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
<b>Junctions and branches</b>					
J321.1	DN100mm x 25mm	nr	1		
J321.2	Ditto but 100mm x 80mm	nr	3		
J321.3	Ditto but 100mm x 100mm	nr	1		
J323.1	Ditto but 300mm x 150mm	nr	1		
<b>Tapers</b>					
J331.1	DN150mm x 100mm, all flanged concentric taper	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN80/90mm stepped coupling	nr	12		
J351.2	Ditto but 300mm	nr	2		
J353.1	DN110/100mm stepped coupling	nr	14		
J351.3	DN80mm flange adaptor	nr	6		
J351.4	Ditto but 100mm	nr	9		
J353.2	Ditto but 300mm	nr	2		
<b>Straight specials</b>					
J381.1	DN100mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J383.1	Ditto but 300mm, 2.0m long	nr	2		
J381.2	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.3	Ditto but 100mm, 1.2m long	nr	5		
J381.4	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.5	Ditto but 100mm, 1.2m long	nr	9		
J383.2	Ditto but 300mm, 1.2m long	nr	2		
<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>					
<b>Bends</b>					
J611.1	DN110mm, 11.25°	nr	12		
J611.2	Ditto but 22.5°	nr	12		
J611.3	Ditto but 60°	nr	1		
J611.4	Ditto but 90°	nr	1		
<b>Valves and penstocks</b>					
<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>					
J811.1	DN80mm all flanged sluice valve, PN10	nr	3		
J811.2	Ditto but 100mm	nr	7		
J811.3	Ditto but 300mm	nr	2		
Page total carried forward to next page					

BILL No. 2.17 - LINE SB28					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	3		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	3		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.4	DN100mm x 25mm	nr	1		
J321.5	Ditto but 100mm x 80mm	nr	3		
J321.6	Ditto but 100mm x 100mm	nr	1		
J323.2	Ditto but 300mm x 150mm	nr	1		
	<b>Tapers</b>				
J331.2	DN150mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN80/90mm stepped coupling	nr	12		
J353.3	Ditto but 300mm	nr	2		
J351.6	DN110/100mm stepped coupling	nr	14		
J351.7	DN80mm flange adaptor	nr	6		
J351.8	Ditto but 100mm	nr	9		
J353.4	Ditto but 300mm	nr	2		
	<b>Straight specials</b>				
J381.8	DN100mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J383.3	Ditto but 300mm, 2.0m long	nr	2		
J381.6	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.7	Ditto but 100mm, 1.2m long	nr	5		
Page total carried forward to next page					

BILL No. 2.17 - LINE SB28					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J381.8	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.9	Ditto but 100mm, 1.2m long	nr	9		
J383.3	Ditto but 300mm, 1.2m long	nr	2		
<b>Bends</b>					
J611.5	DN110mm, 11.25°	nr	12		
J611.6	Ditto but 22.5°	nr	12		
J611.7	Ditto but 60°	nr	1		
J611.8	Ditto but 90°	nr	1		
<b>Valves and penstocks</b>					
J811.6	DN80mm all flanged sluice valve, PN10	nr	3		
J811.7	Ditto but 100mm	nr	7		
J811.8	Ditto but 300mm	nr	2		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	3		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	3		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	14		
<b>Crossings</b>					
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	79		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	L.S	1		
Page total carried forward to next page					



BILL No. 2.17 - LINE SB28					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	10		
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	30		
K73*.3	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	36		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	783		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	178		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	36		
	<b>Special pipe laying methods</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	10		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	831		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	55		
Page total carried forward to next page					

BILL No. 2.17 - LINE SB28					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	772		
L53*	Ditto but imported selected fill.	m	415		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	25		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	59		
L7**.2	Ditto but exceeding 0.1m <sup>3</sup>	nr	1		
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BILL No. 2.18 - LINE SB29					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	2		
J321.4	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	8		
J351.3	DN110/100mm stepped coupling	nr	11		
J351.4	DN50mm flange adaptor	nr	2		
J351.5	Ditto but 80mm	nr	4		
J351.6	Ditto but 100mm	nr	7		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 50mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	4		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.5	Ditto but 80mm, 1.2m long	nr	4		
J381.6	Ditto but 100mm, 1.2m long	nr	7		
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>Bends</b>				
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	5		
J611.4	Ditto but 45°	nr	1		
J611.5	Ditto but 60°	nr	1		
J611.6	Ditto but 90°	nr	3		
Page total carried forward to next page					

BILL No. 2.18 - LINE SB29					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As ΔVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 100mm	nr	5		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.7	Ditto but 100mm x 25mm	nr	1		
J321.8	Ditto but 100mm x 80mm	nr	2		
J321.9	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN50mm straight coupling	nr	2		
J351.8	DN80/90mm stepped coupling	nr	8		
J351.9	DN110/100mm stepped coupling	nr	11		
J351.10	DN50mm flange adaptor	nr	2		
Page total carried forward to next page					

BILL No. 2.18 - LINE SB29					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J351.11	Ditto but 80mm	nr	4		
J351.12	Ditto but 100mm	nr	7		
<b>Straight specials</b>					
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.8	Ditto but 50mm, 0.5m long	nr	1		
J381.9	Ditto but 100mm, 1.2m long	nr	4		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.11	Ditto but 80mm, 1.2m long	nr	4		
J381.12	Ditto but 100mm, 1.2m long	nr	7		
<b>HDPE Bends</b>					
J611.7	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.8	Ditto but 45°	nr	1		
J611.9	DN110mm, 11.25°	nr	5		
J611.10	Ditto but 45°	nr	1		
J611.11	Ditto but 60°	nr	1		
J611.12	Ditto but 90°	nr	3		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN10	nr	2		
J811.5	Ditto but 80mm	nr	2		
J811.6	Ditto but 100mm	nr	5		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN50mm flap valve, PN10	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	9		
Page total carried forward to next page					

BILL No. 2.18 - LINE SB29					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
<b>Crossings</b>					
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
<b>Reinstatement</b>					
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	10		
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
K73*.3	Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
<b>Reinstatement of footpaths</b>					
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
<b>Other Pipework Ancillaries</b>					
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	20		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>					
<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>					
<b>Note:- Blasting is NOT permitted for Item L1</b>					
<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>					
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	588		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	134		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	27		
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BILL No. 2.18 - LINE SB29					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Special pipe laying methods</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	10		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	624		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	40		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	579		
L53*	Ditto but imported selected fill.	m	312		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	45		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	38		
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BILL No. 2.19 - LINE SB30					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	4		
J321.2	Ditto but 100mm x 25mm	nr	4		
J321.3	Ditto but 100mm x 80mm	nr	3		
J321.4	Ditto but 100mm x 100mm	nr	2		
J321.5	Ditto but 200mm x 100mm	nr	1		
J323.1	Ditto but 300mm x 150mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.6	DN100mm x 50mm	nr	4		
	<b>Tapers</b>				
J331.1	DN150mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm coupling	nr	10		
J351.2	DN80/90mm stepped coupling	nr	12		
J353.1	Ditto but 300mm	nr	2		
J351.3	DN110/100mm stepped coupling	nr	32		
J351.4	Ditto but 200/200mm	nr	2		
J351.5	DN50mm flange adaptor	nr	10		
J351.6	Ditto but 80mm	nr	6		
J351.7	Ditto but 100mm	nr	20		
J351.8	Ditto but 200mm	nr	2		
J353.2	Ditto but 300mm	nr	2		
	<b>Straight specials</b>				
J381.1	DN100mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.2	Ditto but 200mm, 2.0m long	nr	2		
J381.3	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.4	Ditto but 50mm, 0.5m long	nr	5		
J381.5	Ditto but 100mm, 1.2m long	nr	14		
J381.6	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	5		
J381.7	Ditto but 80mm, 1.2m long	nr	6		
J381.8	Ditto but 100mm, 1.2m long	nr	18		
J381.9	Ditto but 200mm, 1.2m long	nr	2		
J383.1	Ditto but 300mm, 1.2m long	nr	2		
Page total carried forward to next page					

<b>BILL No. 2.19 - LINE SB30</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	8		
J611.2	Ditto but 45°	nr	4		
J611.3	DN110mm, 11.25°	nr	15		
J611.4	Ditto but 22.5°	nr	2		
J611.5	Ditto but 45°	nr	2		
J611.6	Ditto but 60°	nr	5		
J611.7	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	10		
J811.2	Ditto but 80mm	nr	3		
J811.3	Ditto but 100mm	nr	11		
J811.4	Ditto but 200mm	nr	2		
J813.1	Ditto but 300mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	4		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN10	nr	4		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	3		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	3		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	3		
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<b>BILL No. 2.19 - LINE SB30</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Junctions and branches</b>				
J321.7	DN50mm x 50mm, all flanged tee (for washouts)	nr	5		
J321.8	Ditto but 100mm x 25mm	nr	4		
J321.9	Ditto but 100mm x 80mm	nr	3		
J321.10	Ditto but 100mm x 100mm	nr	2		
J321.11	Ditto but 200mm x 100mm	nr	1		
J323.2	Ditto but 300mm x 150mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.12	DN100mm x 50mm	nr	4		
	<b>Tapers</b>				
J331.2	DN150mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.9	DN50mm straight coupling	nr	10		
J351.10	DN80/90mm stepped coupling	nr	12		
J353.3	Ditto but 300mm	nr	2		
J351.11	DN110/100mm stepped coupling	nr	32		
J351.12	Ditto but 200/200mm	nr	2		
J351.13	DN50mm flange adaptor	nr	10		
J351.14	Ditto but 80mm	nr	6		
J351.15	Ditto but 100mm	nr	20		
J351.16	Ditto but 200mm	nr	2		
J353.4	Ditto but 300mm	nr	2		
	<b>Straight specials</b>				
J381.10	DN100mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J381.11	Ditto but 200mm, 2.0m long	nr	2		
J381.12	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.13	Ditto but 50mm, 0.5m long	nr	5		
J381.14	Ditto but 100mm, 1.2m long	nr	14		
J381.15	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	5		
J381.16	Ditto but 80mm, 1.2m long	nr	6		
J381.17	Ditto but 100mm, 1.2m long	nr	18		
J381.18	Ditto but 200mm, 1.2m long	nr	2		
J383.2	Ditto but 300mm, 1.2m long	nr	2		
	<b>HDPE Bends</b>				
J611.8	DN50mm, 90° Bend, PN10 (for washouts)	nr	8		
J611.9	Ditto but 45°	nr	4		
J611.10	DN110mm, 11.25°	nr	15		
J611.11	Ditto but 22.5°	nr	2		
J611.12	Ditto but 45°	nr	2		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.19 - LINE SB30</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J611.13	Ditto but 60°	nr	5		
J611.14	Ditto but 90°	nr	1		
<b>Valves and penstocks</b>					
J811.5	DN50mm all flanged sluice valve, PN10	nr	9		
J811.6	Ditto but 80mm	nr	3		
J811.7	Ditto but 100mm	nr	11		
J811.8	Ditto but 200mm	nr	2		
J813.2	Ditto but 300mm	nr	2		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	4		
<b>Flap valves</b>					
J88*.2	DN50mm flap valve, PN10	nr	4		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	3		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	3		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> <b>Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries</b>					
<b>In Situ Chambers</b> <b>Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.</b>					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	21		
K21*.2	Ditto but internal dimensions 1500mm x 1200mm.	nr	1		
K21*.3	Ditto but internal dimensions 1800mm x 1200mm.	nr	1		
<b>Crossings</b>					
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
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<b>BILL No. 2.19 - LINE SB30</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	10		
K73*.2	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	15		
K73*.3	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	3		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	42		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	4		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) <b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	782		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	178		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	36		
	<b>Special pipe laying methods</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	10		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	830		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	38		
<b>Page total carried forward to next page</b>					

BILL No. 2.19 - LINE SB30					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	770		
L53*	Ditto but imported selected fill.	m	415		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	25		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	80		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	1		
L7**.3	Ditto but exceeding 0.2m <sup>3</sup>	nr	1		
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BILL No. 2.20 - LINE SB31					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	390		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	390		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.12		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN110mm	m	390		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.2	DN110mm, depth not exceeding 1.5m	m	333		
I71*.3	Ditto but depth exceeding 1.5m	m	57		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.</b>				
	<b>Junctions and branches</b>				
J321.1	DN100mm x 25mm, all flanged tee	nr	1		
J323.1	Ditto but 300mm x 150mm	nr	1		
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<b>BILL No. 2.20 - LINE SB31</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Tapers</b>				
J331.1	DN150mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN110/100mm stepped coupling	nr	3		
J351.2	DN100mm flange adaptor	nr	2		
J353.1	Ditto but 300mm	nr	2		
	<b>Straight specials</b>				
J383.1	DN300mm, 2.0m long all flanged pipe with puddle flange	nr	2		
J381.1	DN100mm, 1.2m long flanged spigot pipe with puddle flange	nr	1		
J381.2	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J383.2	Ditto but 300mm	nr	2		
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN110mm, 11.25°	nr	7		
J611.2	Ditto but 60°	nr	2		
J611.3	Ditto but 90°	nr	2		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent</b>				
J811.1	DN100mm all flanged sluice valve, PN10	nr	1		
J813.1	Ditto but 300mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Junctions and branches</b>				
J321.2	DN100mm x 25mm, all flanged tee	nr	1		
J323.2	Ditto but 300mm x 150mm	nr	1		
	<b>Tapers</b>				
J331.2	DN150mm x 100mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.3	DN110/100mm stepped coupling	nr	3		
J351.4	DN100mm flange adaptor	nr	2		
<b>Page total carried forward to next page</b>					

BILL No. 2.20 - LINE SB31					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J353.2	Ditto but 300mm	nr	2		
	<b>Straight specials</b>				
J383.3	DN300mm, 2.0m long all flanged pipe with puddle flange	nr	2		
J381.3	DN100mm, 1.2m long flanged spigot pipe with puddle flange	nr	1		
J381.4	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J383.4	Ditto but 300mm	nr	2		
	<b>HDPE Bends</b>				
J611.4	DN110mm, 11.25°	nr	7		
J611.5	Ditto but 60°	nr	2		
J611.6	Ditto but 90°	nr	2		
	<b>Valves and penstocks</b>				
J811.2	DN100mm all flanged sluice valve, PN10	nr	1		
J813.2	Ditto but 300mm	nr	2		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	1		
K21*.2	Chamber of internal dimensions 1500mm x 1200mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
Page total carried forward to next page					

BILL No. 2.20 - LINE SB31					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	20		
K73*	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	14		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	257		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	59		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	12		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	273		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	35		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	254		
L53*	Ditto but imported selected fill.	m	137		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	20		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	19		
L7**.2	Ditto but exceeding 0.1m <sup>3</sup>	nr	1		
PAGE TOTAL CARRIED TO SOUTH MAINLAND 2A COLLECTION PAGE					

BILL No. 2.21 - LINE SB32					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	765		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	765		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.23		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN110mm	m	765		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.3	DN50mm for washouts	m	12		
I71*.4	DN110mm, depth not exceeding 1.5m	m	622		
I71*.5	Ditto but depth exceeding 1.5m	m	143		
Page total carried forward to next page					

BILL No. 2.21 - LINE SB32					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	1		
J321.4	Ditto but 100mm x 100mm	nr	2		
J323.1	Ditto but 400mm x 200mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	1		
	<b>Tapers</b>				
J331.1	DN100mm x 80mm, all flanged concentric taper	nr	1		
J331.2	Ditto but 200mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	4		
J353.1	Ditto but 400mm	nr	2		
J351.3	DN75/80mm stepped coupling	nr	1		
J351.4	Ditto but 110/100mm	nr	11		
J351.5	DN50mm flange adaptor	nr	2		
J351.6	Ditto but 80mm	nr	3		
J351.7	Ditto but 100mm	nr	9		
J353.2	Ditto but 400mm	nr	2		
	<b>Straight specials</b>				
J381.1	DN200mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J383.1	Ditto but 400mm, 2.0m long	nr	2		
J381.2	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.3	Ditto but 50mm, 0.5m long	nr	1		
J381.4	Ditto but 100mm, 1.2m long	nr	3		
J381.5	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.6	Ditto but 80mm, 1.2m long	nr	3		
J381.7	Ditto but 100mm, 1.2m long	nr	9		
J383.2	Ditto but 400mm, 1.2m long	nr	2		
Page total carried forward to next page					

<b>BILL No. 2.21 - LINE SB32</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>				
	<b>Bends</b>				
J611.1	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	10		
J611.4	Ditto but 22.5°	nr	8		
J611.5	Ditto but 45°	nr	2		
J611.6	Ditto but 60°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 100mm	nr	7		
J811.4	Ditto but 400mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN10	nr	1		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.7	Ditto but 100mm x 25mm	nr	1		
<b>Page total carried forward to next page</b>					

<b>BILL No. 2.21 - LINE SB32</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
J321.8	Ditto but 100mm x 80mm	nr	1		
J321.9	Ditto but 100mm x 100mm	nr	2		
J323.2	Ditto but 400mm x 200mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.10	DN100mm x 50mm	nr	1		
<b>Tapers</b>					
J331.3	DN100mm x 80mm, all flanged concentric taper	nr	1		
J331.4	Ditto but 200mm x 100mm	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.8	DN50mm coupling	nr	2		
J351.9	DN80/90mm stepped coupling	nr	4		
J353.3	Ditto but 400mm	nr	2		
J351.10	DN75/80mm stepped coupling	nr	1		
J351.11	Ditto but 110/100mm	nr	11		
J351.12	DN50mm flange adaptor	nr	2		
J351.13	Ditto but 80mm	nr	3		
J351.14	Ditto but 100mm	nr	9		
J353.4	Ditto but 400mm	nr	2		
<b>Straight specials</b>					
J381.8	DN200mm, 2.0m long all flanged pipe with puddle flange	nr	1		
J383.3	Ditto but 400mm, 2.0m long	nr	2		
J381.9	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.10	Ditto but 50mm, 0.5m long	nr	1		
J381.11	Ditto but 100mm, 1.2m long	nr	3		
J381.12	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.13	Ditto but 80mm, 1.2m long	nr	3		
J381.14	Ditto but 100mm, 1.2m long	nr	9		
J383.4	Ditto but 400mm, 1.2m long	nr	2		
<b>HDPE Bends</b>					
J611.7	DN50mm, 90° Bend, PN10 (for washouts)	nr	2		
J611.8	Ditto but 45°	nr	1		
J611.9	DN110mm, 11.25°	nr	10		
J611.10	Ditto but 22.5°	nr	8		
J611.11	Ditto but 45°	nr	2		
J611.12	Ditto but 60°	nr	1		
<b>Valves and penstocks</b>					
J811.5	DN50mm all flanged sluice valve, PN10	nr	2		
J811.6	Ditto but 80mm	nr	2		
J811.7	Ditto but 100mm	nr	7		
<b>Page total carried forward to next page</b>					

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BILL No. 2.21 - LINE SB32					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	26		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	505		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	115		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	23		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	536		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	60		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	497		
L53*	Ditto but imported selected fill.	m	268		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	38		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	43		
L7**.2	Ditto but exceeding 0.1m <sup>3</sup>	nr	2		
PAGE TOTAL CARRIED TO SOUTH MAINLAND 2A COLLECTION PAGE					

BILL No. 2.22 - LINE SB33					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	637		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	637		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.19		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.1	DN110mm	m	637		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10</b>				
I71*.2	DN110mm, depth not exceeding 1.5m	m	580		
I71*.3	Ditto but depth exceeding 1.5m	m	57		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.</b>				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
Page total carried forward to next page					

BILL No. 2.22 - LINE SB33					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
<b>Junctions and branches</b>					
J321.1	DN100mm x 25mm, all flanged tee	nr	1		
J321.2	DN100mm x 80mm, all flanged tee	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN80/90mm stepped coupling	nr	4		
J351.2	DN110/100mm stepped coupling	nr	4		
J351.3	DN80mm flange adaptor	nr	2		
J351.4	Ditto but 100mm	nr	2		
<b>Straight specials</b>					
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 100mm, 1.2m long	nr	2		
J381.3	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
<b>Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.</b>					
<b>Bends</b>					
J611.1	DN110mm, 11.25°	nr	7		
J611.2	Ditto but 22.5°	nr	8		
J611.3	Ditto but 45°	nr	2		
J611.4	Ditto but 60°	nr	1		
J611.5	Ditto but 90°	nr	2		
<b>Valves and penstocks</b>					
<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent</b>					
J811.1	DN80mm all flanged sluice valve, PN10	nr	1		
J811.2	Ditto but 100mm	nr	1		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Bulk Water Meters</b>					
<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>					
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
<b>Hydrants</b>					
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
Page total carried forward to next page					

BILL No. 2.22 - LINE SB33					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.3	DN100mm x 25mm, all flanged tee	nr	1		
J321.4	DN100mm x 80mm, all flanged tee	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN80/90mm stepped coupling	nr	4		
J351.6	DN110/100mm stepped coupling	nr	4		
J351.7	DN80mm flange adaptor	nr	2		
J351.8	Ditto but 100mm	nr	2		
	<b>Straight specials</b>				
J381.4	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.5	Ditto but 100mm, 1.2m long	nr	2		
J381.6	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
	<b>HDPE Bends</b>				
J611.6	DN110mm, 11.25°	nr	7		
J611.7	Ditto but 22.5°	nr	8		
J611.8	Ditto but 45°	nr	2		
J611.9	Ditto but 60°	nr	1		
J611.10	Ditto but 90°	nr	2		
	<b>Valves and penstocks</b>				
J811.3	DN80mm all flanged sluice valve, PN10	nr	1		
J811.4	Ditto but 100mm	nr	1		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
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BILL No. 2.22 - LINE SB33					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	4		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	24		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	420		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	96		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	19		
Page total carried forward to next page					

BILL No. 2.22 - LINE SB33					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	446		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	20		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	414		
L53*	Ditto but imported selected fill.	m	223		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	32		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	32		
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BILL No. 2.23 - LINE SB35					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.2	Ditto but 200mm x 25mm	nr	2		
J321.3	Ditto but 200mm x 100mm	nr	1		
J321.4	Ditto but 200mm x 150mm	nr	1		
J321.5	Ditto but 200mm x 200mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.6	DN200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.1	DN250mm x 200mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	4		
J351.2	Ditto but 90/100mm	nr	4		
J351.3	DN160/150mm stepped coupling	nr	1		
J351.4	Ditto but 200/200mm	nr	16		
J351.5	Ditto but 315/250mm	nr	1		
J351.6	DN80mm flange adaptor	nr	2		
J351.7	Ditto but 100mm	nr	4		
J351.8	Ditto but 150mm	nr	1		
J351.9	Ditto but 200mm	nr	11		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 100mm, 0.5m long	nr	2		
J381.3	Ditto but 200mm, 1.2m long	nr	5		
J381.4	Ditto but 250mm, 1.2m long	nr	1		
J381.5	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.6	Ditto but 100mm, 1.2m long	nr	2		
J381.7	Ditto but 150mm, 1.2m long	nr	1		
J381.8	Ditto but 200mm, 1.2m long	nr	11		
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>Bends</b>				
J611.1	DN90mm, 90° Bend, PN10 (for washouts)	nr	4		
J611.2	Ditto but 45°	nr	2		
Page total carried forward to next page					



BILL No. 2.23 - LINE SB35					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J611.3	DN200mm, 11.25°	nr	10		
J611.4	Ditto but 22.5°	nr	5		
J611.5	Ditto but 45°	nr	4		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-kev. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	2		
J811.2	Ditto but 80mm	nr	1		
J811.3	Ditto but 100mm	nr	2		
J811.4	Ditto but 150mm	nr	1		
J811.5	Ditto but 200mm	nr	7		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN10	nr	2		
	<b>Bulk Water Meters</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project. All meters to be smart/AMR enabled, to ensure they can be upgraded by the operator to GSM capability in the future.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Steel Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.7	DN100mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.8	Ditto but 200mm x 25mm	nr	2		
J321.9	Ditto but 200mm x 100mm	nr	1		
J321.10	Ditto but 200mm x 150mm	nr	1		
J321.11	Ditto but 200mm x 200mm	nr	1		
Page total carried forward to next page					

<b>BILL No. 2.23 - LINE SB35</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (KES.)</b>	<b>Amount (KES.)</b>
<b>Sum carried forward from previous page</b>					
	<b>All flanged level invert tee (for washouts)</b>				
J321.12	DN200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.2	DN250mm x 200mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.10	DN80/90mm stepped coupling	nr	4		
J351.11	Ditto but 90/100mm	nr	4		
J351.12	DN160/150mm stepped coupling	nr	1		
J351.13	Ditto but 200/200mm	nr	16		
J351.14	Ditto but 315/250mm	nr	1		
J351.15	DN80mm flange adaptor	nr	2		
J351.16	Ditto but 100mm	nr	4		
J351.17	Ditto but 150mm	nr	1		
J351.18	Ditto but 200mm	nr	11		
	<b>Straight specials</b>				
J381.9	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.10	Ditto but 100mm, 0.5m long	nr	2		
J381.11	Ditto but 200mm, 1.2m long	nr	5		
J381.12	Ditto but 250mm, 1.2m long	nr	1		
J381.13	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.14	Ditto but 100mm, 1.2m long	nr	2		
J381.15	Ditto but 150mm, 1.2m long	nr	1		
J381.16	Ditto but 200mm, 1.2m long	nr	11		
	<b>HDPE Bends</b>				
J611.6	DN90mm, 90° Bend, PN10 (for washouts)	nr	4		
J611.7	Ditto but 45°	nr	2		
J611.8	DN200mm, 11.25°	nr	10		
J611.9	Ditto but 22.5°	nr	5		
J611.10	Ditto but 45°	nr	4		
	<b>Valves and penstocks</b>				
J811.6	DN50mm all flanged sluice valve, PN10	nr	2		
J811.7	Ditto but 80mm	nr	1		
J811.8	Ditto but 100mm	nr	2		
J811.9	Ditto but 150mm	nr	1		
J811.10	Ditto but 200mm	nr	7		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN10, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Page total carried forward to next page</b>					

BILL No. 2.23 - LINE SB35					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve. PN10	nr	2		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN10	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN10	nr	1		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> <b>Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries</b>				
	<b>In Situ Chambers</b> <b>Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.</b>				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	8		
K21*.2	Ditto but internal dimensions 1500mm x 1500mm.	nr	2		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	70		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	15		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	150		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
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BILL No. 2.23 - LINE SB35					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	31		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets include washout soak pit as shown by drawing 6000002/W&S-C-S-005	nr	2		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	446		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	101		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	20		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	473		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	175		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	439		
L53*	Ditto but imported selected fill.	m	236		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	34		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	32		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	11		
L7**.3	Ditto but exceeding 0.2m <sup>3</sup>	nr	1		
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BILL No. 3.1 - SHORT TERM TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Junctions and branches</b>				
J321.3	DN100mm x 50mm, all flanged tee	nr	44		
J321.4	Ditto but 150mm x 80mm	nr	32		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.3	DN50mm flange adaptor	nr	44		
J351.4	Ditto but 80mm	nr	32		
	<b>Straight specials</b>				
J381.5	DN50mm, 1.2m long flanged spigot pipe	nr	44		
J381.6	Ditto but 80mm, 1.2m long	nr	32		
J381.7	DN100mm, 1.2m long all flanged pipe	nr	88		
J381.8	Ditto but 150mm	nr	64		
	<b>HDPE Bends</b>				
J611.5	DN63mm, 90° Elbow/bend	nr	18		
J611.6	Ditto but 45°	nr	7		
J611.7	DN75mm, 90° Elbow/bend	nr	22		
J611.8	Ditto but 45°	nr	9		
	<b>HDPE Adaptors/Couplings/Stepped couplings</b>				
J631.2	DN95mm x 75mm, reducing coupler	nr	32		
J661.5	DN63mm flange adaptor (stub end)	nr	44		
J661.6	Ditto but 90mm	nr	32		
J661.7	Ditto but 110mm	nr	88		
J661.8	Ditto but 160mm	nr	64		
	<b>HDPE End plugs</b>				
J691*.3	DN63mm	nr	44		
J691*.4	Ditto but 75mm	nr	32		
	<b>Valves and penstocks</b>				
J811.3	DN50mm all flanged sluice valve, PN10	nr	44		
J811.4	Ditto but 80mm	nr	32		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	76		
Page total carried forward to next page					

BILL No. 3.1 - SHORT TERM TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	420		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	430		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	330		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	100		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	100		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	90		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	9,611		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	2,184		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	437		
Page total carried forward to next page					



BILL No. 3.1 - SHORT TERM TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	10,193		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	530		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	9,465		
L53*	Ditto but imported selected fill.	m	5,097		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	1,980		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	162		
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BILL No. 3.2 - SHORT TERM EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	10,652		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	10,652		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.43		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**.1	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN40mm	m	295		
I71*.2	DN50mm	m	3,308		
I71*.3	DN63mm	m	919		
I71*.4	DN75mm	m	4,300		
I71*.5	DN90mm	m	1,323		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.6	DN40mm, depth not exceeding 1.5m	m	295		
I71*.7	DN50mm, depth not exceeding 1.5m	m	3,308		
I71*.8	DN63mm, depth not exceeding 1.5m	m	919		
I71*.9	DN75mm, depth not exceeding 1.5m	m	3,225		
Page total carried forward to next page					

BILL No. 3.2 - SHORT TERM EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
I71*.10	Ditto but depth exceeding 1.5m	m	1,075		
I71*.11	DN90mm, depth not exceeding 1.5m	m	860		
I71*.12	Ditto but depth exceeding 1.5m	m	463		
<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>					
Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.					
<b>Junctions and branches</b>					
J321.1	DN100mm x 50mm, all flanged tee	nr	4		
J321.2	Ditto but 100mm x 80mm	nr	4		
J321.3	Ditto but 150mm x 80mm	nr	2		
J321.4	Ditto but 200mm x 80mm	nr	6		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN80/90mm stepped coupling	nr	2		
J351.2	Ditto but 100/110mm	nr	6		
J351.3	Ditto but 150/160mm	nr	3		
J351.4	Ditto but 200mm	nr	12		
J351.5	DN50mm flange adaptor	nr	4		
J351.6	Ditto but 80mm	nr	11		
<b>Straight specials</b>					
J381.1	DN100mm, 1.2m long all flanged pipe	nr	9		
J381.2	DN50mm, 1.2m long flanged spigot pipe	nr	4		
J381.3	Ditto but 80mm, 1.2m long	nr	11		
J381.4	Ditto but 100mm, 1.2m long	nr	6		
J381.5	Ditto but 150mm, 1.2m long	nr	3		
J381.6	Ditto but 200mm, 1.2m long	nr	12		
<b>HDPE Elbows</b>					
J611.1	DN40mm, 45° Bend	nr	3		
J611.2	DN50mm, 90° Bend	nr	6		
J611.3	Ditto but 45°	nr	5		
J611.4	DN63mm, 90° Bend	nr	3		
J611.5	Ditto but 45°	nr	2		
J611.6	DN75mm, 90° Bend	nr	4		
J611.7	Ditto but 45°	nr	11		
J611.8	DN90mm, 90° Bend	nr	2		
J611.9	Ditto but 45°	nr	2		
<b>HDPE Junctions and branches</b>					
J621.1	DN63mm x 40mm, hdpe tee	nr	1		
J621.2	Ditto but 75mm x 75mm	nr	2		
Page total carried forward to next page					

BILL No. 3.2 - SHORT TERM EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>HDPE Adaptors/Couplings/Stepped couplings</b>				
J651.1	DN63mm x 50mm reducing couplers	nr	3		
J651.2	Ditto but 90mm x 75mm	nr	9		
J651.3	DN63mm flange adaptor (stub end) complete with metal back up ring	nr	4		
J651.4	Ditto but 90mm	nr	11		
J651.5	Ditto but 110mm	nr	9		
	<b>End plugs</b>				
J691*.1	DN40mm	nr	2		
J691*.2	Ditto but 50mm	nr	20		
J691*.3	Ditto but 63mm	nr	1		
J691*.4	Ditto but 75mm	nr	13		
J691*.5	Ditto but 90mm	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	4		
J811.2	Ditto but 80mm	nr	11		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Junctions and branches</b>				
J321.5	DN100mm x 50mm, all flanged tee	nr	4		
J321.6	Ditto but 100mm x 80mm	nr	4		
J321.7	Ditto but 150mm x 80mm	nr	2		
J321.8	Ditto but 200mm x 80mm	nr	6		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN80/90mm stepped coupling	nr	2		
J351.8	Ditto but 100mm	nr	6		
J351.9	Ditto but 150mm	nr	3		
J351.10	Ditto but 200mm	nr	12		
J351.11	DN50mm flange adaptor	nr	4		
J351.12	Ditto but 80mm	nr	11		
	<b>Straight specials</b>				
J381.7	DN100mm, 1.2m long all flanged pipe	nr	9		
J381.8	DN50mm, 1.2m long flanged spigot pipe	nr	4		
J381.9	Ditto but 80mm, 1.2m long	nr	11		
Page total carried forward to next page					

BILL No. 3.2 - SHORT TERM EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J381.10	Ditto but 100mm, 1.2m long	nr	6		
J381.11	Ditto but 150mm, 1.2m long	nr	3		
J381.12	Ditto but 200mm, 1.2m long	nr	12		
<b>HDPE Elbows</b>					
J611.10	DN40mm, 45° Bend	nr	3		
J611.11	DN50mm, 90° Bend	nr	6		
J611.12	Ditto but 45°	nr	5		
J611.13	DN63mm, 90° Bend	nr	3		
J611.14	Ditto but 45°	nr	2		
J611.15	DN75mm, 90° Bend	nr	4		
J611.16	Ditto but 45°	nr	11		
J611.17	DN90mm, 90° Bend	nr	2		
J611.18	Ditto but 45°	nr	2		
<b>HDPE Junctions and branches</b>					
J621.3	DN63mm x 40mm, hdpe tee	nr	1		
J621.4	Ditto but 75mm x 75mm	nr	2		
<b>HDPE Adaptors/Couplings/Stepped couplings</b>					
J651.6	DN63mm x 50mm reducing couplers	nr	3		
J651.7	Ditto but 90mm x 75mm	nr	9		
J651.8	DN63mm flange adaptor (stub end) complete with metal back up ring	nr	4		
J651.9	Ditto but 90mm	nr	11		
J651.10	Ditto but 110mm	nr	9		
<b>End plugs</b>					
J691*.6	DN40mm	nr	2		
J691*.7	Ditto but 50mm	nr	20		
J691*.8	Ditto but 63mm	nr	1		
J691*.9	Ditto but 75mm	nr	13		
J691*.10	Ditto but 90mm	nr	1		
<b>Valves and penstocks</b>					
J811.3	DN50mm all flanged sluice valve, PN10	nr	4		
J811.4	Ditto but 80mm	nr	11		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	15		
Page total carried forward to next page					

BILL No. 3.2 - SHORT TERM EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	170		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	180		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	130		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	39		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	40		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	6,696		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	1,522		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	304		
Page total carried forward to next page					

BILL No. 3.2 - SHORT TERM EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	7,102		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	179		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	6,594		
L53*	Ditto but imported selected fill.	m	3,551		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	100		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	71		
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BILL No. 4.1 - SUPPLY AND INSTALLATION OF PIPES, FITTINGS & ACCESSORIES FOR NEW CONSUMER CONNECTIONS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>Notes</b>				
	1) The works under this bill entail supply of pipes, fittings and other accessories and the actual installation works of new consumer connections being done under the Project				
	2) The installation works for new consumer connections will be carried out by a <u>Nominated Sub-Contractor</u> who will be appointed by the Client and then enter into a Sub-Contract Agreement with the Main Contractor				
	3) Pipes, fittings and accessories for the new consumer connections will be procured by the Main Contractor and handed over to the Water Company as directed by the Engineer. The Water Company will issue pipes and fittings to the Nominated Sub-Contractor to carry out the installation works upon customer application and payment of requisite fees to the WSP				
	4) Payment to the Nominated Sub-Contractor will be made through the Main Contractor after certification by the Engineer and WSP. An item for percentage mark up for the Main Contractor's attendance upon the Nominated Sub-Contractor has been included under this bill				
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply of pipes and fittings for consumer connection works</b>				
	Typical arrangement of pipes and fittings for a consumer connection are shown in standard drawings.				
	The pipes and fittings to be supplied and installed under this item are for 1,000 Nr. new consumer connections.				
	Supply, transport to site and hand over to the Water Company the following pipes and fittings for new consumer connections. Rates to include all necessary jointing material/ fittings. All pipes and fittings to be pressure class PN 10 rating.				
I712.1	DN15mm, HDPE pipe	m	28,000		
I712.2	Ditto but 32mm	m	200		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>90° HDPE Elbows</b>				
J611	DN15mm	nr	2,000		
J611	DN32mm	nr	800		
	<b>Brass Ferrule</b>				
J621.1	DN15mm	nr	800		
J621.2	DN32mm	nr	100		
	<b>HDPE Equal Tee</b>				
J621.3	DN32mm x 32mm	nr	100		
	<b>End Cap</b>				
J641.1	DN15 mm	nr	1,000		
	<b>Stop Cocks</b>				
J641.2	15mm dia Stop Cock, make Pegler or approved equivalent.	nr	1,000		
	<b>HDPE Saddle Clamps</b>				
J651.1	DN32mm x 15mm	nr	500		
J651.2	DN40mm x 15mm	nr	300		
J651.3	DN50mm x 32mm	nr	100		
	<b>HDPE Adaptor</b> Flange Adaptor (Stub end) complete with metal back up ring				
J651.4	DN15mm	nr	2,000		
Page total carried forward to next page					



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BILL No. 4.2 - REINSTATEMENT OF EXISTING CONSUMER CONNECTIONS AFTER LAYING OF NEW MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>Notes</b>				
	1) The works under this bill entail supply of pipes, fittings and other accessories and the actual installation works of new consumer connections being done under the Project				
	2) The installation works for new consumer connections will be carried out by a <b>Nominated Sub-Contractor</b> who will be appointed by the Client and then enter into a Sub-Contract Agreement with the Main Contractor				
	3) Pipes, fittings and accessories for the new consumer connections will be procured by the Main Contractor and handed over to the Water Company as directed by the Engineer. The Water Company will issue pipes and fittings to the Nominated Sub-Contractor to carry out the installation works upon customer application and payment of requisite fees to the WSP.				
	4) Payment to the Nominated Sub-Contractor will be made through the Main Contractor after certification by the Engineer and WSP. An item for percentage mark up for the Main Contractor's attendance upon the Nominated Sub-Contractor has been included under this bill				
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply of pipes and fittings to be used for reinstatement of existing consumer connections</b>				
	Typical arrangement of pipes and fittings for a consumer connection are shown in standard drawings.				
	The pipes and fittings to be supplied and installed under this item are for 1,050 Nr. consumer connections.				
	Supply, transport to site and hand over to the Water Company the following pipes and fittings for new consumer connections. Rates to include all necessary jointing material/ fittings. All pipes and fittings to be pressure class PN 10 rating.				
I712.1	DN15mm, HDPE pipe	m	29,400		
I712.2	Ditto but 32mm	m	200		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>90° HDPE Elbows</b>				
J611	DN15mm	nr	2,100		
	<b>Brass Ferrule</b>				
J621.1	DN15mm	nr	840		
J621.2	DN32mm	nr	105		
	<b>HDPE Equal Tee</b>				
J621.3	DN32mm x 32mm	nr	105		
	<b>End Cap</b>				
J641.1	DN15mm	nr	1,050		
	<b>Stop Cocks</b>				
J641.2	15mm dia Stop Cock, make Pegler or approved equivalent.	nr	1,050		
	<b>HDPE Saddle Clamps</b>				
J651.1	DN32mm x 15mm	nr	525		
J651.2	DN40mm x 15mm	nr	315		
J651.3	DN50mm x 32mm	nr	105		
	<b>HDPE Adaptor</b>				
	Flange Adaptor (Stub end) complete with metal back up ring				
J651.4	DN15mm	nr	2,100		
Page total carried forward to next page					

BILL No. 4.2 - REINSTATEMENT OF EXISTING CONSUMER CONNECTIONS AFTER LAYING OF NEW MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>HDPE Reducing Coupler</b>				
J651.5	DN32mm x 15mm	nr	210		
	<b>Consumer Water Meters and Stop Cocks</b>				
	<b>Consumer Water Meters</b>				
	<i>Note: All Water Meters to be MID approved and to conform with EN ISO 4064: 2014, and KS OMIL R 49:2006 Specifications for Domestic Water Meters or approved equivalent.</i>				
J91*.1	15mm dia Consumer Plastic Water Meters, Single-Jet, Composite Body, Plastic Register. Type, Aquila or approved equivalent. The Meters to include inbuilt Meter Strainers & Non-Return Mechanism. Rate to include for Supply of Meters Liner (2Nr for each Meter). All Meters to be engraved with word "MOWASSCO" or as directed by the Engineer.	nr	1,050		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	<b>Meter Boxes</b>				
K37*	Standard Plastic Meter Boxes with cover and opening key, minimum dimensions: length-265mm, width-150mm & height-180mm.	nr	1,050		
	<b>Reconnection of consumer connections</b>				
	<b>Under this Item, upon completion of new pipelines and decommissioning of old pipelines by the Main Contractor, the Nominated Sub-Contractor will carry out works to reconnect consumers who were previously connected to the old pipelines. The Nominated Sub-Contractor will collect the required pipes and fittings from the water company's store and carry out the installation works progressively as the water company verifies and approves the customers to be re-connected. (Ref Clause 1120 in the Contract Specifications)</b>				
K861.1	Allow a P.C. Sum of KES. 4,500 for reinstallation of existing consumer connections by a Nominated Sub-Contractor to be appointed by the Client after the award of the Main Works Contract.	nr	1,050	4,500	4,725,000.00
K861.2	Add ----% for profit, administration, attendance upon overheads, etc. for Item K861.1 above.	%			
PAGE TOTAL CARRIED TO SOUTH MAINLAND 2A COLLECTION PAGE					

BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	All meters to be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
	All fittings and specials to be supplied with bolts, washers, nuts, gaskets, packing, jointing material etc. and should match diameters of relevant existing mains. All diameters are nominal				
	<b>CLASS A: GENERAL ITEMS</b>				
	Method related charges for installation of new appurtenances along distribution and transmission pipelines				
A322.1	Allow for exposing of pipes, cutting, connecting new fittings, making good and removal of all waste materials and leaving the site in a neat and clean state free from any debris etc. Dismantled pipes, fittings and fixtures to be delivered to the Storage Yard as directed by the Engineer. The Contractor to include for any mobile equipment e.g. generators, drills, pumps etc. to successfully complete the work.	lot	56		
A322.2	Dealing with water flow and maintaining continuity of supply by fixing requisite pipe diameter / material as make up piece and other required fittings.	lot	56		
A322.3	Requisite preparation works for installation of new appurtenances within existing chambers.	lot	56		
A322.4	Allow for any other method related charges the Bidder feels may be required.	lot	56		
i)	.....				
ii)	.....				
iii)	.....				
	<b>CLASS I: PIPEWORK - PIPES</b>				
	Supply, transport to site and store in secure place bulk water meter connector pipe.				
	<b>Plain Ended Epoxy Coated FBE Steel Pipes Pieces - PN 16 (Mark No. 6)</b>				
I43*.1	DN400mm, length 4000mm for each water meter	nr	2		
I44*.1	DN700mm, length 7000mm for each water meter	nr	2		
I44*.2	DN800mm, length 8000mm for each water meter	nr	2		
	<b>High Density Polyethylene Pipes (HDPE) - PN 10 (Mark No. 6)</b>				
I71*.1	DN90mm, length 900mm for each water meter	nr	4		
I71*.2	Ditto but DN110mm, length 1100mm	nr	48		
I71*.3	Ditto but DN160mm, length 1600mm	nr	10		
I71*.4	Ditto but DN180mm, length 1800mm	nr	4		
I72*.1	Ditto but DN200mm, length 2000mm	nr	18		
I72*.2	Ditto but DN250mm, length 2000mm	nr	16		
I73*.1	Ditto but DN315mm, length 2500mm	nr	6		
	Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 10				
	<b>Plain Ended Epoxy Coated FBE Steel Pipes Pieces - PN 16 (Mark No. 6)</b>				
I43*.2	DN400mm, length 4000mm for each water meter	nr	2		
Page total carried forward to next page					

BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
I44*.3	DN700mm, length 7000mm for each water meter	nr	2		
I44*.4	DN800mm, length 8000mm for each water meter	nr	2		
	<b>High Density Polyethylene Pipes (HDPE) - PN 10 (Mark No. 6)</b>				
I71*.5	DN90mm, length 900mm for each water meter	nr	4		
I71*.6	Ditto but DN110mm, length 1100mm	nr	48		
I71*.7	Ditto but DN160mm, length 1600mm	nr	10		
I71*.8	Ditto but DN180mm, length 1800mm	nr	4		
I72*.3	Ditto but DN200mm, length 2000mm	nr	18		
I72*.4	Ditto but DN250mm, length 2000mm	nr	16		
I73*.2	Ditto but DN315mm, length 2500mm	nr	6		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.</b>				
	<b>All flanged epoxy coated FBE steel 45° bends (Mark No. 8)</b>				
J311.1	DN80mm	nr	8		
J311.2	Ditto but DN100mm	nr	96		
J311.3	Ditto but DN150mm	nr	28		
J311.4	Ditto but DN200mm	nr	48		
J312.1	Ditto but DN250mm	nr	32		
J313.1	Ditto but DN400mm	nr	4		
J314.1	Ditto but DN700mm	nr	4		
J314.2	Ditto but DN800mm	nr	4		
	<b>Epoxy coated FBE mechanical couplings (Mark No. 1)</b>				
J351.1	DN80mm straight	nr	8		
J351.2	Ditto but DN100/110mm stepped	nr	96		
J351.3	Ditto but DN150/160mm	nr	28		
J351.4	Ditto but DN200/200mm	nr	48		
J352.1	Ditto but DN315/250mm	nr	32		
J353.1	Ditto but DN400mm	nr	4		
J354.1	Ditto but DN700mm	nr	4		
J354.2	Ditto but DN800mm	nr	4		
	<b>Epoxy coated FBE flange adaptors (Mark No. 4)</b>				
J351.5	DN80mm	nr	4		
J351.6	Ditto but DN100mm	nr	48		
J351.7	Ditto but DN150mm	nr	14		
J351.8	Ditto but DN200mm	nr	24		
Page total carried forward to next page					

BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J352.2	Ditto but DN250mm	nr	16		
J353.2	Ditto but DN400mm	nr	2		
J354.3	Ditto but DN700mm	nr	2		
J354.4	Ditto but DN800mm	nr	2		
	<b>1.2m long all flanged epoxy coated FBE steel pipes with puddle flange (Mark No. 9)</b>				
J381.1	DN80mm	nr	2		
J381.2	Ditto but DN100mm	nr	24		
J381.3	Ditto but DN150mm	nr	7		
J381.4	Ditto but DN200mm	nr	12		
J382.1	Ditto but DN250mm	nr	8		
J383.1	Ditto but DN400mm	nr	1		
J384.1	Ditto but DN700mm	nr	1		
J384.2	Ditto but DN800mm	nr	1		
	<b>1.2m long single flanged epoxy coated FBE steel spigot pipes (Mark Nos. 2 &amp; 7)</b>				
J381.5	DN80mm	nr	2		
J381.6	Ditto but with Puddle Flange	nr	2		
J381.7	DN100mm	nr	24		
J381.8	Ditto but with Puddle Flange	nr	24		
J381.9	DN150mm	nr	7		
J381.10	Ditto but with Puddle Flange	nr	7		
J381.11	DN200mm	nr	12		
J381.12	Ditto but with Puddle Flange	nr	12		
J382.2	DN250mm	nr	8		
J382.3	Ditto but with Puddle Flange	nr	8		
J383.2	DN400mm	nr	1		
J383.3	Ditto but with Puddle Flange	nr	1		
J384.3	DN700mm	nr	1		
J384.4	Ditto but with Puddle Flange	nr	1		
J384.5	DN800mm	nr	1		
J384.6	Ditto but with Puddle Flange	nr	1		
	<b>1.2m long plain ended epoxy coated FBE steel pipes (Mark No. 5)</b>				
J381.13	DN80mm	nr	2		
J381.14	Ditto but DN100mm	nr	24		
J381.15	Ditto but DN150mm	nr	7		
J381.16	Ditto but DN200mm	nr	12		
J382.4	Ditto but DN250mm	nr	8		
J383.4	Ditto but DN400mm	nr	1		
Page total carried forward to next page					

BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J384.7	Ditto but DN700mm	nr	1		
J384.8	Ditto but DN800mm	nr	1		
	<b>PN10, Sluice Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN80mm	nr	2		
J811.2	Ditto but DN100mm	nr	24		
J811.3	Ditto but DN150mm	nr	7		
J811.4	Ditto but DN200mm	nr	12		
J812.1	Ditto but DN250mm	nr	8		
J813.1	Ditto but DN400mm	nr	1		
J814.1	Ditto but DN700mm	nr	1		
J814.2	Ditto but DN800mm	nr	1		
	<b>PN10, Non-Return Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 48 with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.5	DN80mm	nr	2		
J811.6	Ditto but DN100mm	nr	24		
J811.7	Ditto but DN150mm	nr	7		
J811.8	Ditto but DN200mm	nr	12		
J812.2	Ditto but DN250mm	nr	8		
J813.2	Ditto but DN400mm	nr	1		
J814.3	Ditto but DN700mm	nr	1		
J814.4	Ditto but DN800mm	nr	1		
	<b>PN10, Smart Enabled Mechanical Water Meters</b> Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, 2 low frequency pulse emitters (index) and 1 high frequency pulse emitter (flow). Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
J91*.1	DN80mm	nr	2		
J91*.2	Ditto but DN100mm	nr	24		
J91*.3	Ditto but DN150mm	nr	7		
J91*.4	Ditto but DN200mm	nr	12		
Page total carried forward to next page					

BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>PN10, Electromagnetic Water Flow Meters</b> Electromagnetic Water Flow Meters with battery life up to 20 years, $\pm 0.4\%$ of measured value $\pm 2$ mm/s accuracy independent of fluid viscosity, density and temperature, LCD Display, Pulsed DC magnetic field for zero point stability, No pressure loss, Corrosion resistant liners for long life, Integral and remote signal converter availability, grounding rings or grounding electrode, Measurement independent of flow profile, Low-power digital microcontroller (16 bit), Digital and infrared outputs, Automatic zero-point stability, certified (by NSF, OIML and MID), Data logging, IP68 protection class. Smart enabled and AMR ready as Badger ModMag Electromagnetic Water Flow Meters or similar equivalent				
J92*.1	Ditto but DN250mm	nr	8		
J93*.1	Ditto but DN400mm	nr	1		
J94*.1	Ditto but DN700mm	nr	1		
J94*.2	Ditto but DN800mm	nr	1		
	<b>PN10, Y-Strainers</b> Strainer in cast iron (GJS 450-10)with detachable screen in stainless steel. Face-to-face dimentions according to EN 558. Both internally and externally corrosion protected with fusion bonded epoxy coating, 250 $\mu$ m blue RAL 5017, approved for drinking water.				
J91*.5	DN80mm	nr	2		
J91*.6	Ditto but DN100mm	nr	24		
J91*.7	Ditto but DN150mm	nr	7		
J91*.8	Ditto but DN200mm	nr	12		
J92*.2	Ditto but DN250mm	nr	8		
J93*.2	Ditto but DN400mm	nr	1		
J94*.3	Ditto but DN700mm	nr	1		
J94*.4	Ditto but DN800mm	nr	1		
	<u>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc. plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</u>				
	<b>All flanged epoxy coated FBE steel 45° bends (Mark No. 8)</b>				
J311.5	DN80mm	nr	8		
J311.6	Ditto but DN100mm	nr	96		
J311.7	Ditto but DN150mm	nr	28		
J311.8	Ditto but DN200mm	nr	48		
J312.2	Ditto but DN250mm	nr	36		
J313.2	Ditto but DN400mm	nr	4		
J314.3	Ditto but DN700mm	nr	4		
J314.4	Ditto but DN800mm	nr	4		
	<b>Epoxy coated FBE mechanical couplings (Mark No. 1)</b>				
J351.5	DN80mm straight	nr	8		
J351.6	Ditto but DN100/110mm stepped	nr	96		
J351.7	Ditto but DN150/160mm	nr	28		
Page total carried forward to next page					



BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J351.8	Ditto but DN200/200mm	nr	48		
J352.2	Ditto but DN315/250mm	nr	36		
J313.2	Ditto but DN400mm	nr	4		
J314.3	Ditto but DN700mm	nr	4		
J354.4	Ditto but DN800mm	nr	4		
	<b>Epoxy coated FBE flange adaptors (Mark No. 4)</b>				
J351.8	DN80mm	nr	4		
J351.10	Ditto but DN100mm	nr	48		
J351.11	Ditto but DN150mm	nr	14		
J351.12	Ditto but DN200mm	nr	24		
J352.3	Ditto but DN250mm	nr	18		
J353.3	Ditto but DN400mm	nr	2		
J354.5	Ditto but DN700mm	nr	2		
J354.6	Ditto but DN800mm	nr	2		
	<b>1.2m long all flanged epoxy coated FBE steel pipes with puddle flange (Mark No. 9)</b>				
J381.17	DN80mm	nr	2		
J381.18	Ditto but DN100mm	nr	24		
J381.19	Ditto but DN150mm	nr	7		
J381.20	Ditto but DN200mm	nr	12		
J382.4	Ditto but DN250mm	nr	9		
J383.4	Ditto but DN400mm	nr	1		
J384.7	Ditto but DN700mm	nr	1		
J384.8	Ditto but DN800mm	nr	1		
	<b>1.2m long single flanged epoxy coated FBE steel spigot pipes (Mark Nos. 2 &amp; 7)</b>				
J381.21	DN80mm	nr	2		
J381.22	Ditto but with Puddle Flange	nr	2		
J381.23	DN100mm	nr	24		
J381.24	Ditto but with Puddle Flange	nr	24		
J381.25	DN150mm	nr	7		
J381.26	Ditto but with Puddle Flange	nr	7		
J381.27	DN200mm	nr	12		
J381.28	Ditto but with Puddle Flange	nr	12		
J382.4	DN250mm	nr	8		
J382.5	Ditto but with Puddle Flange	nr	18		
J383.5	DN400mm	nr	1		
J383.6	Ditto but with Puddle Flange	nr	1		
J384.9	DN700mm	nr	1		
J384.10	Ditto but with Puddle Flange	nr	1		
Page total carried forward to next page					

BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
J384.11	DN800mm	nr	8		
J384.12	Ditto but with Puddle Flange	nr	8		
	<b>1.2m long plain ended epoxy coated FBE steel pipes (Mark No. 5)</b>				
J381.29	DN80mm	nr	2		
J381.30	Ditto but DN100mm	nr	24		
J381.31	Ditto but DN150mm	nr	7		
J381.32	Ditto but DN200mm	nr	12		
J382.5	Ditto but DN250mm	nr	8		
J383.5	Ditto but DN400mm	nr	1		
J384.9	Ditto but DN700mm	nr	1		
J384.10	Ditto but DN800mm	nr	1		
	<b>PN10, Sluice Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.9	DN80mm	nr	2		
J811.10	Ditto but DN100mm	nr	24		
J811.11	Ditto but DN150mm	nr	7		
J811.12	Ditto but DN200mm	nr	12		
J812.3	Ditto but DN250mm	nr	9		
J813.3	Ditto but DN400mm	nr	1		
J814.5	Ditto but DN700mm	nr	1		
J814.6	Ditto but DN800mm	nr	1		
	<b>PN10, Non-Return Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 48 with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.13	DN80mm	nr	2		
J811.14	Ditto but DN100mm	nr	24		
J811.15	Ditto but DN150mm	nr	7		
J811.16	Ditto but DN200mm	nr	12		
J812.4	Ditto but DN250mm	nr	8		
J813.4	Ditto but DN400mm	nr	1		
J814.7	Ditto but DN700mm	nr	1		
J814.8	Ditto but DN800mm	nr	1		
Page total carried forward to next page					

BILL No. 5 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>PN10, Smart Enabled Mechanical Water Meters</b> Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, 2 low frequency pulse emitters (index) and 1 high frequency pulse emitter (flow). Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
J91*.9	DN80mm	nr	2		
J91*.10	Ditto but DN100mm	nr	24		
J91*.11	Ditto but DN150mm	nr	7		
J91*.12	Ditto but DN200mm	nr	12		
	<b>PN10, Electromagnetic Water Flow Meters</b> Electromagnetic Water Flow Meters with battery life up to 20 years, $\pm 0.4\%$ of measured value $\pm 2$ mm/s accuracy independent of fluid viscosity, density and temperature, LCD Display, Pulsed DC magnetic field for zero point stability, No pressure loss, Corrosion resistant liners for long life, Integral and remote signal converter availability, grounding rings or grounding electrode, Measurement independent of flow profile, Low-power digital microcontroller (16 bit), Digital and infrared outputs, Automatic zero-point stability, certified (by NSF, OIML and MID), Data logging, IP68 protection class. Smart enabled and AMR ready as Badger ModMag Electromagnetic Water Flow Meters or similar equivalent				
J92*.3	Ditto but DN250mm	nr	9		
J93*.3	Ditto but DN400mm	nr	1		
J94*.5	Ditto but DN700mm	nr	1		
J94*.6	Ditto but DN800mm	nr	1		
	<b>PN10, Y-Strainers</b> Strainer in cast iron (GJS 450-10)with detachable screen in stainless steel. Face-to-face dimentions according to EN 558. Both internally and externally corrosion protected with fusion bonded epoxy coating, 250 $\mu$ m blue RAL 5017, approved for drinking water.				
J91*.13	DN80mm	nr	2		
J91*.14	Ditto but DN100mm	nr	24		
J91*.15	Ditto but DN150mm	nr	7		
J91*.16	Ditto but DN200mm	nr	12		
J92*.4	Ditto but DN250mm	nr	9		
J93*.4	Ditto but DN400mm	nr	1		
J94*.7	Ditto but DN700mm	nr	1		
J94*.8	Ditto but DN800mm	nr	1		
Page total carried forward to next page					

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SOUTH MAINLAND LOT 2A COLLECTION PAGE	
Bills	Amount (KES.)
1 Bill No. 2.1 - Line SB01	
2 Bill No. 2.2 - Line SB04	
3 Bill No. 2.3 - Line SB06	
4 Bill No. 2.4 - Line SB07	
5 Bill No. 2.5 - Line SB10	
6 Bill No. 2.6 - Line SB12	
7 Bill No. 2.7 - Line SB13	
8 Bill No. 2.8 - Line SB15	
9 Bill No. 2.9 - Line SB16	
10 Bill No. 2.10 - Line SB18	
11 Bill No. 2.11 - Line SB19	
12 Bill No. 2.12 - Line SB20	
13 Bill No. 2.13 - Line SB23	
14 Bill No. 2.14 - Line SB24	
15 Bill No. 2.15 - Line SB26	
16 Bill No. 2.16 - Line SB27	
17 Bill No. 2.17 - Line SB28	
18 Bill No. 2.18 - Line SB29	
19 Bill No. 2.19 - Line SB30	
20 Bill No. 2.20 - Line SB31	
21 Bill No. 2.21 - Line SB32	
22 Bill No. 2.22 - Line SB33	
23 Bill No. 2.23 - Line SB35	
<b>Total South Mainland 2A Primary and Secondary Mains Carried Forward to Grand Summary Page</b>	
24 Bill No. 3.1 - Short term tertiary mains	
25 Bill No. 3.2 - Short term existing tertiary mains to be replaced	
<b>Total South Mainland 2A Tertiary Mains Carried Forward to Grand Summary Page</b>	
26 Bill No. 4.1 - Supply and installation of pipes, fittings and accessories for new consumer connections	
27 Bill No. 4.2 - Reinstatement of existing consumer connections after laying of new mains	
<b>Total South Mainland 2A Consumer Connections Carried Forward to Grand Summary Page</b>	
28 Bill No. 5 - Bulk water meters	
<b>Total South Mainland 2A Bulk Water Meters Carried Forward to Grand Summary Page</b>	

BILL No. 6 - ABLUTION BLOCKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>Note: This bill is provisional and can be deleted as decided by the employer. This should have no effect on the rates of works on other bills of quantities. The ablution blocks will be constructed at various sites. The quantities given under this bill are for 1 No. ablution block and the sum is multiplied by the number of ablution blocks</b>				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Parmanent Sign Board</b>				
A324	Provide and erect signboards as detailed on standard drawings. Include for painting, decorating and anchoring of the signboard to the ground using 300mm x 300mm x 600mm deep mass concrete footing, all as detailed. <b>Note: Final wording on signboard to be decided in consultation with the Employer.</b>	Nr	1		
	<b>Provisional Sum</b>				
A42*.1	Allow a Prime Cost of KES. 130,000 for provision and installation of furniture for the Ablution Block Office, Shop and Store including cleaning Equipment.	P.C	1	130,000	130,000.00
A42*.2	Allow a Prime Cost of KES. 500,000 for use as directed by the Engineer on other works that may be unforeseen e.g. demolition of existing structures, etc.	P.C	1	500,000	500,000.00
A42*.3	Add .....% for profit, administration, attendance upon, overheads, etc. for Items 1A42*.1 and A42*.2 above.	%			
	<b>CLASS D: SITE CLEARANCE &amp; TOP SOIL STRIPPING</b>				
D11*	Clear area within the site of all grass, bushes, shrubs, hedges, grub up roots and cart away to tips as directed by the Engineer.	ha	0.0278		
D2**	Cut down trees, grub up roots and burn debris. Girth n.e. 1.0m (Provisional).	nr	1		
D4**	Excavate over site for buildings, roads, etc. Average 150mm deep to remove vegetable soil and stack part of material for use as and where directed by the Engineer. cart away surplus to tips.	m <sup>2</sup>	278		
	<b>CLASS E: EARTHWORKS</b>				
	<b>Excavation For Foundation</b> <b>The rates shall include for all strutting, shuttering, stabilising the excavation faces, and keeping the excavation free of water by pumping, bailing or other means.</b>				
E3**.1	Excavate below stripped level to formation level in common material, part backfill after construction and remainder, cart away to tips or use as fill on site, all as directed by the Engineer. Maximum depth n.e. 1.0 m	m <sup>3</sup>	75		
E3**.2	Extra over excavation for isolated piers and wall footing 0.00 - 1.50 metres deep	m <sup>3</sup>	56		
	<b>Excavation for Earth Drains (Provisional)</b>				
14.7	Excavate trapezoidal earth drains Type 1 as shown on the standard drawings to the lines and levels directed by the Engineer. Allow for trimming of sides to correct slopes and cart excavated material to tips. Depth to invert n.e. 1.0m	m	10		
14.8	-Ditto- but depth to invert n.e. 2.0m	m	5		
	<b>Extra Over Excavation in any Position For:- (Provisional)</b>				
E43*.1	Excavating in rock Class "A"	m <sup>3</sup>	43		
E43*.2	Excavating in rock Class "B"	m <sup>3</sup>	26		
E43*.3	Excavating in rock Class "C"	m <sup>3</sup>	17		
	<b>Approved Selected Filling in Foundation</b>				
E611.1	Fill and ram selected excavated materials around foundations and buildings.	m <sup>3</sup>	95		
Page total carried forward to next page					

BILL No. 6 - ABLUTION BLOCKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Approved Selected Filling in Drain</b>				
E611.2	Provide and spread 100mm of approved top soil on the base of sides of the earth drain, rake and level to the required profiles as directed by the Engineer (Provisional)	m <sup>2</sup>	20		
	<b>Approved Hardcore Filling as Described:-</b>				
E612.1	Provide and deposit approved imported hardcore in maximum 150mm thick layers in making up levels including achieving satisfactory compaction.	m <sup>3</sup>	30		
E612.2	Provide, lay and level out fine crushed stone, sand or gravel blinding 50mm thick to surface of filling, including watering and rolling to achieve satisfactory compaction.	m <sup>2</sup>	95		
	<b>Disposal of Surplus Spoil:-</b>				
E612.3	Cart away surplus excavated materials to an approved dumping site.	m <sup>3</sup>	46		
	<b>Anti-Termite Treatment in Foundation</b>				
E72*	Chemical anti-termite treatment to surface of filling with an approved insecticide.	m <sup>2</sup>	95		
	<b>Landscaping</b>				
E812.1	Spread Top Soil stacked on site (under item 1.3) in 100mm layers as directed, level and compact (light compaction) and prepare ready for grassing. Provide and plant approved grass and maintain until it takes root. The rate to include provision of manure approximate 0.01 kg per metre squared and spreading as directed by the Engineer	m <sup>2</sup>	75		
E812.2	Supply and plant approved grass on base and sides of the earth drain and maintenance until it takes root to the satisfaction of the Engineer (Provisional)	m <sup>2</sup>	20		
	<b>CLASS F: IN-SITU CONCRETE</b>				
	<b>Mass Concrete Class 15/20mm Maximum Aggregate as Described in:-</b>				
F611	50mm thick blinding under foundation concrete, column bases or over hardcore.	m <sup>2</sup>	95		
	<b>Guaranteed Strength Reinforced Concrete Class 25/20mm</b>				
F72*.1	Foundation trenches for strip footing.	m <sup>3</sup>	8		
F72*.2	Column footing	m <sup>3</sup>	4		
F72*.3	Columns	m <sup>3</sup>	2		
F72*.4	150mm thick ramp laid to slope not exceeding 15 degrees from horizontal at entrance.	m <sup>3</sup>	2		
F72*.5	Extra over concrete for tamping whilst still green to make ribbed finish.	m <sup>2</sup>	3		
F72*.6	Ring Beams	m <sup>3</sup>	3		
	<b>CLASS G: CONCRETE ANCILLARIES</b>				
	<b>Provide and Fix Shuttering Including Propping, Strutting and Striking, all as Specified</b>				
	<b>Sawn Formwork - Class F1 Finish:-</b>				
G14*.1	Vertical Sides of Strip Footing	m <sup>2</sup>	90		
G14*.2	Vertical sides of column bases	m <sup>2</sup>	15		
G14*.3	Vertical sides of columns	m <sup>2</sup>	60		
G14*.4	Ring Beams	m <sup>2</sup>	25		
Page total carried forward to next page					

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BILL No. 6 - ABLUTION BLOCKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS U: BRICKWORK, BLOCKWORK AND MASONRY</b>				
	<u>Internal Walls</u> <u>Solid Concrete Block Walling With Concrete Blocks to BS 2028, Type "A" with Minimum Crushing Strength of 7N/mm2 at 28 Days, Bedded, Jointed and Pointed in Cement Mortar (1:3):-</u>				
U111	100mm Thick walling	m <sup>2</sup>	90		
	<u>Natural Stone Block Walling, Medium Chisel Dressed, Reinforced with 20 swg Hoop Iron at Every Alternate Course, and Bedded, Jointed and Pointed in Cement Mortar (1:3):-</u>				
U121.1	200mm Walling	m <sup>2</sup>	108		
	<u>External Walls</u> <u>Selected Machine Dressed Natural Stone Block Walling, Reinforced with 20 swg Hoop Iron at every third courses, and Bedded, Jointed and Pointed in Cement Mortar (1:3):-</u>				
U121.2	200mm Thick walling	m <sup>2</sup>	172		
	<b>Labours</b>				
U17*	Extra over walling for ruled horizontal and flush vertical joints	m <sup>2</sup>	172		
	<b>CLASS V: PAINTING</b>				
	<u>Prepare and Apply Three Coats Exterior Quality Plastic Emulsion Paint:-</u>				
	<u>Externally on:-</u>				
V53*.1	Fair-faced concrete surfaces	m <sup>2</sup>	27		
	<u>Internally on:-</u>				
V53*.2	Plastered Walls	m <sup>2</sup>	343		
	<b>CLASS W: WATERPROOFING</b>				
	<b>Roof Coverings - Concrete, single lap interlocking roof tiles.</b>				
W37*.1	Roofing Tiles	m <sup>2</sup>	112		
	<b>Extra Over Roofing Tiles for</b>				
W37*.2	Hip capping including bedding and pointing in cement sand (1:3) mortar with colouring to match colour of tiles	m	40		
W37*.3	Fair raking cutting roofing tiles	m	150		
W37*.4	Fair raking cutting plain sheet roofing	m	150		
W37*.5	Polycarbonate Roofing Sheets	m <sup>2</sup>	52		
	<b>Sheet Linings Membrane</b>				
W67*	Gauge 28 galvanised plain sheets laid as underlay and Joined to rafters	m <sup>2</sup>	120		
	<b>CLASS X: MISCELLANEOUS WORK</b>				
	<b>Fencing</b>				
X134	Excavate for post holes, provide all materials and construct chain link fence on concrete posts at 3 m centres all as per details on standard drawings including straining posts at every 10 <sup>th</sup> post and additional posts at corners.	m	90		
	<b>Gates</b>				
X223	Provide all materials and construct metal gate 4.0 m wide with 1Nr 915 mm wide pedestrians gate including 4Nr pillars all as detailed on standard drawings.	Nr	1		
Page total carried forward to next page					

BILL No. 6 - ABLUTION BLOCKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS</b>				
	<b>Timber Door Frame</b>				
	<u>Wrot Cypress Door Frames size 100 x 50mm with a suitable rebate to receive hinged door panel, including suitable mild steel clamps fixed to back of frame and fixing to door opening size and all necessary woodwork finishes (prepare, knot, prime, stop and apply two undercoats and one finishing coat hard gloss paint to woodwork):-</u>				
Z313.1	Frame to fit door opening 800mm wide x 2100mm high.	Nr	8		
Z313.2	Frame to fit door opening 900mm wide x 2100mm high.	Nr	3		
	<b>Timber Doors</b>				
	<u>Supply and Fix 50mm Thick Prime Grade Cypress Panelled Door With 50 x 100mm Stiles and Top Rails, 50 x 150mm Middle and Bottom Rails and Infill Panels in 50 x 100mm T &amp; G battens. Rate to include for 3 Nr 100mm steel heavy duty washered butt hinges, three lever mortice lock as "Union Ref:2237" with a set of aluminium lever handles as "Union" Ref.681-06-02 and rubber door stop and three coats of gloss paint complete with bedding and pointing around frames in cement mortar. (See Door Details in Standard Drawings):-</u>				
Z313.3	Door size 700 x 2080 mm high	Nr	8		
Z313.4	Door size 800 x 2080 mm high	Nr	3		
Z313.5	Door size 900 x 2080 mm high	Nr	4		
Z313.6	Supply and fix Stainless steel buffer coat hooks	Nr	15		
Z313.7	Supply and fix 100mm D-pull handles	Nr	15		
	<b>Metal Windows</b>				
	<u>Supply and Fix the following Standard Section Steel Casement Windows, including 4mm Thick Clear Sheet Glass glazed to Steel Casements with putty, complete with opening accessories, including building in lugs to jambs and head and water-proofing and filling around opening with approved compound; and including burglar-proofing fabricated from 12 x 12mm mild steel square bars at 150mm centres vertically and 150mm horizontally and fixed internally to surrounding wall with 12mm mild steel fish-tailed lugs at maximum 600mm centres; all finished with three coats oil paint, :-</u>				
Z321.1	797 x 1597mm steel casement window with upper part having 1 No. top-hung ventilator, and lower half having 1 No. side-hung panel opening outwards.	Nr	1		
Z321.2	597 x 597mm steel casement window with single top hung panel, opening outwards.	Nr	10		
Z321.3	1197 x 597mm Steel casement window in 2 equal panels with 2 No. top hung panels, opening outwards.	Nr	4		
	<b>Pressed Metal Louvre Doors</b>				
	<u>Supply and Fix the following Pressed Metal Louvre Doors with 100 x 25mm Stiles and Top &amp; Bottom Rails, 150 x 25mm Middle Rail and 50 x 25mm Metal Infill Louvres and 100 x 25mm Pressed Metal Frames, Including Hinges, Pad Bolts and Tower Bolts. All To Manufacturer's Details, with one coat lead oxide primer complete with three lever mortice lock including bedding and pointing around frames in cement mortar.</u>				
Z323.1	Single door size 900 x 2400mm high (D2c)	Nr	1		
Page total carried forward to next page					

BILL No. 6 - ABLUTION BLOCKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Sliding Metal Doors</b> Supply and Fix the following Pressed Metal Sliding Doors 100 x 50mm Stiles and Top Rails, 150 x 50mm Middle and Bottom Rails and appropriate intermediate supports. Rate includes the top and bottom sliding rail and wheels or approved equivalent mechanism. All To Manufacturer's Details, with three coats gloss paint complete with Locking and Opening Accessories Including Bedding and Pointing Around Frames in Cement Mortar.				
Z323.2	Single door size 1800 x 2400mm high	Nr	2		
	<b>Roll Up Metal Door</b> Supply and fix metal roll up door, with curtain assembled from slats, roll-formed from gauge 24 galvanized steel strip. The bottom bar shall be a T-shape aluminium extrusion attached to the bottom of the curtain with a weather strip provided on the bottom of the bar. Door Guides shall be formed from steel channels sized to retain curtain, bolted to steel wall angles sized to support door. Guides shall be assembled and attached to wall with approved bolts not more than 600mm centres. Removable curtains tops shall be provided. Hood shall be formed from Gauge 24 steel sheet with top and bottom bars to reduce deflection. Operation of door shall be by pushing up through a chain host. Locking shall be by slide locks on bottom bar.				
Z323.3	Single door size 2165 x 1200mm high NOTE: Contractor to submit to the Engineer the Door details for approval.	Nr	1		
	<b>Ceiling</b> <u>12mm Thick Approved Plasterboard in Sheets Size 2400 x 1200mm Fixed to and Including 50 x 50mm Sawn Cypress Grade 2 Battens at 600mm Centres in Both Directions Complete with Gauge Jointing Material</u>				
Z45*.1	Horizontal ceiling fixed to underside of trusses	m <sup>2</sup>	108		
Z45*.2	12mm Cornice 50mm high, plugged	m	183		
Z45*.3	Extra over ceiling lining for forming removable access trap door size 600 x 600mm with 100 x 38 mm sawn treated cypress trimming joists between tie beams, 120 x 20mm (finished ) wrought cypress frame all round and 20mm blockboard removable panel set loose on top of framing	Nr	2		
	<b>Surface finishings</b> <u>12.5mm Thick Cement and Sand Render as Described Externally on :-</u>				
Z413.1	Blockwork and concrete surfaces	m <sup>2</sup>	27		
	<b>Screeds</b> <u>Bonded cement and sand (1:4) screed bed in one coat, well bonded to concrete base as described:-</u>				
Z411.2	38mm Thick screed laid level to receive floor tiling (measured separately)	m <sup>2</sup>	96		
Z411.3	13mm Thick backing with approved plasticiser to receive wall tiles or floor tiles laid as skirting (measured separately)	m <sup>2</sup>	21		
	<u>Bonded cement and sand (1:4) screed bed in one coat with approved hardener incorporated in the mix, well bonded to concrete base as described:-</u>				
Z413.1	12mm (minimum) Thick screed laid level to receive ceramic wall tiles (measured separately).	m <sup>2</sup>	143		
	<b>12.5mm Thick Gauged Cement Plaster as Described Internally on :-</b>				
Z413.2	Blockwork and concrete surfaces	m <sup>2</sup>	343		
Page total carried forward to next page					

BILL No. 6 - ABLUTION BLOCKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Ceramic Floor Tiling</b>				
	<b>Coloured Ceramic Floor Tiles from Saj Co. as supplied by M/s Tile &amp; Carpet Centre. or other approved equivalent</b>				
Z421.1	300 x 300mm Tiles laid on screed (measured separately) and joints filled in approved filler to match colour of tiles	m <sup>2</sup>	96		
Z421.2	Ditto but laid as skirting 100mm high	m	21		
	<b>Wall Tiles</b>				
	<b>Coloured Ceramic Wall Tiles from Saj Co. as supplied by M/s Tile &amp; Carpet Centre. or other approved equivalent</b>				
Z423.1	200 x 300mm Thick coloured wall tiles laid on backing (measured separately) and joints filled in approved filler to match colour of tiles	m <sup>2</sup>	143		
	<b>Wall Tiles Sundries</b>				
Z423.2	PVC tiling edge to external corners of tiles (Provisional)	m	100		
	<b>Builders Work in Connection with Sanitary Fittings</b>				
	<b>Allow for cutting and leaving all necessary holes, notches, mortices, sinking's and chases both in the structure and its finishes and for all making good in connection with the following (All Provisional): -</b>				
Z53*.1	White vitreous China squatting / Sit level wash-down W.C. suite complete.	Nr	5		
Z53*.2	Hand held Bidet Shower complete	Nr	5		
Z53*.3	White vitreous China washbasin complete	Nr	8		
Z53*.4	Shower unit complete	Nr	3		
Z53*.5	Mirror size 3000 x 600mm	Nr	3		
Z53*.6	Toilet roll holder	Nr	5		
Z53*.7	Recessed soap tray	Nr	3		
Z53*.8	Chrome plated shower rail size 25mm diameter x 900mm long complete with fixtures	Nr	3		
Z53*.9	Electronic hand dryer	Nr	3		
Z53*.10	Wall mounted collapsible seat in washroom	Nr	3		
Z53*.11	Wall mounted collapsible baby changing platform	Nr	3		
	<b>Sanitary Appliances</b>				
	<b>All sanitary appliances shall be supplied and installed as complete units with all fittings, fixtures , pipework to manholes, waste grits &amp; traps and shall be as specified or approved equal. Rate to include for all 25 - 50mm dia pipework (PPR and GI pipes), Gate Valves and Taps ( Pegler type, English) and connection to water supply and connection to foul water drainage System</b>				
Z53*.12	White vitreous China squatting / Sit level wash down Water Closet suit complete with high level 6 litre cistern and flush pipe.	Nr	5		
Z53*.13	1.5m long polished chrome flexible hose,20mm dia. Handheld stainless steel bidet shower with flexible couplinq.	Nr	5		
Z53*.14	Urinal bowl with urinal automatic flushing system complete with cistern and flush pipes.	Nr	2		
Z53*.15	Wall mounted washbasin as "Twyford's Entice 575" with one tap & 32mm waste grit "basin mixer as "Europath Astra" with aerator & pop -up waste."32mm CP bottle trap with tail pipe, cap-nut & wall flange as "Cobra" 340 & C-342/1/2/3 or approved equivalent	Nr	8		
Page total carried forward to next page					

BILL No. 6 - ABLUTION BLOCKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum carried forward from previous page</b>					
Z53*.16	Shower unit complete with shower head and all taps and connections to water tank and connection to foul water drainage.	Nr	3		
Z53*.17	White vitreous China 1000mm x 1000mm basin for shower room.	Nr	3		
Z53*.18	Mirror size 3000 x 600mm plugged and screwed to wall with chromium plated domed screws complete with 5mm thick foam back rest.	Nr	3		
Z53*.19	Drier shall be operated by infrared sensor which switches on when hands are placed under the hot air outlet. The machine switches off when the hands are withdrawn or after 40secs. It shall be capable of delivering 36 Litres/sec of warm air at 50° C above ambient temperature at an average speed of 17 m/s and a relative drying time of 35 seconds with a power supply of 2.2Kw 240V,50Hz."Starmix" Automatic Hand Dryer Model No.T50E.or approved equivalent.	Nr	3		
Z53*.20	Wall mounted collapsible 890 x 560mm Baby changing station. Body formed from injection-moulded polypropylene with metal mounting chassis. Reinforced steel on steel hinge mechanism for opening and collapsing. Changing surface area should be contoured and complete with nylon safety strap and bar hooks.	Nr	3		
Z53*.21	Sanitary waste disposal bin with a "no-touch" option, Capacity 22L for the Ladies' Washrooms.	Nr	4		
<b>Foul/Waste Drainage</b>					
Z53*.22	Excavate pipe trench in ordinary ground for 160mm diameter pipe n.e. 2m	m	25		
Z53*.23	Provide lay and joint uPVC pipes golden brown Class 41 160mm diameter. Include for all fittings and connections to inspection chambers.	m	25		
Z53*.24	Allow a lump sum of KES. 100,000 for Plumbing works for the building. This include supply and fixing of pipes, fitting, taps etc.	P.C	1	100,000	100,000.00
Z53*.25	Add .....% for profit, administration, attendance upon, overheads, etc. for Items Z53*.24 above.	%			
<b>Inspection Chambers</b>					
Z53*.26	Excavate for, provide all materials, special shuttering etc. and construct 600 x 450mm internal dimensions in situ concrete inspection chambers on sewers diameter 160mm.Include for building in pipes, forming benching to falls, medium duty fibre reinforced frame and cover, depth n.e. 1.5m.	Nr	7		
<b>Septic Tank</b>					
Z53*.27	Provide all materials and construct a 15.9m³ single chamber Septic Tank including manholes, covers, pipework, radial drains, connections etc. as per details shown on Standard Drawings.	Nr	1		
<b>Water Supply</b>					
Z53*.28	Allow a P.C Sum of KES. 30,000 for Connection of Ablution Block to existing water supply system including provision of meters etc.	P.C	1	30,000	30,000.00
Z53*.29	Add .....% for profit, administration, attendance upon, overheads, etc. for Items Z53*.28 above.	%			
Z53*.30	For supply and installation of the 1 Nr 5000 litres capacity "Roto" or approved water tank complete with provisions for inlet pipe, outlet pipe, overflow pipe and drain pipe to site drainage and requisite chambers including a 4m high galvanised steel tower. The rate to also include for ball valve 32mm diameter medium pressure ball valve as "PORTSMOUTH" type or approved equivalent with brass stem and plastic float, screwed to threaded socket of tank including union.	set	1		
<b>Page total carried forward to next page</b>					

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BILL No. 7.1 - LINE WM03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	200.00		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	200.00		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.04		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1.00		
D21*.2	Girth: 1.0 m - 2 m	nr	1.00		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN160mm	m	200		
I71*.2	DN160mm, depth not exceeding 1.5m	m	200		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.</b>				
	<b>Junctions and branches</b>				
J321.1	DN150mm x 150mm, all flanged tee	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN150mm straight coupling	nr	2		
J351.2	DN160/150mm stepped coupling	nr	1		
Page total carried forward to next page					

BILL No. 7.1 - LINE WM03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J351.3	DN150mm flange adaptor	nr	1		
	<b>Straight specials</b>				
J381.1	DN150mm, 1.2m long flanged spigot pipe	nr	2		
J381.2	DN150mm, 1.2m long plain ended pipe with puddle flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN160mm, 11.25°	nr	2		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN150mm all flanged sluice valve, PN16	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Junctions and branches</b>				
J321.2	DN150mm x 150mm, all flanged tee	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.4	DN150mm straight coupling	nr	2		
J351.5	DN160/150mm stepped coupling	nr	1		
J351.6	DN150mm flange adaptor	nr	1		
	<b>Straight specials</b>				
J381.3	DN150mm, 1.2m long flanged spigot pipe	nr	2		
J381.4	DN150mm, 1.2m long plain ended pipe with puddle flange	nr	1		
	<b>HDPE Bends</b>				
J611.2	DN160mm, 11.25°	nr	2		
	<b>Valves and penstocks</b>				
J811.2	DN150mm all flanged sluice valve, PN16	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	1		
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BILL No. 7.1 - LINE WM03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	2		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	20		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	20		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	2		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	94		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	19		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	7		
Page total carried forward to next page					

BILL No. 7.1 - LINE WM03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	70		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	50		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	70		
L53*	Ditto but imported selected fill.	m	30		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	7		
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BILL No. 7.2 - LINE WM05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J322.1	Ditto but 250mm x 100mm	nr	3		
J323.1	Ditto but 300mm x 50mm	nr	1		
J323.2	Ditto but 300mm x 80mm	nr	2		
J323.3	Ditto but 350mm x 250mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	8		
J351.2	Ditto but 150mm	nr	2		
J353.1	Ditto but 350mm	nr	2		
J351.3	DN110/100mm stepped coupling	nr	3		
J352.1	Ditto but 315/250mm	nr	7		
J352.2	Ditto but 300/300mm	nr	8		
J351.4	DN80mm flange adaptor	nr	4		
J351.5	Ditto but 100mm	nr	3		
J351.6	Ditto but 150mm	nr	2		
J352.3	Ditto but 250mm	nr	4		
J352.4	Ditto but 300mm	nr	4		
J353.2	Ditto but 350mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 100mm, 0.5m long	nr	1		
J382.1	Ditto but 250mm, 1.2m long	nr	3		
J382.2	Ditto but 300mm, 1.2m long	nr	4		
J383.1	Ditto but 350mm, 1.2m long	nr	1		
J381.3	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.4	Ditto but 150mm, 1.2m long	nr	1		
J382.3	Ditto but 250mm, 1.2m long	nr	4		
J382.4	Ditto but 300mm, 1.2m long	nr	4		
J383.2	Ditto but 350mm, 1.2m long	nr	1		
	<b>HDPE Bends</b>				
J661.1	DN160mm, 90° Bend, PN12.5 (for washouts)	nr	2		
J661.2	Ditto but 45°	nr	1		
J613.1	DN315mm, 11.25°	nr	4		
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BILL No. 7.2 - LINE WM05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J613.2	Ditto but 22.5°	nr	5		
J613.3	Ditto but 30°	nr	2		
J613.4	Ditto but 45°	nr	4		
J613.5	Ditto but 60°	nr	1		
J613.6	Ditto but 90°	nr	1		
<b>Valves and penstocks</b>					
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN12.5	nr	1		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 100mm	nr	3		
J811.4	Ditto but 150mm	nr	1		
J812.1	Ditto but 250mm	nr	4		
J812.2	Ditto but 300mm	nr	2		
J813.1	Ditto but 350mm	nr	1		
<b>Air Valves</b>					
J861*.1	DN50mm reinforced polyamide combination air valve, PN12.5, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.1	DN150mm flap valve, PN16	nr	1		
<b>Bulk Water Meters</b>					
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'wolman' water meters, PN16	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	2		
<b>Hydrants</b>					
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
<b>Bends</b>					
J311.2	DN80mm, 90° Bend	nr	2		
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BILL No. 7.2 - LINE WM05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
<b>Junctions and branches</b>					
J322.2	Ditto but 250mm x 100mm	nr	3		
J323.5	Ditto but 300mm x 50mm	nr	1		
J323.6	Ditto but 300mm x 80mm	nr	2		
J323.7	Ditto but 350mm x 250mm	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.7	DN80/90mm stepped couplinq	nr	8		
J351.8	Ditto but 150mm	nr	2		
J353.3	Ditto but 350mm	nr	2		
J351.9	DN110/100mm stepped coupling	nr	3		
J352.5	Ditto but 315/250mm	nr	7		
J352.6	Ditto but 300/300mm	nr	8		
J351.10	DN80mm flange adaptor	nr	4		
J351.11	Ditto but 100mm	nr	3		
J351.12	Ditto but 150mm	nr	2		
J352.7	Ditto but 250mm	nr	4		
J352.8	Ditto but 300mm	nr	4		
J353.4	Ditto but 350mm	nr	1		
<b>Straight specials</b>					
J381.5	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.6	Ditto but 100mm, 0.5m long	nr	1		
J382.5	Ditto but 250mm, 1.2m long	nr	3		
J382.6	Ditto but 300mm, 1.2m long	nr	4		
J383.3	Ditto but 350mm, 1.2m long	nr	1		
J381.7	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.8	Ditto but 150mm, 1.2m long	nr	1		
J382.7	Ditto but 250mm, 1.2m long	nr	4		
J382.8	Ditto but 300mm, 1.2m long	nr	4		
J383.4	Ditto but 350mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J661.3	DN160mm, 90° Bend, PN12.5 (for washouts)	nr	2		
J661.4	Ditto but 45°	nr	1		
J613.7	DN315mm, 11.25°	nr	4		
J613.8	Ditto but 22.5°	nr	5		
J613.9	Ditto but 30°	nr	2		
J613.10	Ditto but 45°	nr	4		
J613.11	Ditto but 60°	nr	1		
J613.12	Ditto but 90°	nr	1		
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BILL No. 7.2 - LINE WM05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
J811.5	DN50mm all flanged sluice valve, PN16	nr	1		
J811.6	Ditto but 80mm	nr	2		
J811.7	Ditto but 100mm	nr	3		
J811.8	Ditto but 150mm	nr	1		
J812.3	Ditto but 250mm	nr	4		
J812.4	Ditto but 300mm	nr	2		
J813.2	Ditto but 350mm	nr	1		
	<b>Air Valves</b>				
J861*.2	DN50mm reinforced polyamide combination air valve, PN12.5, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.2	DN150mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Ditto but internal dimensions 1500mm x 1200mm.	nr	7		
K21*.2	Ditto but internal dimensions 1800mm x 1800mm.	nr	4		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	30		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
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BILL No. 7.2 - LINE WM05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	29		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	636		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	131		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	49		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN315mm HDPE pipe and a DN400mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	45		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	476		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
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BILL No. 7.2 - LINE WM05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	476		
L53*	Ditto but imported selected fill.	m	204		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	38		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	13		
L7**.3	Ditto but 0.2 - 0.5 m <sup>3</sup>	nr	11		
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BILL No. 7.3 - LINE WM07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,238		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,238		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.25		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN90mm for washouts	m	25		
I71*.2	DN160mm	m	600		
I71*.3	DN200mm	m	638		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.4	DN90mm for washouts	m	25		
I71*.5	DN160mm	m	600		
I71*.6	DN200mm	m	638		
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BILL No. 7.3 - LINE WM07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	1		
J321.2	Ditto but 150mm x 150mm	nr	1		
J321.3	Ditto but 200mm x 25mm	nr	2		
J321.4	Ditto but 200mm x 80mm	nr	3		
J321.5	Ditto but 200mm x 100mm	nr	1		
J321.6	Ditto but 200mm x 150mm	nr	2		
J322.1	Ditto but 350mm x 150mm	nr	1		
J322.2	Ditto but 350mm x 300mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.7	DN200mm x 100mm	nr	1		
	<b>Tapers</b>				
J333.1	DN350mm x 200mm, all flanged concentric taper	nr	1		
J331.1	Ditto but 200mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	12		
J351.2	Ditto but 100/110mm	nr	3		
J351.3	Ditto but 150/160mm	nr	2		
J353.1	Ditto but 200	nr	7		
J353.2	Ditto but 350mm	nr	1		
J351.4	DN80mm flange adaptor	nr	6		
J351.5	Ditto but 100mm	nr	1		
J351.6	Ditto but 150mm	nr	5		
J353.3	Ditto but 200mm	nr	1		
J353.4	Ditto but 300mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN200mm, 1.2m long all flanged pipe with puddle flange	nr	9		
J381.2	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	6		
J381.3	Ditto but 100mm, 0.5m long	nr	1		
J381.4	Ditto but 150mm, 1.2m long	nr	1		
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BILL No. 7.3 - LINE WM07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J383.1	Ditto but 200mm, 1.2m long	nr	12		
J383.2	Ditto but 350mm, 2.0m long	nr	1		
J381.5	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.6	Ditto but 100mm, 1.2m long	nr	1		
J381.7	Ditto but 150mm, 1.2m long	nr	7		
J383.3	Ditto but 200mm, 1.2m long	nr	8		
J383.4	Ditto but 300mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J611.1	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN160mm, 11.25°	nr	3		
J611.4	DN200mm, 11.25°	nr	5		
J611.5	Ditto but 22.5°	nr	2		
<b>Valves and penstocks</b>					
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	1		
J811.2	Ditto but 80mm	nr	3		
J811.3	Ditto but 100mm	nr	2		
J811.4	Ditto but 150mm	nr	4		
J813.1	Ditto but 300mm	nr	1		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Flap valves</b>					
J88*.1	DN100mm flap valve, PN16	nr	1		
<b>Bulk Water Meters</b>					
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	3		
<b>Page total carried forward to next page</b>					

BILL No. 7.3 - LINE WM07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	Hydrants				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	Bends				
J311.2	DN80mm, 90° Bend	nr	3		
	Junctions and branches				
J321.8	DN100mm x 50mm, all flanged tee	nr	1		
J321.9	Ditto but 150mm x 150mm	nr	1		
J321.10	Ditto but 200mm x 25mm	nr	2		
J321.11	Ditto but 200mm x 80mm	nr	3		
J321.12	Ditto but 200mm x 100mm	nr	1		
J321.13	Ditto but 200mm x 150mm	nr	2		
J322.3	Ditto but 350mm x 150mm	nr	1		
J322.4	Ditto but 350mm x 300mm	nr	1		
	All flanged level invert tee (for washouts)				
J321.14	DN200mm x 100mm	nr	1		
	Tapers				
J333.2	DN350mm x 200mm, all flanged concentric taper	nr	1		
J331.2	Ditto but 200mm x 150mm	nr	1		
	Adaptors/Couplings/Stepped couplings				
J351.7	DN80/90mm stepped couplinq	nr	12		
J351.8	Ditto but 100/110mm	nr	2		
J351.9	Ditto but 150/160mm	nr	1		
J353.5	Ditto but 200	nr	1		
J353.6	Ditto but 350mm	nr	1		
J351.10	DN80mm flange adaptor	nr	6		
J351.11	Ditto but 100mm	nr	1		
J351.12	Ditto but 150mm	nr	5		
J353.7	Ditto but 200mm	nr	1		
J353.8	Ditto but 300mm	nr	1		
	Straight specials				
J381.8	DN200mm, 1.2m long all flanged pipe with puddle flange	nr	9		
J381.9	DN80mm, 1.2m long flanged spiqot pipe with puddle flange	nr	6		
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BILL No. 7.3 - LINE WM07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J381.10	Ditto but 100mm, 0.5m long	nr	1		
J381.11	Ditto but 150mm, 1.2m long	nr	1		
J383.5	Ditto but 200mm, 1.2m long	nr	12		
J383.6	Ditto but 350mm, 2.0m long	nr	1		
J381.12	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.13	Ditto but 100mm, 1.2m long	nr	1		
J381.14	Ditto but 150mm, 1.2m long	nr	7		
J383.7	Ditto but 200mm, 1.2m long	nr	8		
J383.8	Ditto but 300mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J611.6	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.7	Ditto but 45°	nr	1		
J611.8	DN150mm, 11.25°	nr	3		
J611.9	DN200mm, 11.25°	nr	5		
J611.10	Ditto but 22.5°	nr	2		
<b>Valves and penstocks</b>					
J811.6	DN50mm all flanged sluice valve, PN16	nr	1		
J811.7	Ditto but 80mm	nr	3		
J811.8	Ditto but 100mm	nr	2		
J811.9	Ditto but 150mm	nr	4		
J813.2	Ditto but 300mm	nr	1		
<b>Air Valves</b>					
J861*2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Flap valves</b>					
J88*2	DN100mm flap valve, PN16	nr	1		
<b>Bulk Water Meters</b>					
J91*4	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*5	DN80mm flanged Y-type strainers, PN16	nr	3		
<b>Hydrants</b>					
J91*6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
<b>Page total carried forward to next page</b>					

BILL No. 7.3 - LINE WM07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries  <b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	14		
K21*.2	Ditto but internal dimensions 1800mm x 1800mm.	nr	1		
K21*.3	Ditto but internal dimensions 2100mm x 2100mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	10		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	22		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
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BILL No. 7.3 - LINE WM07					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	579		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	119		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	45		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN200mm HDPE pipe and a DN300mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	45		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	433		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	30		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	433		
L53*	Ditto but imported selected fill.	m	186		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete. volume n.e 0.1m3	nr	45		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	10		
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BILL No. 7.4 - LINE WM08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	185		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	185		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.04		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN110mm	m	185		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.2	DN110mm, depth not exceeding 1.5m	m	185		
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BILL No. 7.4 - LINE WM08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Junctions and branches</b>				
J321.1	DN100mm x 80mm, all flanged tee	nr	1		
J321.2	Ditto but 100mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN75/80mm stepped coupling	nr	1		
J351.2	Ditto but 110/100mm	nr	3		
J351.3	DN80mm flange adaptor	nr	1		
J351.4	Ditto but 100mm	nr	2		
	<b>Straight specials</b>				
J381.1	DN100mm, 1.2m long single flanged spigot pipe with puddle flange	nr	1		
J381.2	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.3	Ditto but 100mm	nr	2		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN80mm all flanged sluice valve, PN16	nr	1		
J811.2	Ditto but 100mm	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Junctions and branches</b>				
J321.3	DN100mm x 80mm, all flanged tee	nr	1		
J321.4	Ditto but 100mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN75/80mm stepped coupling	nr	1		
J351.6	Ditto but 110/100mm	nr	3		
J351.7	DN80mm flange adaptor	nr	1		
J351.8	Ditto but 100mm	nr	1		
	<b>Straight specials</b>				
J381.4	DN100mm, 1.2m long flanged spigot pipe	nr	3		
J381.5	DN80mm, 1.2m long plain ended pipe	nr	1		
J381.6	Ditto but 100mm	nr	1		
Page total carried forward to next page					

BILL No. 7.4 - LINE WM08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
J811.3	DN80mm all flanged sluice valve, PN16	nr	1		
J811.4	Ditto but 100mm	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	2		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	2		
Page total carried forward to next page					

BILL No. 7.4 - LINE WM08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	90		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	20		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	10		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	65		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	65		
L53*	Ditto but imported selected fill.	m	28		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	5		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 7.5 - LINE WM11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	460		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	460		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.09		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN110mm	m	460		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	12		
I71*.4	DN110mm, depth not exceeding 1.5m	m	245		
I71*.5	Ditto but depth exceeding 1.5m	m	215		
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BILL No. 7.5 - LINE WM11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	1		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.4	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	4		
J351.3	DN110/100mm stepped coupling	nr	6		
J351.4	DN50mm flange adaptor	nr	2		
J351.5	Ditto but 80mm	nr	2		
J351.6	Ditto but 100mm	nr	3		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 50mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	3		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.5	Ditto but 80mm, 1.2m long	nr	2		
J381.6	Ditto but 100mm, 1.2m long	nr	3		
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 22.5°	nr	2		
J611.4	Ditto but 30°	nr	1		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 80mm	nr	1		
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BILL No. 7.5 - LINE WM11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J811.3	Ditto but 100mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'wolman' water meters, PN16	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.5	DN50mm x 50mm. all flanged tee	nr	1		
J321.6	Ditto but 100mm x 25mm	nr	1		
J321.7	Ditto but 100mm x 80mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.8	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN50mm straight coupling	nr	2		
J351.8	DN80/90mm stepped coupling	nr	4		
J351.9	DN110mm stepped coupling	nr	6		
J351.10	DN50mm flange adaptor	nr	2		
J351.11	Ditto but 80mm	nr	2		
J351.12	Ditto but 100mm	nr	3		
	<b>Straight specials</b>				
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.8	Ditto but 100mm, 0.5m long	nr	1		
J381.9	Ditto but 100mm, 1.2m long	nr	3		
Page total carried forward to next page					

BILL No. 7.5 - LINE WM11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.11	Ditto but 80mm, 1.2m long	nr	2		
J381.12	Ditto but 100mm, 1.2m long	nr	3		
<b>HDPE Bends</b>					
J611.5	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.6	Ditto but 45°	nr	1		
J611.7	DN110mm, 22.5°	nr	2		
J611.8	Ditto but 30°	nr	1		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN16	nr	2		
J811.5	Ditto but 80mm	nr	1		
J811.6	Ditto but 100mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN100mm flap valve, PN16	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	1		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	5		
<b>Crossings</b>					
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	2		
<b>Page total carried forward to next page</b>					



BILL No. 7.5 - LINE WM11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	20		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	8		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	220		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	50		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	20		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN100mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	10		
Page total carried forward to next page					

BILL No. 7.5 - LINE WM11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	161		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	40		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	161		
L53*	Ditto but imported selected fill.	m	69		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	23		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	13		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	3,097		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	3,097		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.62		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN90mm for washouts	m	60		
I71*.2	DN160mm	m	1,507		
I71*.3	DN200mm	m	1,590		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.4	DN90mm for washouts	m	60		
I71*.5	DN160mm	m	1,507		
I71*.6	DN200mm	m	1,590		
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BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	7		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	5		
J321.2	Ditto but 150mm x 25mm	nr	1		
J321.3	Ditto but 150mm x 80mm	nr	3		
J321.4	Ditto but 150mm x 100mm	nr	1		
J321.5	Ditto but 200mm x 25mm	nr	1		
J321.6	Ditto but 200mm x 80mm	nr	4		
J321.7	Ditto but 200mm x 100mm	nr	1		
J321.8	Ditto but 200mm x 150mm	nr	1		
J323*.1	Ditto but 400mm x 200mm	nr	1		
J323*.2	Ditto but 600mm x 400mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.7	DN150mm x 100mm	nr	3		
J321.8	Ditto but 200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.1	DN200mm x 150mm, all flanged concentric taper	nr	1		
J333.1	Ditto but 400mm x 200mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	28		
J353*.1	Ditto but 600mm	nr	2		
J351.2	DN 110/100mm stepped coupling	nr	7		
J351.3	Ditto but 160/150mm	nr	18		
J351.4	Ditto but 200/200mm	nr	12		
J351.5	DN80mm flange adaptor	nr	14		
J351.6	Ditto but 100mm	nr	5		
J351.7	Ditto but 150mm	nr	7		
J351.8	Ditto but 200mm	nr	8		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	14		
J381.2	Ditto but 100mm, 0.5m long	nr	5		
J381.3	Ditto but 100mm, 1.2m long	nr	5		
J381.4	Ditto but 150mm, 1.2m long	nr	7		
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BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J381.5	Ditto but 200mm, 1.2m long	nr	8		
J383*.1	Ditto but 600mm, 1.2m long	nr	1		
J381.6	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	14		
J381.7	Ditto but 100mm, 1.2m long	nr	5		
J381.8	Ditto but 150mm, 1.2m long	nr	5		
J381.9	Ditto but 200mm, 1.2m long	nr	7		
J381.10	Ditto but 200mm, 1.2m long	nr	8		
J383*.2	Ditto but 600mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J611.1	DN100mm, 90° Bend, PN12.5 (for washouts)	nr	10		
J611.2	Ditto but 45°	nr	5		
J611.3	DN160mm, 11.25°	nr	7		
J611.4	Ditto but 22.5°	nr	4		
J611.5	Ditto but 30°	nr	3		
J611.6	Ditto but 45°	nr	1		
J611.7	Ditto but 60°	nr	1		
J611.8	DN200mm, 11.25°	nr	3		
J611.9	Ditto but 22.5°	nr	2		
J611.10	Ditto but 30°	nr	3		
J611.11	Ditto but 45°	nr	1		
J611.12	Ditto but 60°	nr	1		
<b>Valves and penstocks</b>					
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	5		
J811.2	Ditto but 80mm	nr	7		
J811.3	Ditto but 100mm	nr	2		
J811.4	Ditto but 150mm	nr	1		
J811.5	Ditto but 200mm	nr	2		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	4		
<b>Page total carried forward to next page</b>					

BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN16	nr	5		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	7		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	7		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	7		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	7		
	<b>Junctions and branches</b>				
J321.9	DN100mm x 50mm, all flanged tee	nr	5		
J321.10	Ditto but 150mm x 25mm	nr	1		
J321.11	Ditto but 150mm x 80mm	nr	3		
J321.12	Ditto but 150mm x 100mm	nr	1		
J321.13	Ditto but 200mm x 25mm	nr	1		
J321.14	Ditto but 200mm x 80mm	nr	4		
J321.15	Ditto but 200mm x 100mm	nr	1		
J321.16	Ditto but 200mm x 150mm	nr	1		
J323*.3	Ditto but 400mm x 200mm	nr	1		
J323*.4	Ditto but 600mm x 400mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.16	DN150mm x 100mm	nr	3		
J321.17	Ditto but 200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.2	DN200mm x 150mm, all flanged concentric taper	nr	1		
J333.2	Ditto but 400mm x 200mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.9	DN80/90mm stepped coupling	nr	28		
J351.10	Ditto but 600mm	nr	2		
J353*.2	DN 110/100mm stepped coupling	nr	7		
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BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J351.11	Ditto but 160/150mm	nr	18		
J351.12	Ditto but 200/200mm	nr	12		
J351.13	DN80mm flange adaptor	nr	14		
J351.14	Ditto but 100mm	nr	5		
J351.15	Ditto but 150mm	nr	7		
J351.16	Ditto but 200mm	nr	8		
<b>Straight specials</b>					
J381.11	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	14		
J381.12	Ditto but 100mm, 0.5m long	nr	5		
J381.13	Ditto but 100mm, 1.2m long	nr	5		
J381.14	Ditto but 150mm, 1.2m long	nr	7		
J381.15	Ditto but 200mm, 1.2m long	nr	8		
J383*.2	Ditto but 600mm, 1.2m long	nr	1		
J381.16	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	14		
J381.17	Ditto but 100mm, 1.2m long	nr	5		
J381.18	Ditto but 150mm, 1.2m long	nr	5		
J381.19	Ditto but 200mm, 1.2m long	nr	7		
J381.20	Ditto but 200mm, 1.2m long		8		
J383*.3	Ditto but 600mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J611.13	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	10		
J611.14	Ditto but 45°	nr	5		
J611.15	DN160mm, 11.25°	nr	7		
J611.16	Ditto but 22.5°	nr	4		
J611.17	Ditto but 30°	nr	3		
J611.18	Ditto but 45°	nr	1		
J611.19	Ditto but 60°	nr	1		
J611.20	DN200mm, 11.25°	nr	3		
J611.21	Ditto but 22.5°	nr	2		
J611.22	Ditto but 30°	nr	3		
J611.23	Ditto but 45°	nr	1		
J611.24	Ditto but 60°	nr	1		
<b>Valves and penstocks</b>					
J811.6	DN50mm all flanged sluice valve, PN16	nr	5		
J811.7	Ditto but 80mm	nr	7		
J811.8	Ditto but 100mm	nr	2		
J811.9	Ditto but 150mm	nr	1		
J811.10	Ditto but 200mm	nr	2		
<b>Page total carried forward to next page</b>					

BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	4		
	<b>Flap valves</b>				
J88*.2	DN100mm flap valve, PN16	nr	5		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	7		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	7		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	7		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	33		
K21*.2	Ditto but internal dimensions 1500mm x 1200mm.	nr	2		
K21*.3	Ditto but internal dimensions 3400mm x 1800mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	10		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	12		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	12		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	22		
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BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	51		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	5		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION. ANCILLARIES TO LAYING AND EXCAVATION</u></b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	1,450		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	300		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	120		
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN200mm HDPE pipe and a DN300mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	50		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,084		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	44		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,084		
L53*	Ditto but imported selected fill.	m	465		
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BILL No. 7.6 - LINE WM12					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	10		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	65		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	4		
L7**.3	Ditto but 0.2 - 0.5 m <sup>3</sup>	nr	4		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liason with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	7		
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BILL No. 7.7 - LINE WM13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	5,687		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	5,687		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	1.71		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN90mm for washouts	m	60		
I71*.2	DN160mm	m	5,687		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN90mm for washouts	m	60		
I71*.4	DN160mm, depth not exceeding 1.5m	m	3,541		
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BILL No. 7.7 - LINE WM13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
I71*.5	Ditto but depth exceeding 1.5m	m	2,146		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	11		
	<b>Junctions and branches</b>				
J321.1	DN80mm x 50mm, all flanged tee	nr	5		
J321.2	Ditto but 150mm x 25mm	nr	5		
J321.3	Ditto but 150mm x 80mm	nr	11		
J321.4	Ditto but 150mm x 100mm	nr	1		
J321.5	Ditto but 150mm x 150mm	nr	7		
J323.1	Ditto but 400mm x 250mm	nr	4		
J323.2	Ditto but 600mm x 400mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.6	DN150mm x 80mm	nr	5		
	<b>Tapers</b>				
J333.1	DN400mm x 150mm, all flanged concentric taper	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J353.1	Ditto but 600mm	nr	4		
J351.1	DN80/90mm stepped coupling	nr	48		
J351.2	Ditto but 100/110mm	nr	1		
J351.3	Ditto but 150/160mm	nr	45		
J352.1	Ditto but 250mm	nr	4		
J351.4	DN80mm flange adaptor	nr	22		
J351.5	Ditto but 100mm	nr	1		
J351.6	Ditto but 150mm	nr	24		
J352.2	Ditto but 250mm	nr	4		
J353.2	Ditto but 600mm	nr	4		
	<b>Straight specials</b>				
J381.1	DN150mm, 1.2m long all flanged pipe	nr	26		
J381.2	Ditto but 150mm, 2.0m long	nr	11		
J383.1	Ditto but 400mm, 1.2m long	nr	2		
J383.2	Ditto but 400mm, 2.0m long	nr	4		
J381.3	Ditto but 150mm, 6.0m long	nr	4		
J381.4	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	22		
	Ditto but 80mm, 0.5m long	nr	5		
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BILL No. 7.7 - LINE WM13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J381.5	Ditto but 150mm, 1.2m long	nr	17		
J381.6	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	23		
J381.7	Ditto but 100mm, 1.2m long	nr	1		
J381.8	Ditto but 150mm, 1.2m long	nr	13		
J382.1	Ditto but 250mm, 1.2m long	nr	4		
J383.3	Ditto but 600mm, 1.2m long	nr	4		
	Blank flange				
J391*.1	DN150mm blank flange	nr	3		
	HDPE Bends				
J611.1	DN90mm, 90° Bend, PN10 (for washouts)	nr	5		
	Ditto but 45°	nr	5		
J611.2	Ditto but DN160, 22.5°	nr	13		
J611.3	Ditto but 30°	nr	1		
	Glands				
J661.1	DN160mm flange adaptor (stub end)	nr	21		
	Valves and penstocks				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN12.5	nr	5		
J811.2	Ditto but 80mm	nr	13		
J811.3	Ditto but 100mm	nr	3		
J812.1	Ditto but 150mm	nr	19		
J813.1	Ditto but 250mm	nr	4		
J813.1	Ditto but 600mm	nr	4		
	Air Valves				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, with threaded BSP. Rate includes a brass gate valve (Peglar or similar equivalent), a threaded nipple and a threaded flange as shown in the standard drawings.	nr	2		
	Flap valves				
J88*.1	DN100mm flap valve, PN16	nr	5		
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BILL No. 7.7 - LINE WM13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	11		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	11		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	11		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	11		
	<b>Junctions and branches</b>				
J321.6	DN150mm x 50mm, all flanged tee	nr	2		
J321.7	Ditto but 150mm x 80mm	nr	11		
J321.8	Ditto but 150mm x 100mm	nr	1		
J321.9	Ditto but 150mm x 150mm	nr	7		
J323.3	Ditto but 400mm x 250mm	nr	4		
J323.4	Ditto but 600mm x 400mm	nr	2		
	<b>Plain ended invert tee with flanged branch (for washouts)</b>				
J321.10	DN150mm x 80mm	nr	2		
	<b>Tapers</b>				
J333.2	DN400mm x 150mm, all flanged concentric taper	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J353.3	Ditto but 600mm	nr	4		
J351.7	DN80/90mm stepped coupling	nr	48		
J351.8	Ditto but 100/110mm	nr	1		
J351.9	Ditto but 150/160mm	nr	45		
J352.3	Ditto but 250mm	nr	4		
J351.10	DN80mm flange adaptor	nr	22		
J351.11	Ditto but 100mm	nr	1		
J351.12	Ditto but 150mm	nr	24		
J352.4	Ditto but 250mm	nr	4		
J353.4	Ditto but 600mm	nr	4		
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BILL No. 7.7 - LINE WM13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Straight specials</b>				
J381.9	DN150mm, 1.2m long all flanged pipe	nr	26		
J381.10	Ditto but 150mm, 2.0m long	nr	11		
J383.4	Ditto but 400mm, 1.2m long	nr	2		
J383.5	Ditto but 400mm, 2.0m long	nr	4		
J381.11	Ditto but 150mm, 6.0m long	nr	4		
J381.12	DN80mm, 1.2m long single flanged spigot pipe	nr	22		
J381.13	Ditto but 150mm, 1.2m long	nr	17		
J381.14	DN80mm, 1.2m long plain ended pipe	nr	13		
J381.15	Ditto but 100mm, 1.2m long	nr	1		
J381.16	Ditto but 150mm, 1.2m long	nr	2		
J382.2	Ditto but 250mm, 1.2m long	nr	4		
J383.6	Ditto but 600mm, 1.2m long	nr	4		
	<b>Blank flange</b>				
J391*.2	DN150mm blank flange	nr	3		
	<b>HDPE Bends</b>				
J611.4	DN90mm, 90°	nr	4		
J611.5	Ditto but DN160, 22.5°	nr	13		
J611.6	Ditto but 30°	nr	1		
	<b>Glands</b>				
J661.2	DN160mm flange adaptor (stub end)	nr	21		
	<b>Valves and penstocks</b>				
J811.5	DN50mm all flanged sluice valve, PN16	nr	2		
J811.6	Ditto but 80mm	nr	13		
J811.7	Ditto but 100mm	nr	1		
J811.8	Ditto but 150mm	nr	19		
J812.2	Ditto but 250mm	nr	4		
J813.2	Ditto but 600mm	nr	4		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, with threaded BSP. Rate includes a brass gate valve (Peglar or similar equivalent), a threaded nipple and a threaded flange as shown in the standard drawings.	nr	2		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	11		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	11		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	11		
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BILL No. 7.7 - LINE WM13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct reinforced concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, rendering of exposed blockwork etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	50		
K21*.2	Ditto but internal dimensions 1800mm x 1800mm.	nr	4		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	12		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	20		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	50		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	62		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	2		
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BILL No. 7.7 - LINE WM13					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	2,670		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	550		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	210		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	75		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,990		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	60		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,990		
L53*	Ditto but imported selected fill.	m	853		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	30		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	95		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	19		
L7**.3	Ditto but 0.2 - 0.5 m <sup>3</sup>	nr	6		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	Nr	9		
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BILL No. 7.8 - LINE WM14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	3,145		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	3,145		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.63		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN160mm for washouts	m	24		
I71*.2	DN315mm	m	3,145		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN150mm for washouts	m	24		
I71*.4	DN315mm, depth not exceeding 1.5m	m	1,975		
I71*.5	Ditto but depth exceeding 1.5m	m	1,170		
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BILL No. 7.8 - LINE WM14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, all flanged 90° Bend	nr	8		
J311.2	Ditto but 600mm	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN150mm x 50mm, all flanged tee	nr	2		
J322.1	Ditto but 250mm x 25mm	nr	3		
J322.2	Ditto but 250mm x 80mm	nr	1		
J322.3	Ditto but 250mm x 100mm	nr	2		
J322.4	Ditto but 250mm x 150mm	nr	5		
J322.5	Ditto but 600mm x 250 all flanged cross tee	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J322.6	DN250mm x 150mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	32		
J351.3	Ditto but 110/100mm	nr	1		
J351.4	Ditto but 160/150mm	nr	5		
J352.1	Ditto but 315/250mm	nr	25		
J353.1	Ditto but 600/525mm	nr	1		
J351.5	DN80mm flange adaptor	nr	2		
J351.6	Ditto but 100mm	nr	2		
J351.7	Ditto but 150mm	nr	3		
J352.2	Ditto but 250mm	nr	18		
J353.2	Ditto but 600mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	16		
J381.2	Ditto but 150mm, 0.5m long	nr	2		
J382.1	Ditto but 250mm, 1.2m long	nr	23		
J383.1	Ditto but 600mm, 2.4m long	nr	2		
J381.3	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	18		
J381.4	Ditto but 100mm, 1.2m long	nr	2		
J381.5	Ditto but 150mm, 1.2m long	nr	7		
J382.2	Ditto but 250mm, 1.2m long	nr	18		
Page total carried forward to next page					

BILL No. 7.8 - LINE WM14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Blank flange</b>				
J392*.1	DN250mm blank flange	nr	2		
	<b>HDPE Bends</b>				
J661.1	DN160mm, 90° Bend, PN10 (for washouts)	nr	4		
J661.2	Ditto but 45°	nr	2		
J613.1	DN315mm, 11.25°	nr	3		
J613.2	Ditto but 45°	nr	1		
J613.3	Ditto but 90°	nr	2		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 80mm	nr	10		
J811.3	Ditto but 100mm	nr	2		
J811.4	Ditto but 150mm	nr	7		
J812.1	Ditto but 250mm	nr	1		
J812.1	Ditto but 600mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN50mm reinforced polyamide combination air valve, PN16, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	3		
	<b>Flap valves</b>				
J88*.1	DN150mm flap valve, PN16	nr	2		
	<b>Bulk Water Meters</b>				
	<b>Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	8		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	8		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	8		
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BILL No. 7.8 - LINE WM14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.3	DN80mm, 90° Bend	nr	8		
J311.4	Ditto but 600mm	nr	1		
	<b>Junctions and branches</b>				
J321.2	DN150mm x 50mm, all flanged tee	nr	2		
J322.7	Ditto but 250mm x 25mm	nr	3		
J322.8	Ditto but 250mm x 80mm	nr	1		
J322.9	Ditto but 250mm x 100mm	nr	2		
J322.10	Ditto but 250mm x 150mm	nr	5		
J322.11	Ditto but 600mm x 250 all flanged cross tee	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J322.12	DN250mm x 150mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.8	DN80mm straight coupling	nr	2		
J351.9	DN80/90mm stepped coupling	nr	32		
J351.10	Ditto but 110/100mm	nr	1		
J351.11	Ditto but 160/150mm	nr	5		
J352.3	Ditto but 315/250mm	nr	25		
J353.3	Ditto but 600/525mm	nr	1		
J351.12	DN80mm flange adaptor	nr	2		
J351.13	Ditto but 100mm	nr	2		
J351.14	Ditto but 150mm	nr	3		
J352.4	Ditto but 250mm	nr	18		
J353.4	Ditto but 600mm		1		
	<b>Straight specials</b>				
J381.6	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	16		
J381.7	Ditto but 150mm. 0.5m long	nr	2		
J382.3	Ditto but 250mm, 1.2m long	nr	23		
J383.2	Ditto but 600mm, 2.4m long	nr	2		
J381.8	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	18		
J381.9	Ditto but 100mm, 1.2m long	nr	2		
J381.10	Ditto but 150mm. 1.2m long	nr	7		
J382.4	Ditto but 250mm, 1.2m long	nr	18		
J381.12	Ditto but 150mm, 1.2m long	nr	7		
J382.4	Ditto but 250mm, 1.2m long		18		
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BILL No. 7.8 - LINE WM14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	Blank flange				
J392*.2	DN250mm blank flange	nr	2		
	HDPE Bends				
J661.3	DN160mm, 90° Bend, PN10 (for washouts)	nr	4		
J661.4	Ditto but 45°	nr	2		
J613.4	DN315mm, 11.25°	nr	3		
J613.5	Ditto but 45°	nr	1		
J613.6	Ditto but 90°	nr	2		
	Valves and penstocks				
J811.5	DN50mm all flanged sluice valve, PN16	nr	2		
J811.6	Ditto but 80mm	nr	10		
J811.7	Ditto but 100mm	nr	2		
J811.8	Ditto but 150mm	nr	7		
J812.2	Ditto but 250mm	nr	1		
	Ditto but 600mm	nr	1		
	Air Valves				
J861*.2	DN50mm reinforced polyamide combination air valve, PN16, including required 50mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	3		
	Flap valves				
J88*.2	DN150mm flap valve, PN16	nr	2		
	Bulk Water Meters				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	8		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	8		
	Hydrants				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	8		
	CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	In Situ Chambers Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1500mm x 1200mm.	nr	34		
K21*.2	Ditto but internal dimensions 2000mm x 2000mm.	nr	1		
K21*.3	Ditto but internal dimensions 2500mm x 2000mm.	nr	1		
Page total carried forward to next page					

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BILL No. 7.8 - LINE WM14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN315mm HDPE pipe and a DN400mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	25		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,101		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	40		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,101		
L53*	Ditto but imported selected fill.	m	472		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	50		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	70		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	17		
L7**.3	Ditto but 0.2 - 0.5m <sup>3</sup>	nr	18		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	6		
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BILL No. 7.9 - LINE WM17					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	CLASS J: PIPEWORK - FITTINGS AND VALVES				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	Bends				
J311.1	DN80mm, 90° Bend	nr	1		
	Junctions and branches				
J322.1	DN150mm x 80mm, all flanged tee	nr	1		
J321.1	Ditto but 250mm x 150mm	nr	1		
	Adaptors/Couplings/Stepped couplings				
J351.1	DN80/90mm stepped coupling	nr	4		
J352.1	Ditto but 250mm	nr	2		
J351.2	DN160/150mm stepped coupling	nr	4		
J351.3	DN80mm flange adaptor	nr	2		
J351.4	Ditto but 150mm	nr	3		
	Straight specials				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 150mm, 1.2m long	nr	4		
J382.1	Ditto but 250mm, 1.2m long	nr	2		
J381.3	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.4	Ditto but 150mm, 1.2m long	nr	1		
	Blank flange				
J391*.1	DN150mm blank flange	nr	1		
	HDPE Bends				
J611.1	DN160mm, 22.5°	nr	1		
	Valves and penstocks				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN80mm all flanged sluice valve, PN16	nr	1		
J811.2	Ditto but 150mm	nr	3		
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BILL No. 7.9 - LINE WM17					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J322.2	DN150mm x 80mm, all flanged tee	nr	1		
J321.2	Ditto but 250mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN80/90mm stepped coupling	nr	4		
J352.2	Ditto but 250mm	nr	2		
J351.6	DN160/150mm stepped coupling	nr	4		
J351.7	DN80mm flange adaptor	nr	2		
J351.8	Ditto but 150mm	nr	3		
	<b>Straight specials</b>				
J381.5	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	2		
J381.6	Ditto but 150mm, 1.2m long	nr	4		
J382.2	Ditto but 250mm, 1.2m long	nr	2		
J381.7	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.8	Ditto but 150mm, 1.2m long	nr	1		
	<b>Blank flange</b>				
J391*.2	DN150mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.2	DN160mm, 22.5°	nr	1		
	<b>Valves and penstocks</b>				
J811.3	DN80mm all flanged sluice valve, PN16	nr	1		
J811.4	Ditto but 150mm	nr	3		
Page total carried forward to next page					

BILL No. 7.9 - LINE WM17					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	5		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	8		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	20		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	7		
Page total carried forward to next page					

BILL No. 7.9 - LINE WM17					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	280		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	60		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	30		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	208		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	35		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	208		
L53*	Ditto but imported selected fill.	m	89		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	10		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete. volume n.e 0.1m3	nr	14		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in lison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	2		
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BILL No. 7.10 - LINE WM18					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	1		
J321.2	Ditto but 150mm x 80mm	nr	1		
J322.1	Ditto but 250mm x 150mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.3	DN150mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	4		
J352.1	Ditto but 250mm	nr	2		
J351.2	DN110/100mm stepped coupling	nr	2		
J351.3	Ditto but DN160/150mm	nr	5		
J351.4	DN80mm flange adaptor	nr	4		
J351.5	Ditto but DN100mm	nr	2		
J351.6	Ditto but 150mm	nr	4		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 100mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	2		
J381.4	Ditto but 150mm, 1.2m long	nr	4		
J382.1	Ditto but 250mm, 1.2m long	nr	2		
J381.5	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.6	Ditto but 100mm, 1.2m long	nr	2		
J381.7	Ditto but 150mm, 1.2m long	nr	3		
	<b>Blank flange</b>				
J391*.1	DN150mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN160mm, 22.5°	nr	1		
J611.4	Ditto but 30°	nr	1		
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BILL No. 7.10 - LINE WM18					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	1		
J811.2	Ditto but 80mm	nr	2		
J811.2	Ditto but 100mm	nr	2		
J811.3	Ditto but 150mm	nr	3		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.4	DN100mm x 50mm, all flanged tee	nr	1		
J321.5	Ditto but 150mm x 80mm	nr	1		
J322.2	Ditto but 250mm x 150mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.6	DN150mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN80/90mm stepped coupling	nr	4		
J352.2	Ditto but 250mm	nr	2		
J351.8	DN110/100mm stepped coupling	nr	2		
J351.9	Ditto but DN160/150mm	nr	5		
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BILL No. 7.10 - LINE WM18					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J351.10	DN80mm flange adaptor	nr	4		
J351.11	Ditto but DN100mm	nr	2		
J351.12	Ditto but 150mm	nr	4		
<b>Straight specials</b>					
J381.8	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	2		
J381.9	Ditto but 100mm, 0.5m long	nr	1		
J381.10	Ditto but 100mm, 1.2m long	nr	2		
J382.2	Ditto but 150mm, 1.2m long	nr	4		
J381.11	Ditto but 250mm, 1.2m long	nr	2		
J381.12	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.13	Ditto but 100mm, 1.2m long	nr	2		
J381.14	Ditto but 150mm, 1.2m long	nr	3		
<b>Blank flange</b>					
J391*.2	DN150mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.5	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.6	Ditto but 45°	nr	1		
J611.7	DN160mm, 22.5°	nr	1		
J611.8	Ditto but 30°	nr	1		
<b>Valves and penstocks</b>					
J811.5	DN50mm all flanged sluice valve, PN16	nr	1		
J811.6	Ditto but 80mm	nr	2		
J811.7	Ditto but 100mm	nr	2		
J811.8	Ditto but 150mm	nr	3		
<b>Flap valves</b>					
J88*.2	DN100mm flap valve, PN16	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	1		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	5		
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BILL No. 7.10 - LINE WM18					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
K21*.2	Ditto but internal dimensions 1500mm x 1200mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	8		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	9		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	340		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	70		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	30		
	<b>Special pipe laying methods</b>				
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BILL No. 7.10 - LINE WM18					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	40		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	249		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	25		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	249		
L53*	Ditto but imported selected fill.	m	107		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	40		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	15		
L7**.2	Ditto but exceeding 0.1 m <sup>3</sup>	nr	1		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	2		
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BILL No. 7.11 - LINE WM19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,515		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,515		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.30		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	24		
I71*.2	DN110mm	m	1,515		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	24		
I71*.4	DN110mm, depth not exceeding 1.5m	m	1,455		
I71*.5	Ditto but depth exceeding 1.5m	m	56		
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BILL No. 7.11 - LINE WM19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	2		
J321.2	Ditto but 100mm x 25mm	nr	2		
J321.3	Ditto but 100mm x 80mm	nr	3		
J321.4	Ditto but 100mm x 100mm	nr	1		
J321.5	Ditto but 150mm x 100mm	nr	1		
J322.1	Ditto but 250mm x 200mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	2		
	<b>Tapers</b>				
J331.1	DN150mm x 100mm, all flanged concentric taper	nr	1		
J332.1	Ditto but 250mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	4		
J351.2	DN80/90mm stepped coupling	nr	12		
J351.3	Ditto but 200mm	nr	1		
J352.1	Ditto but 250mm	nr	1		
J351.4	DN110/100mm stepped coupling	nr	16		
J351.5	Ditto but 160/150mm	nr	1		
J352.2	Ditto but 315/250mm	nr	1		
J351.6	DN50mm flange adaptor	nr	4		
J351.7	Ditto but 80mm	nr	6		
J351.8	Ditto but 100mm	nr	8		
J351.9	Ditto but 150mm	nr	1		
J351.10	Ditto but 200mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	6		
J381.2	Ditto but 100mm, 0.5m long	nr	2		
J381.3	Ditto but 100mm, 1.2m long	nr	8		
J382.1	Ditto but 250mm, 1.2m long	nr	1		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.5	Ditto but 80mm, 1.2m long	nr	6		
J381.6	Ditto but 100mm, 1.2m long	nr	8		
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BILL No. 7.11 - LINE WM19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J381.7	Ditto but 150mm, 1.2m long	nr	1		
J381.8	Ditto but 200mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J611.1	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J611.2	Ditto but 45°	nr	2		
J611.3	DN110mm, 11.25°	nr	7		
J611.4	Ditto but 22.5°	nr	3		
J611.5	Ditto but 30°	nr	5		
J611.6	Ditto but 90°	nr	2		
<b>Valves and penstocks</b>					
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	4		
J811.2	Ditto but 80mm	nr	3		
J811.3	Ditto but 100mm	nr	6		
J811.4	Ditto but 150mm	nr	1		
J811.5	Ditto but 200mm	nr	1		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN50mm flap valve, PN16	nr	2		
<b>Bulk Water Meters</b>					
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	3		
<b>Hydrants</b>					
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
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BILL No. 7.11 - LINE WM19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee	nr	2		
J321.7	DN100mm x 50mm, all flanged tee	nr	2		
J321.8	Ditto but 100mm x 80mm	nr	3		
J321.9	Ditto but 100mm x 100mm	nr	1		
J321.10	Ditto but 150mm x 100mm	nr	1		
J322.2	Ditto but 250mm x 200mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	2		
	<b>Tapers</b>				
J331.2	DN150mm x 100mm, all flanged concentric taper	nr	1		
J332.2	Ditto but 250mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.11	DN50mm straight coupling	nr	4		
J351.12	DN80/90mm stepped couplinq	nr	12		
J351.13	Ditto but 200mm	nr	1		
J352.3	Ditto but 250mm	nr	1		
J351.14	DN110/100mm stepped coupling	nr	16		
J351.15	Ditto but 160/150mm	nr	1		
J352.4	Ditto but 315/250mm	nr	1		
J351.16	DN50mm flange adaptor	nr	4		
J351.17	Ditto but 80mm	nr	6		
J351.18	Ditto but 100mm	nr	8		
J351.19	Ditto but 150mm	nr	1		
J351.20	Ditto but 200mm	nr	1		
	<b>Straight specials</b>				
J381.9	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.10	Ditto but 100mm, 0.5m long	nr	2		
J381.11	Ditto but 100mm, 1.2m long	nr	8		
J382.2	Ditto but 250mm, 1.2m long	nr	1		
J381.12	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.13	Ditto but 80mm, 1.2m long	nr	6		
J381.14	Ditto but 100mm, 1.2m long	nr	8		
Page total carried forward to next page					

BILL No. 7.11 - LINE WM19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J381.15	Ditto but 150mm, 1.2m long	nr	1		
J381.16	Ditto but 200mm, 1.2m long	nr	1		
<b>HDPE Bends</b>					
J611.7	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J611.8	Ditto but 45°	nr	2		
J611.9	DN100mm, 11.25°	nr	7		
J611.10	Ditto but 22.5°	nr	3		
J611.11	Ditto but 30°	nr	5		
J611.12	Ditto but 90°	nr	2		
<b>Valves and penstocks</b>					
J811.6	DN50mm all flanged sluice valve, PN16	nr	4		
J811.7	Ditto but 80mm	nr	3		
J811.8	Ditto but 100mm	nr	6		
J811.9	Ditto but 150mm	nr	1		
J811.10	Ditto but 200mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN100mm flap valve, PN16	nr	2		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	3		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	13		
K21*.2	Ditto but internal dimensions 2000mm x 1200mm.	nr	2		
<b>Crossings</b>					
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	10		
<b>Page total carried forward to next page</b>					



BILL No. 7.11 - LINE WM19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	15		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	25		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	30		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	2		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	710		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	150		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	60		
	<b>Special pipe laying methods</b>				
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BILL No. 7.11 - LINE WM19					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	20		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	530		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	40		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	530		
L53*	Ditto but imported selected fill.	m	227		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	15		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	70		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	3		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 7.12 - LINE WM20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	155		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	155		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.05		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN110mm	m	155		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.2	DN110mm, depth not exceeding 1.5m	m	155		
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BILL No. 7.12 - LINE WM20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	1		
J322.1	Ditto but 250mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	1		
J351.2	DN110/100mm stepped coupling	nr	4		
J352.1	Ditto but 250/250mm	nr	2		
J351.3	DN50mm flange adaptor	nr	1		
J351.4	Ditto but 100mm	nr	3		
J352.2	Ditto but 250mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN100mm, 1.2m long single flanged spigot pipe with puddle flange	nr	3		
J382.1	Ditto but 250mm, 1.2m long	nr	1		
J381.2	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	2		
J382.2	Ditto but 250mm, 1.2m long	nr	1		
	<b>Blank flange</b>				
J391*.1	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN110mm, 22.5°	nr	2		
J611.2	Ditto but 30°	nr	1		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	1		
J811.2	Ditto but 100mm	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Junctions and branches</b>				
J321.2	DN100mm x 50mm, all flanged tee	nr	1		
J322.2	Ditto but 250mm x 100mm	nr	1		
Page total carried forward to next page					

BILL No. 7.12 - LINE WM20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN50mm straight coupling	nr	1		
J351.6	DN110/100mm stepped coupling	nr	4		
J352.3	Ditto but 250/250mm	nr	2		
J351.7	DN50mm flange adaptor	nr	1		
J351.8	Ditto but 100mm	nr	3		
J352.4	Ditto but 250mm	nr	1		
	<b>Straight specials</b>				
J381.4	DN100mm, 1.2m long single flanged spigot pipe with puddle flange	nr	3		
J382.3	Ditto but 250mm, 1.2m long	nr	1		
J381.5	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.6	Ditto but 100mm, 1.2m long	nr	2		
J382.4	Ditto but 250mm, 1.2m long	nr	1		
	<b>Blank flange</b>				
J391*.2	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.3	DN100mm, 22.5°	nr	2		
J611.4	Ditto but 30°	nr	1		
	<b>Valves and penstocks</b>				
J811.3	DN50mm all flanged sluice valve, PN16	nr	1		
J811.4	Ditto but 100mm	nr	2		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	3		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
Page total carried forward to next page					

BILL No. 7.12 - LINE WM20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	6		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) <b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	80		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	20		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	10		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
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BILL No. 7.12 - LINE WM20					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	54		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	54		
L53*	Ditto but imported selected fill.	m	23		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	5		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m3	nr	8		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in lison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	1		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 7.13 - LINE WM21					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	395		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	395		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.08		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN90mm for washouts	m	12		
I71*.2	DN160mm	m	395		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN90mm for washouts	m	12		
I71*.4	DN160mm, depth not exceeding 1.5m	m	296		
I71*.5	Ditto but depth exceeding 1.5m	m	101		
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BILL No. 7.13 - LINE WM21					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	1		
J321.2	Ditto but 150mm x 80mm	nr	1		
J321.3	Ditto but 150mm x 100mm	nr	1		
J321.4	Ditto but 150mm x 150mm	nr	3		
J321.5	Ditto but 150mm x 25mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.6	DN150mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN75/80mm stepped coupling	nr	1		
J351.2	Ditto but 110/100mm	nr	2		
J351.3	Ditto but 160/150mm	nr	11		
J351.4	DN80mm flange adaptor	nr	1		
J351.5	Ditto but 100mm	nr	4		
J351.6	Ditto but 150mm	nr	4		
	<b>Straight specials</b>				
J381.1	DN100mm, 1.2m long all flanged pipe	nr	1		
J381.2	Ditto but 150mm, 1.2m long	nr	6		
J381.3	Ditto but 100mm, 0.5m long	nr	1		
J381.4	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.5	Ditto but 100mm, 1.2m long	nr	2		
J381.6	Ditto but 150mm, 1.2m long	nr	5		
	Supply, transport to site and store in secure place, HDPE pipe fittings. Include supply of jointing materials etc as applicable.				
	<b>HDPE Bends</b>				
J611.1	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN160mm, 11.25°	nr	5		
J611.4	Ditto but 22.5°	nr	3		
J611.5	Ditto but 30°	nr	6		
J611.6	Ditto but 45°	nr	3		
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BILL No. 7.13 - LINE WM21					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	1		
J811.2	Ditto but 80mm	nr	1		
J811.3	Ditto but 100mm	nr	2		
J811.4	Ditto but 150mm	nr	3		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN16	nr	1		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Junctions and branches</b>				
J321.7	DN100mm x 50mm, all flanged tee	nr	1		
J321.8	Ditto but 150mm x 80mm	nr	1		
J321.9	Ditto but 150mm x 100mm	nr	1		
J321.10	Ditto but 150mm x 150mm	nr	3		
J321.11	Ditto but 200mm x 25mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.12	DN200mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN75/80mm stepped coupling	nr	1		
J351.8	Ditto but 110/100mm	nr	2		
J351.9	Ditto but 160/150mm	nr	11		
J351.10	DN80mm flange adaptor	nr	1		
J351.11	Ditto but 100mm	nr	4		
J351.12	Ditto but 150mm	nr	4		
Page total carried forward to next page					

BILL No. 7.13 - LINE WM21					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Straight specials</b>				
J381.7	DN100mm, 1.2m long all flanged pipe	nr	1		
J381.8	Ditto but 150mm, 1.2m long	nr	6		
J381.9	Ditto but 100mm, 0.5m long	nr	1		
J381.10	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.11	Ditto but 100mm, 1.2m long	nr	2		
J381.12	Ditto but 150mm, 1.2m long	nr	5		
	<b>HDPE Bends</b>				
J611.7	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.8	Ditto but 45°	nr	1		
J611.9	DN160mm, 11.25°	nr	5		
J611.10	Ditto but 22.5°	nr	3		
J611.11	Ditto but 30°	nr	6		
J611.12	Ditto but 45°	nr	3		
	<b>Valves and penstocks</b>				
J811.5	DN50mm all flanged sluice valve, PN16	nr	1		
J811.6	Ditto but 80mm	nr	1		
J811.7	Ditto but 100mm	nr	2		
J811.8	Ditto but 150mm	nr	3		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.2	DN100mm flap valve, PN16	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	3		
K21*.2	Chamber of internal dimensions 1800mm x 1200mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
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BILL No. 7.13 - LINE WM21					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	13		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	190		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	40		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	20		
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BILL No. 7.13 - LINE WM21					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	45		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	138		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	138		
L53*	Ditto but imported selected fill.	m	59		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	15		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	40		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	1		
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BILL No. 8.1 - LINE WN01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>					
Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.					
<b>Bends</b>					
J311.1	DN80mm, 90° Bend	nr	5		
<b>Junctions and branches</b>					
J321.1	DN100mm x 50mm, all flanged tee (for washouts)	nr	7		
J321.2	Ditto but 150mm x 25mm	nr	6		
J321.3	Ditto but 150mm x 80mm	nr	5		
J322.1	Ditto but 250mm x 100mm	nr	1		
J322.2	Ditto but 250mm x 150mm	nr	1		
J322.3	Ditto but 250mm x 250mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.4	DN150mm x 100mm	nr	7		
<b>Tapers</b>					
J331.1	DN250mm x 150mm, all flanged concentric taper	nr	2		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN100mm straight coupling	nr	3		
J351.2	Ditto but 150mm	nr	2		
J352.1	Ditto but 250mm	nr	1		
J351.3	DN80/90mm stepped coupling	nr	8		
J351.4	Ditto but 100/110mm	nr	5		
J351.5	Ditto but 150/160mm	nr	26		
J351.6	DN80mm flange adaptor	nr	4		
J351.7	Ditto but 100mm	nr	5		
J351.8	Ditto but 150mm	nr	15		
J352.2	Ditto but 250mm	nr	2		
<b>Straight specials</b>					
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 100mm, 1.2m long	nr	1		
J381.3	Ditto but 150mm, 1.2m long	nr	14		
J382.1	Ditto but 250mm, 1.2m long	nr	1		
J381.4	Ditto but 100mm, 0.5m long	nr	2		
J381.5	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.6	Ditto but 100mm, 1.2m long	nr	5		
J381.7	Ditto but 150mm, 1.2m long	nr	14		
J382.2	Ditto but 250mm, 1.2m long	nr	1		
J382.3	Ditto but 250mm, <12m long	nr	1		
Page total carried forward to next page					

BILL No. 8.1 - LINE WN01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Blank flange</b>				
J391*.1	DN150mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	14		
J611.2	Ditto but 45°	nr	7		
J611.3	DN160mm, 11.25°	nr	24		
J611.4	Ditto but 22.5°	nr	8		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN16	nr	7		
J811.2	Ditto but 80mm	nr	5		
J811.3	Ditto but 100mm	nr	8		
J811.4	Ditto but 150mm	nr	8		
J812.1	Ditto but 250mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	6		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN16	nr	7		
	<b>Bulk Water Meters</b> Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	5		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	5		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	5		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	5		
Page total carried forward to next page					



BILL No. 8.1 - LINE WN01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
<b>Junctions and branches</b>					
J321.5	DN100mm x 50mm, all flanged tee (for washouts)	nr	7		
J321.6	Ditto but 150mm x 25mm	nr	6		
J321.7	Ditto but 150mm x 80mm	nr	5		
J322.4	Ditto but 250mm x 100mm	nr	1		
J322.5	Ditto but 250mm x 150mm	nr	1		
J322.6	Ditto but 250mm x 250mm	nr	1		
<b>All flanged level invert tee (for washouts)</b>					
J321.8	DN150mm x 100mm	nr	7		
<b>Tapers</b>					
J331.2	DN250mm x 150mm, all flanged concentric taper	nr	2		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.8	DN100mm straight coupling	nr	3		
J351.9	Ditto but 150mm	nr	2		
J352.3	Ditto but 250mm	nr	1		
J351.10	DN80/90mm stepped coupling	nr	8		
J351.11	Ditto but 100/110mm	nr	5		
J351.12	Ditto but 150/160mm	nr	26		
J351.13	DN80mm flange adaptor	nr	4		
J351.14	Ditto but 100mm	nr	5		
J351.15	Ditto but 150mm	nr	15		
J352.4	Ditto but 250mm	nr	2		
<b>Straight specials</b>					
J381.8	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.9	Ditto but 100mm, 1.2m long	nr	1		
J381.10	Ditto but 150mm, 1.2m long	nr	14		
J382.4	Ditto but 250mm, 1.2m long	nr	1		
J381.11	Ditto but 100mm, 0.5m long	nr	2		
J381.12	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.13	Ditto but 100mm, 1.2m long	nr	5		
J381.14	Ditto but 150mm, 1.2m long	nr	14		
J382.5	Ditto but 250mm, 1.2m long	nr	1		
J382.6	Ditto but 250mm, <12m long	nr	1		
<b>Blank flange</b>					
J391*.2	DN150mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.5	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	7		
J611.6	Ditto but 45°	nr	7		
Page total carried forward to next page					

BILL No. 8.1 - LINE WN01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J611.7	DN160mm, 11.25°	nr	24		
J611.8	Ditto but 22.5°	nr	8		
<b>Valves and penstocks</b>					
J811.5	DN50mm all flanged sluice valve, PN16	nr	7		
J811.6	Ditto but 80mm	nr	5		
J811.7	Ditto but 100mm	nr	8		
J811.8	Ditto but 150mm	nr	8		
J812.2	Ditto but 250mm	nr	2		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	6		
<b>Flap valves</b>					
J88*.1	DN100mm flap valve, PN16	nr	7		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	5		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	5		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	5		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	29		
K21*.2	Chamber of internal dimensions 2000mm x 1500mm.	nr	1		
<b>Crossings</b>					
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	4		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	10		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
Page total carried forward to next page					

BILL No. 8.1 - LINE WN01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	24		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	30		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	36		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	7		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) <b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	720		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	150		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	60		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	30		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	532		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	59		
Page total carried forward to next page					

BILL No. 8.1 - LINE WN01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	532		
L53*	Ditto but imported selected fill.	m	228		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	30		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	40		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	6		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liason with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	4		
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BILL No. 8.2 - LINE WN02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN150mm x 80mm, all flanged tee	nr	2		
J321.2	Ditto but 150mm x 100mm	nr	2		
J321.3	Ditto but 150mm x 150mm	nr	1		
J322.1	Ditto but 250mm x 150mm	nr	2		
J322.2	Ditto but 250mm x 250mm	nr	2		
	<b>Tapers</b>				
J331.1	DN150mm x 100mm, all flanged concentric taper	nr	1		
J332.1	Ditto but 250mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	4		
J351.2	DN110/100mm stepped coupling	nr	4		
J351.3	Ditto but 160/150mm	nr	9		
J352.1	Ditto but 250/250mm	nr	2		
J351.5	DN80mm flange adaptor	nr	3		
J351.6	Ditto but 100mm	nr	3		
J351.7	Ditto but 150mm	nr	6		
J352.2	Ditto but 250mm	nr	2		
	<b>Straight specials</b>				
J382.1	DN250mm, 2.0m long double flanged spigot pipe with puddle flange	nr	1		
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 150mm, 1.2m long	nr	4		
J381.3	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.4	Ditto but 100mm, 1.2m long	nr	3		
J381.5	Ditto but 150mm, 1.2m long	nr	5		
J382.2	Ditto but 250mm, 1.2m long	nr	2		
	<b>Blank flange</b>				
J391*.1	DN250mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN160mm, 11.25°	nr	6		
J611.2	Ditto but 22.5°	nr	3		
J611.3	Ditto but 45°	nr	2		
Page total carried forward to next page					

BILL No. 8.2 - LINE WN02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN80mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 100mm	nr	3		
J811.3	Ditto but 150mm	nr	5		
J811.4	Ditto but 250mm	nr	2		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent. To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'volutman' water meters, PN16	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.4	DN150mm x 80mm, all flanged tee	nr	2		
J321.5	Ditto but 150mm x 100mm	nr	2		
J321.6	Ditto but 150mm x 150mm	nr	1		
J322.3	Ditto but 250mm x 150mm	nr	2		
J322.4	Ditto but 250mm x 250mm	nr	2		
	<b>Tapers</b>				
J331.2	DN150mm x 100mm, all flanged concentric taper	nr	1		
J332.2	Ditto but 250mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.8	DN80/90mm stepped coupling	nr	4		
J351.9	DN110/100mm stepped coupling	nr	4		
J351.10	Ditto but 160/150mm	nr	9		
Page total carried forward to next page					

BILL No. 8.2 - LINE WN02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J352.3	Ditto but 250/250mm	nr	2		
J351.11	DN80mm flange adaptor	nr	3		
J351.12	Ditto but 100mm	nr	3		
J351.13	Ditto but 150mm	nr	6		
J352.4	Ditto but 250mm	nr	2		
<b>Straight specials</b>					
J382.3	Ditto but 250mm, 2.0m long	nr	1		
J381.6	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.7	Ditto but 150mm, 1.2m long	nr	4		
J381.8	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.9	Ditto but 100mm, 1.2m long	nr	3		
J381.10	Ditto but 150mm, 1.2m long	nr	5		
J382.4	Ditto but 250mm, 1.2m long	nr	2		
<b>Blank flange</b>					
J391*.2	DN250mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.4	DN160mm, 11.25°	nr	6		
J611.5	Ditto but 22.5°	nr	3		
J611.6	Ditto but 45°	nr	2		
<b>Valves and penstocks</b>					
J811.5	DN80mm all flanged sluice valve, PN16	nr	2		
J811.6	Ditto but 100mm	nr	3		
J811.7	Ditto but 150mm	nr	5		
J811.8	Ditto but 250mm	nr	2		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	1		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	7		
K21*.2	Chamber of internal dimensions 1500mm x 1200mm.	nr	1		
<b>Page total carried forward to next page</b>					



BILL No. 8.2 - LINE WN02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction.	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b>				
	<b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	20		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	15		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	340		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	70		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	30		
Page total carried forward to next page					

BILL No. 8.2 - LINE WN02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	20		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	254		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	35		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	254		
L53*	Ditto but imported selected fill.	m	109		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	20		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**1	Class 15/20 mass concrete, volume n.e 0.1m3	nr	54		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	2		
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BILL No. 8.3 - LINE WN03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN110/100mm stepped coupling	nr	2		
J351.2	DN100mm flange adaptor	nr	1		
	<b>Straight specials</b>				
J381.1	DN100mm, 1.2m long single flanged spigot pipe with puddle flange	nr	1		
J381.2	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN110mm, 90°	nr	1		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN100mm all flanged sluice valve, PN16	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.3	DN110/100mm stepped coupling	nr	2		
J351.4	DN100mm flange adaptor	nr	1		
	<b>Straight specials</b>				
J381.3	DN100mm, 1.2m long flanged spigot pipe with puddle flange	nr	1		
J381.4	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	1		
	<b>HDPE Bends</b>				
J611.4	DN110mm, 90°	nr	1		
	<b>Valves and penstocks</b>				
J811.2	DN100mm all flanged sluice valve, PN16	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	1		
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BILL No. 8.3 - LINE WN03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	1		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction.	nr	2		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b>				
	Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	50		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	3		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	120		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	30		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	10		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	84		
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BILL No. 8.3 - LINE WN03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	60		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	84		
L53*	Ditto but imported selected fill.	m	36		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	12		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	4		
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BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	8,344		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	8,344		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	1.67		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. Steel epoxy coated FBE externally or approved equivalent and cement mortar lined internally socket and spigot sizes - PN 16</b>				
I44*.1	DN700mm	m	6,865		
I44*.2	DN800mm	m	1,479		
	<b>Supply, transport to site and store in secure place. HDPE PN12.5 pipes</b>				
I7**.1	DN110mm	m	24		
I7**.2	Ditto but 200mm	m	1,530		
I7**.3	Ditto but 355mm	m	110		
Page total carried forward to next page					

BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	Transport from site store, lay and joint pipes in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. Steel epoxy coated FBE externally or approved equivalent and cement mortar lined internally socket and spigot pipes - PN 16				
I44*.3	DN700mm, depth not exceeding 1.5m	m	1,373		
I44*.4	Ditto but depth exceeding 1.5m	m	5,492		
I44*.5	DN800mm, depth not exceeding 1.5m	m	296		
I44*.6	Ditto but depth exceeding 1.5m	m	1,183		
	Transport from site store, lay and joint pipes in trench, include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. HDPE PN12.5 pipes for draining of washouts (Provisional)				
I7**.1	DN110mm	m	24		
I7**.2	Ditto but 200mm	m	1,530		
I7**.3	Ditto but 355mm	m	110		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES - PN16</b>				
	Supply, transport to site and store in secure place. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable. Steel pipe fittings - epoxy FBE coated and lined.				
	<b>Bends</b>				
J31*.1	DN150mm, 90° all flanged long bend	nr	1		
J31*.2	DN700mm, 11.25°	nr	20		
J31*.3	Ditto but 22.5°	nr	7		
J31*.4	DN800mm, 11.25°	nr	6		
J31*.5	Ditto but 22.5°	nr	6		
J31*.6	Ditto but 60°	nr	1		
J31*.7	DN800 90° all flanged long bend	nr	3		
	<b>Junctions and branches</b>				
J32*.1	DN200mm x 25mm (Air-Valve), all flanged tee	nr	2		
J32*.2	Ditto but 200mm x 50mm	nr	2		
J32*.3	Ditto but 200mm x 150mm	nr	2		
J32*.4	Ditto but 300mm x 150mm x 150mm	nr	1		
J32*.5	Ditto but 500mm x 200mm	nr	1		
J32*.6	Ditto but 600mm x 80mm (Air-Valve)	nr	5		
J32*.7	Ditto but 600mm x 400mm	nr	2		
J32*.8	Ditto but 600mm x 600mm	nr	1		
J32*.9	Ditto but 700mm x 80mm (Air-Valve)	nr	11		
J32*.10	Ditto but 800mm x 80mm (Air-Valve)	nr	2		
J32*.11	Ditto but 800mm x 600mm	nr	1		
J32*.12	Ditto but 800mm x 800mm	nr	2		
J32*.13	Ditto but 800mm x 600mm special angled	nr	1		
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BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J32*.14	DN700mm x 700mm, flanged cross tee	nr	1		
J32*.15	DN600mm x 400mm, flanged cross tee	nr	1		
J32*.16	DN600mm x 600mm, flanged cross tee	nr	1		
J32*.17	DN1000mm x 700mm all flanged cross tee	nr	2		
J32*.18	DN1000mm x 1000mm all flanged cross tee	nr	1		
J32*.19	DN1200mm x 800mm all flanged reducing tee	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J32*.20	DN200mm x 100mm	nr	2		
J32*.21	DN700mm x 350mm	nr	10		
J32*.22	Ditto but 800mm x 350mm	nr	1		
	<b>Tapers</b>				
J33*.1	DN200mm x 150mm, all flanged concentric taper	nr	1		
J33*.2	Ditto but 400mm x 200mm	nr	1		
J33*.3	Ditto but 500mm x 200mm	nr	2		
J33*.4	Ditto but 700mm x 600mm	nr	1		
J33*.5	Ditto but 800mm x 600mm	nr	1		
J33*.6	Ditto but 800mm x 700mm	nr	1		
J33*.7	Ditto but 1000mm x 500mm	nr	2		
J33*.8	Ditto but 1000mm x 700mm	nr	1		
J33*.9	Ditto but 1000mm x 300mm special reducer	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J35*.1	DN150mm straight coupling	nr	3		
J35*.2	Ditto but 200mm	nr	3		
J35*.3	Ditto but 300mm	nr	3		
J35*.4	Ditto but 400mm	nr	2		
J35*.5	Ditto but 500mm	nr	4		
J35*.6	Ditto but 600mm	nr	8		
J35*.7	Ditto but 700mm	nr	100		
J35*.8	Ditto but 800mm	nr	41		
J35*.9	DN63/50mm stepped coupling	nr	2		
J35*.10	Ditto but DN110/100mm	nr	4		
J35*.11	Ditto but 200/200mm	nr	34		
J35*.12	Ditto but 355/350mm	nr	22		
J35*.13	Ditto but 600/525mm	nr	4		
J35*.14	DN50mm flange adaptor	nr	2		
J35*.15	Ditto but 100mm	nr	4		
J35*.16	Ditto but 150mm	nr	3		
J35*.17	Ditto but 200mm	nr	10		
<b>Page total carried forward to next page</b>					

BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J35*.18	Ditto but 300mm	nr	3		
J35*.19	Ditto but 350mm	nr	22		
J35*.20	Ditto but 400mm	nr	3		
J35*.21	Ditto but 500mm	nr	2		
J35*.22	Ditto but 600mm	nr	9		
J35*.23	Ditto but 700mm	nr	23		
J35*.24	Ditto but 800mm	nr	7		
<b>Straight specials</b>					
J38*.1	DN800mm, 2.4m long double flanged spigot pipe with puddle flange	nr	1		
J38*.2	Ditto but length >2.5 to be determined on site	nr	1		
J38*.3	DN200mm, 2.4m long single flanged spigot pipe with puddle flange	nr	8		
J38*.4	Ditto but DN400mm	nr	2		
J38*.5	Ditto but DN500mm.	nr	2		
J38*.6	Ditto but DN600mm.	nr	8		
J38*.7	Ditto but DN700mm.	nr	22		
J38*.8	Ditto but DN800mm	nr	9		
J38*.9	DN100mm, 1.2m long single flanged spigot pipe	nr	2		
J38*.10	Ditto but 350mm	nr	11		
J38*.11	DN400mm, 2.4m long single flanged spigot pipe	nr	1		
J38*.12	DN50mm, 2.4m long plain ended pipe with puddle flange	nr	2		
J38*.13	Ditto but 100mm	nr	2		
J38*.14	Ditto but 150mm	nr	4		
J38*.15	Ditto but 200mm	nr	10		
J38*.16	Ditto but 300mm	nr	3		
J38*.17	Ditto but DN350mm.	nr	11		
J38*.18	Ditto but 500mm	nr	2		
J38*.19	Ditto but 600mm	nr	5		
J38*.20	Ditto but 700mm	nr	23		
J38*.21	Ditto but 800mm	nr	6		
J38*.22	DN800mm, 2.4m long plain ended pipe	nr	2		
J38*.23	Ditto but 600mm	nr	1		
J38*.24	Ditto but 500mm	nr	2		
J38*.25	Ditto but 400mm length approx 3m to be confirmed on site	nr	1		
J38*.26	Ditto but 600mm, 2.4m long	nr	1		
<b>Blank flange</b>					
J391*.1	DN200mm blank flange	nr	2		
J391*.2	Ditto but DN700mm	nr	1		
Page total carried forward to next page					

BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J391*.3	Ditto but DN800mm	nr	1		
J391*.4	Ditto but DN1000mm	nr	2		
J391*.5	Ditto but DN1200mm	nr	1		
<b>HDPE Bends</b>					
J613.1	DN315mm, 90° Bend, PN12.5 (for washouts)	nr	22		
J613.2	Ditto but 45°	nr	11		
J613.3	DN110mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J613.4	Ditto but 45°	nr	2		
<b>Valves and penstocks</b>					
Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent					
J81*.1	DN50mm all flanged sluice valve, PN10	nr	15		
J81*.2	Ditto but 100mm	nr	2		
J81*.3	Ditto but 150mm	nr	2		
J81*.4	Ditto but 200mm	nr	7		
J81*.5	Ditto but 300mm	nr	1		
J81*.6	Ditto but 350mm	nr	11		
J81*.7	Ditto but 400mm	nr	1		
J81*.8	Ditto but 600mm	nr	10		
J81*.9	Ditto but 800mm	nr	2		
J81*.10	DN300mm all flanged sluice valve, PN16	nr	1		
J81*.11	Ditto but 700mm	nr	2		
J81*.12	Ditto but 800mm	nr	2		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
J861*.2	Ditto but 80mm	nr	12		
<b>Pressure reducing valves</b>					
J87*.1	DN800mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
<b>Flap valves</b>					
J88*.1	DN100mm flap valve, PN10	nr	2		
J88*.2	Ditto but 350mm	nr	11		
Page total carried forward to next page					

BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J31*.8	DN150mm, 90° all flanged long bend	nr	1		
J31*.9	DN700mm, 11.25°	nr	20		
J31*.10	Ditto but 22.5°	nr	7		
J31*.11	DN800mm, 11.25°	nr	6		
J31*.12	Ditto but 22.5°	nr	6		
J31*.13	Ditto but 60°	nr	1		
J31*.14	DN800 90° all flanged long bend	nr	3		
	<b>Junctions and branches</b>				
J32*.23	DN200mm x 25mm (Air-Valve), all flanged tee	nr	2		
J32*.24	Ditto but 200mm x 50mm	nr	2		
J32*.25	Ditto but 200mm x 150mm	nr	2		
J32*.26	Ditto but 300mm x 150mm x 150mm	nr	1		
J32*.27	Ditto but 500mm x 200mm	nr	1		
J32*.28	Ditto but 600mm x 80mm (Air-Valve)	nr	5		
J32*.29	Ditto but 600mm x 400mm	nr	2		
J32*.30	Ditto but 600mm x 600mm	nr	1		
J32*.31	Ditto but 700mm x 80mm (Air-Valve)	nr	11		
J32*.32	Ditto but 800mm x 80mm (Air-Valve)	nr	2		
J32*.33	Ditto but 800mm x 600mm	nr	1		
J32*.34	Ditto but 800mm x 800mm	nr	2		
J32*.35	Ditto but 800mm x 600mm special angled	nr	1		
J32*.36	DN700mm x 700mm, flanged cross tee	nr	1		
J32*.37	DN600mm x 400mm, flanged cross tee	nr	1		
J32*.38	DN600mm x 600mm, flanged cross tee	nr	1		
J32*.39	DN1000mm x 700mm all flanged cross tee	nr	2		
J32*.40	DN1000mm x 1000mm all flanged cross tee	nr	1		
J32*.41	DN1200mm x 800mm all flanged reducing tee	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J32*.42	DN200mm x 100mm	nr	2		
J32*.43	DN700mm x 350mm	nr	10		
J32*.44	Ditto but 800mm x 350mm	nr	1		
	<b>Tapers</b>				
J33*.10	DN200mm x 150mm, all flanged concentric taper	nr	1		
J33*.11	Ditto but 400mm x 200mm	nr	1		
Page total carried forward to next page					

BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J33*.12	Ditto but 500mm x 200mm	nr	2		
J33*.13	Ditto but 700mm x 600mm	nr	1		
J33*.14	Ditto but 800mm x 600mm	nr	1		
J33*.15	Ditto but 800mm x 700mm	nr	1		
J33*.16	Ditto but 1000mm x 500mm	nr	2		
J33*.17	Ditto but 1000mm x 700mm	nr	1		
J33*.18	Ditto but 1000mm x 300mm special reducer	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J35*.25	DN150mm straight coupling	nr	3		
J35*.26	Ditto but 200mm	nr	3		
J35*.27	Ditto but 300mm	nr	3		
J35*.28	Ditto but 400mm	nr	2		
J35*.29	Ditto but 500mm	nr	4		
J35*.30	Ditto but 600mm	nr	8		
J35*.31	Ditto but 700mm	nr	100		
J35*.32	Ditto but 800mm	nr	41		
J35*.33	DN63/50mm stepped coupling	nr	2		
J35*.34	Ditto but DN110/100mm	nr	4		
J35*.35	Ditto but 200/200mm	nr	34		
J35*.36	Ditto but 355/350mm	nr	22		
J35*.37	Ditto but 600/525mm	nr	4		
J35*.38	DN50mm flange adaptor	nr	2		
J35*.39	Ditto but 100mm	nr	4		
J35*.40	Ditto but 150mm	nr	3		
J35*.41	Ditto but 200mm	nr	10		
J35*.42	Ditto but 300mm	nr	3		
J35*.43	Ditto but 350mm	nr	22		
J35*.44	Ditto but 400mm	nr	3		
J35*.45	Ditto but 500mm	nr	2		
J35*.46	Ditto but 600mm	nr	9		
J35*.47	Ditto but 700mm	nr	23		
J35*.48	Ditto but 800mm	nr	7		
<b>Straight specials</b>					
J38*.27	DN800mm, 2.4m long double flanged spigot pipe with puddle flange	nr	1		
J38*.28	Ditto but length >2.5 to be determined on site	nr	1		
J38*.29	DN200mm, 2.4m long single flanged spigot pipe with puddle flange	nr	8		
J38*.30	Ditto but DN400mm	nr	2		
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BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J38*.31	Ditto but DN500mm.	nr	2		
J38*.32	Ditto but DN600mm.	nr	8		
J38*.33	Ditto but DN700mm.	nr	22		
J38*.34	Ditto but DN800mm	nr	9		
J38*.35	DN100mm, 1.2m long single flanged spigot pipe	nr	2		
J38*.36	Ditto but 350mm	nr	11		
J38*.37	DN400mm, 2.4m long single flanged spigot pipe	nr	1		
J38*.38	DN50mm, 2.4m long plain ended pipe with puddle flange	nr	2		
J38*.39	Ditto but 100mm	nr	2		
J38*.40	Ditto but 150mm	nr	4		
J38*.41	Ditto but 200mm	nr	10		
J38*.42	Ditto but 300mm	nr	3		
J38*.43	Ditto but DN350mm.	nr	11		
J38*.44	Ditto but 500mm	nr	2		
J38*.45	Ditto but 600mm	nr	5		
J38*.46	Ditto but 700mm	nr	23		
J38*.47	Ditto but 800mm	nr	6		
J38*.48	DN800mm, 2.4m long plain ended pipe	nr	2		
J38*.49	Ditto but 600mm	nr	1		
J38*.50	Ditto but 500mm	nr	2		
J38*.51	Ditto but 400mm length approx 3m to be confirmed on site	nr	1		
J38*.52	Ditto but 600mm, 2.4m long	nr	1		
<b>Blank flange</b>					
J391*.7	DN200mm blank flange	nr	2		
J391*.8	Ditto but DN700mm	nr	1		
J391*.9	Ditto but DN800mm	nr	1		
J391*.10	Ditto but DN1000mm	nr	2		
J391*.11	Ditto but DN1200mm	nr	1		
<b>HDPE Bends</b>					
J613.5	DN315mm, 90° Bend, PN12.5 (for washouts)	nr	22		
J613.6	Ditto but 45°	nr	11		
J613.7	DN110mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J613.8	Ditto but 45°	nr	2		
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BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J81*.13	DN50mm all flanged sluice valve, PN10	nr	15		
J81*.14	Ditto but 100mm	nr	2		
J81*.15	Ditto but 150mm	nr	2		
J81*.16	Ditto but 200mm	nr	7		
J81*.17	Ditto but 300mm	nr	1		
J81*.18	Ditto but 350mm	nr	11		
J81*.19	Ditto but 400mm	nr	1		
J81*.20	Ditto but 600mm	nr	10		
J81*.21	Ditto but 800mm	nr	2		
J81*.22	DN300mm all flanged sluice valve, PN16	nr	1		
J81*.23	Ditto but 700mm	nr	2		
J81*.24	Ditto but 800mm	nr	2		
	<b>Air Valves</b>				
J861*.3	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
J861*.4	Ditto but 80mm	nr	12		
	<b>Pressure reducing valves</b>				
J87*.2	DN800mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
	<b>Flap valves</b>				
J88*.3	DN100mm flap valve, PN10	nr	2		
J88*.4	Ditto but 350mm	nr	11		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 2000mm x 2000mm.	nr	9		
K21*.2	Chamber of internal dimensions 2500mm x 2500mm.	nr	23		
K21*.3	Chamber of internal dimensions 3600mm x 3600mm.	nr	8		
K21*.4	Chamber of internal dimensions 4300mm x 3600mm.	nr	2		
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BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Crossings</b>				
	<b>Stream Crossings approximate length 15m</b>				
	<b>Pipe bore upto DN800mm</b>				
K632.1	Excavation for trench, preparation of surfaces, disposal of excavated material, upholding sides of excavation and backfilling for stream crossing	m	15		
	Extra over excavation in rock, depth n.e. 4.0m including preparation of trenches for stream crossing (No blasting permitted) (provisional)				
K632.2	<b>Class 'A'</b>	m <sup>3</sup>	26		
K632.3	<b>Class 'B'</b>	m <sup>3</sup>	3		
K632.4	<b>Class 'C'</b>	m <sup>3</sup>	2		
K632.5	Supply "Denso Tape" Wrapping or approved equivalent. Bidder to include wrapping / jointing on the 800mm dia. ferrous pipe in two layers for stream crossing as directed by the Engineer.	m	15		
K632.6	Provide all materials and construct concrete ogee pipe sleeve and 150mm thick class 20/20 concrete surround to Ferrous pipe under River crossings, diameter of pipe 800mm as per Drawing No. M410/SD/08	m	15		
	<b>Method Related Charges</b>				
K632.7	Allow for diverting any stream flows in wet days including construction of cofferdam, e.t.c., for river crossing works and reinstatement after construction. The stream/waterway to be kept operational during construction	L.S	1		
K632.8	Allow for keeping excavations free of water which may occur through ground water seepage, rain or other means.	L.S	1		
K632.9	Allow for any other method related charges the Bidder feels may be required. These should be indicated below with pricing for each item.				
	i)	L.S	1		
	ii)	L.S	1		
	<b>Other crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	10		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	25		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	L.S	1		
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BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Tarmac road reinstated with 50mm thick Type 1 Asphalt Concrete surfacing and 300mm thick well graded stabilised gravel with 3% cement content base compacted to 95% MDD (AASHTO T180) in layers of 150mm thick using an 8-10 tonne roller.	m	80		
K73*.2	Murram road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	80		
K73*.3	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	50		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of footpaths as per details in standard drawings i.e tarmac, murram, concrete and concrete block paved surfaces.	m	110		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	55		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	6		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:-</b> Blasting is NOT permitted for Item L1  <b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	5,745		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	1,064		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	638		
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BILL No. 8.4 - LINE WN05 (Revised)					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
	Trenchless road crossing: Provide all labour, equipment and materials to bore below tarmac road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of an epoxy coated FBE steel pipe inside an approved RC service duct as specified in the standard drawings, constructed and protected by precast RC segments, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these</b>				
L2**.1	Ditto but for DN300mm pipe across Mombasa-Nairobi Dual Carriageway near NTSA		60		
L2**.2	Ditto but for DN600mm pipe across Mombasa-Nairobi Dual Carriageway near Mazeras	m	60		
L2**.3	Ditto but for DN700mm pipe across the 4 lanes at the Miritini Interchange and at Maqonqo Road at Jomvu	m	300		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	3,456		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	320		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	3,456		
L53*	Ditto but imported selected fill.	m	1,481		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	740		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 1m <sup>3</sup>	nr	37		
L7**.2	Ditto but 1 - 2m <sup>3</sup>	nr	32		
L7**.3	Ditto but 2 - 4 m <sup>3</sup>	nr	5		
L7**.4	Ditto but exceeding 4 m <sup>3</sup>	nr	4		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	17		
X65	Allow a provisional sum for carrying out investigations and repairs to leaks at the Nguu Tatu Reservoirs	ps	1	25,000,000	25,000,000.00
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BILL No. 8.5 - LINE WN08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,520		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,520		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.30		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN110mm	m	1,520		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	12		
I71*.4	DN110mm, depth not exceeding 1.5m	m	945		
I71*.5	Ditto but depth exceeding 1.5m	m	575		
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BILL No. 8.5 - LINE WN08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	3		
J321.4	Ditto but 100mm x 100mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	12		
J351.3	DN110/100mm stepped coupling	nr	16		
J351.4	DN50mm flange adaptor	nr	2		
J351.5	Ditto but 80mm	nr	6		
J351.6	Ditto but 100mm	nr	10		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.2	Ditto but 100mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	6		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.5	Ditto but 80mm, 1.2m long	nr	6		
J381.6	Ditto but 100mm, 1.2m long	nr	10		
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	6		
J611.2	Ditto but 45°	nr	3		
J611.3	DN110mm, 11.25°	nr	5		
J611.4	Ditto but 22.5°	nr	6		
J611.5	Ditto but 45°	nr	1		
J611.6	Ditto but 60°	nr	1		
J611.7	Ditto but 90°	nr	1		
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BILL No. 8.5 - LINE WN08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 80mm	nr	3		
J811.3	Ditto but 100mm	nr	8		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	3		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement				
	<b>Bends</b>				
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee (for washouts)	nr	1		
J321.7	Ditto but 100mm x 25mm	nr	1		
J321.8	Ditto but 100mm x 80mm	nr	3		
J321.9	Ditto but 100mm x 100mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	1		
J311.2	DN80mm, 90° Bend	nr	3		
Page total carried forward to next page					

BILL No. 8.5 - LINE WN08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN50mm straight coupling	nr	2		
J351.8	DN80/90mm stepped coupling	nr	12		
J351.9	DN110/100mm stepped coupling	nr	16		
J351.10	DN50mm flange adaptor	nr	2		
J351.11	Ditto but 80mm	nr	6		
J351.12	Ditto but 100mm	nr	10		
	<b>Straight specials</b>				
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.8	Ditto but 100mm, 0.5m long	nr	1		
J381.9	Ditto but 100mm, 1.2m long	nr	6		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.11	Ditto but 80mm, 1.2m long	nr	6		
J381.12	Ditto but 100mm, 1.2m long	nr	10		
	<b>HDPE Bends</b>				
J611.8	DN50mm, 90° Bend, PN12.5 (for washouts)	nr	1		
J611.9	Ditto but 45°	nr	1		
J611.10	DN110mm, 11.25°	nr	5		
J611.11	Ditto but 22.5°	nr	6		
J611.12	Ditto but 45°	nr	1		
J611.13	Ditto but 60°	nr	1		
J611.14	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
J811.4	DN50mm all flanged sluice valve, PN16	nr	2		
J811.5	Ditto but 80mm	nr	3		
J811.6	Ditto but 100mm	nr	8		
	<b>Air Valves</b>				
J861*2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*2	DN50mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
J91*4	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*5	DN80mm flanged Y-type strainers, PN16	nr	3		
	<b>Hydrants</b>				
J91*6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
Page total carried forward to next page					

BILL No. 8.5 - LINE WN08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	<b>Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries</b>				
	<b>In Situ Chambers</b> <b>Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.</b>				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	13		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	8		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	15		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings	nr	27		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
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BILL No. 8.5 - LINE WN08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	720		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	150		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	60		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these</b>	m	20		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	532		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	25		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	532		
L53*	Ditto but imported selected fill.	m	228		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	10		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m3	nr	54		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in lison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	1		
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BILL No. 8.6 - LINE WN09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Junctions and branches</b>				
J321.1	DN100mm x 100mm, all flanged tee	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN110/100mm stepped coupling	nr	4		
J351.2	DN100mm flange adaptor	nr	2		
	<b>Straight specials</b>				
J381.1	DN100mm, 1.2m long flanged spigot pipe with puddle flange	nr	1		
J381.2	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
	<b>HDPE Bends</b>				
J611.1	DN110mm, 22.5°	nr	4		
J611.2	Ditto but 30°	nr	2		
J611.3	Ditto but 45°	nr	1		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN100mm all flanged sluice valve, PN16	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Junctions and branches</b>				
J321.2	DN100mm x 100mm, all flanged tee	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.3	DN110/100mm stepped coupling	nr	4		
J351.4	DN100mm flange adaptor	nr	1		
	<b>Straight specials</b>				
J381.3	DN100mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.4	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	1		
	<b>HDPE Bends</b>				
J611.4	DN110mm, 22.5°	nr	4		
J611.5	Ditto but 30°	nr	2		
J611.6	Ditto but 45°	nr	1		
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BILL No. 8.6 - LINE WN09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
J811.2	DN100mm all flanged sluice valve, PN16	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	1		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	1		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	4		
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BILL No. 8.6 - LINE WN09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	90		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	20		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	10		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	67		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	67		
L53*	Ditto but imported selected fill.	m	29		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	12		
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BILL No. 8.7 - LINE WN10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	855		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	855		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.26		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN110mm	m	855		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	12		
I71*.4	DN110mm, depth not exceeding 1.5m	m	695		
I71*.5	Ditto but depth exceeding 1.5m	m	160		
Page total carried forward to next page					

BILL No. 8.7 - LINE WN10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, oaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	1		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	2		
J321.4	Ditto but 100mm x 100mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	8		
J351.3	DN110/100mm stepped coupling	nr	12		
J351.4	DN50mm flange adaptor	nr	2		
J351.5	Ditto but 80mm	nr	4		
J351.6	Ditto but 100mm	nr	7		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 100mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	5		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.5	Ditto but 80mm, 1.2m long	nr	4		
J381.6	Ditto but 100mm, 1.2m long	nr	7		
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN10	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	2		
J611.4	Ditto but 22.5°	nr	4		
J611.5	Ditto but 30°	nr	1		
J611.6	Ditto but 60°	nr	1		
J611.7	Ditto but 90°	nr	5		
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BILL No. 8.7 - LINE WN10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 100mm	nr	5		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee	nr	1		
J321.7	Ditto but 100mm x 25mm	nr	1		
J321.8	Ditto but 100mm x 80mm	nr	2		
J321.9	Ditto but 100mm x 100mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN50mm straight coupling	nr	2		
J351.8	DN80/90mm stepped coupling	nr	8		
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BILL No. 8.7 - LINE WN10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J351.9	DN110/100mm stepped coupling	nr	12		
J351.10	DN50mm flange adaptor	nr	2		
J351.11	Ditto but 80mm	nr	4		
J351.12	Ditto but 100mm	nr	7		
<b>Straight specials</b>					
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.8	Ditto but 100mm, 0.5m long	nr	1		
J381.9	Ditto but 100mm, 1.2m long	nr	5		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.11	Ditto but 80mm, 1.2m long	nr	4		
J381.12	Ditto but 100mm, 1.2m long	nr	7		
<b>HDPE Bends</b>					
J611.8	DN50mm, 90° Bend, PN10	nr	1		
J611.9	Ditto but 45°	nr	1		
J611.10	DN110mm, 11.25°	nr	2		
J611.11	Ditto but 22.5°	nr	4		
J611.12	Ditto but 30°	nr	1		
J611.13	Ditto but 60°	nr	1		
J611.14	Ditto but 90°	nr	5		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN12.5	nr	2		
J811.5	Ditto but 80mm	nr	2		
J811.6	Ditto but 100mm	nr	5		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN12.5, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN50mm flap valve, PN12.5	nr	1		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN12.5	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN12.5	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
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BILL No. 8.7 - LINE WN10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries  <b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	9		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	24		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	22		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
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BILL No. 8.7 - LINE WN10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	410		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	90		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	40		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	299		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	34		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	299		
L53*	Ditto but imported selected fill.	m	128		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	44		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	43		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	3		
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BILL No. 8.8 - LINE WN11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	2		
J321.2	Ditto but 100mm x 25mm	nr	1		
J321.3	Ditto but 100mm x 80mm	nr	1		
J321.4	Ditto but 200mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	4		
J351.2	DN80/90mm stepped coupling	nr	4		
J351.3	Ditto but 200mm	nr	2		
J351.4	DN110/100mm stepped coupling	nr	9		
J351.5	DN50mm flange adaptor	nr	4		
J351.6	Ditto but 80mm	nr	2		
J351.7	Ditto but 100mm	nr	5		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 100mm, 0.5m long	nr	2		
J381.3	Ditto but 100mm, 1.2m long	nr	4		
J381.4	Ditto but 200mm, 1.2m long	nr	2		
J381.5	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.6	Ditto but 80mm, 1.2m long	nr	2		
J381.7	Ditto but 100mm, 1.2m long	nr	5		
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN10	nr	2		
J611.2	Ditto but 45°	nr	2		
J611.3	DN110mm, 11.25°	nr	9		
J611.4	Ditto but 22.5°	nr	5		
J611.5	Ditto but 30°	nr	2		
J611.6	Ditto but 60°	nr	2		
J611.7	Ditto but 90°	nr	1		
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BILL No. 8.8 - LINE WN11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	4		
J811.2	Ditto but 80mm	nr	1		
J811.3	Ditto but 100mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN16	nr	2		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee	nr	2		
J321.7	Ditto but 100mm x 25mm	nr	1		
J321.8	Ditto but 100mm x 80mm	nr	1		
J321.9	Ditto but 200mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	2		
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BILL No. 8.8 - LINE WN11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.8	DN50mm straight coupling	nr	4		
J351.9	DN80/90mm stepped coupling	nr	4		
J351.10	Ditto but 200mm	nr	2		
J351.11	DN110/100mm stepped coupling	nr	9		
J351.12	DN50mm flange adaptor	nr	4		
J351.13	Ditto but 80mm	nr	2		
J351.14	Ditto but 100mm	nr	5		
	<b>Straight specials</b>				
J381.8	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.9	Ditto but 100mm, 0.5m long	nr	2		
J381.10	Ditto but 100mm, 1.2m long	nr	4		
J381.11	Ditto but 200mm, 1.2m long	nr	2		
J381.12	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.13	Ditto but 80mm, 1.2m long	nr	2		
J381.14	Ditto but 100mm, 1.2m long	nr	5		
	<b>HDPE Bends</b>				
J611.8	DN50mm, 90° Bend, PN10	nr	2		
J611.9	Ditto but 45°	nr	2		
J611.10	DN110mm, 11.25°	nr	9		
J611.11	Ditto but 22.5°	nr	5		
J611.12	Ditto but 30°	nr	2		
J611.13	Ditto but 60°	nr	2		
J611.14	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
J811.4	DN50mm all flanged sluice valve, PN16	nr	4		
J811.5	Ditto but 80mm	nr	1		
J811.6	Ditto but 100mm	nr	2		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.2	DN50mm flap valve, PN16	nr	2		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
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BILL No. 8.8 - LINE WN11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries  <b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	7		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	35		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	17		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	2		
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BILL No. 8.8 - LINE WN11					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	320		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	70		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	30		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	235		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	45		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	235		
L53*	Ditto but imported selected fill.	m	101		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	55		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	50		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	2		
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BILL No. 8.9 - LINE WP01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,095		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,095		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.22		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN160mm for washouts	m	12		
I71*.2	DN355mm	m	1,095		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN160mm for washouts	m	24		
I71*.4	DN355mm, depth not exceeding 1.5m	m	726		
I71*.5	Ditto but depth exceeding 1.5m	m	369		
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BILL No. 8.9 - LINE WP01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN150mm x 50mm, all flanged tee	nr	2		
J323*.1	Ditto but 300mm x 80mm	nr	2		
J323*.2	Ditto but 300mm x 100mm	nr	1		
J322.1	Ditto but 250mm x 250mm	nr	1		
J323*.3	Ditto but 300mm x 250mm	nr	1		
J323*.4	Ditto but 300mm x 300mm	nr	3		
	<b>All flanged level invert tee (for washouts)</b>				
J323*.5	DN300mm x 150mm	nr	2		
	<b>Tapers</b>				
J333*.1	DN300mm x 80mm, all flanged concentric taper	nr	1		
J333*.2	Ditto but 300mm x 250mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN75/80mm stepped coupling	nr	1		
J351.2	Ditto but DN80/90mm	nr	9		
J351.3	Ditto but 110/100mm	nr	1		
J351.4	Ditto but 150/160mm	nr	2		
J352.1	Ditto but 250/315mm	nr	4		
J353.1	Ditto but 300/355mm	nr	8		
J351.5	DN80mm flange adaptor	nr	5		
J351.6	Ditto but 100mm	nr	1		
J351.7	Ditto but 150mm	nr	2		
J352.2	Ditto but 250mm	nr	3		
J353.2	Ditto but 300mm	nr	9		
	<b>Straight specials</b>				
J38*.1	DN80mm, 1.2m long all flanged pipe with puddle flange	nr	1		
J38*.2	Ditto but 300mm, 2.0m long	nr	2		
J38*.3	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J38*.4	Ditto but 150mm, 0.5m long	nr	1		
J38*.5	Ditto but 150mm, 1.2m long	nr	1		
J38*.6	Ditto but 250mm, 1.2m long	nr	1		
J38*.7	Ditto but 300mm, 1.2m long	nr	6		
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BILL No. 8.9 - LINE WP01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J38*.8	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	5		
J38*.9	Ditto but 100mm, 1.2m long	nr	1		
J38*.10	Ditto but 250mm, 1.2m long	nr	3		
J38*.11	Ditto but 300mm, 1.2m long	nr	9		
	<b>Bends</b>				
J611.1	DN160mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J611.2	Ditto but 45°	nr	2		
J613*.1	DN355mm, 11.25°	nr	12		
J613*.2	Ditto but 22.5°	nr	4		
J613*.3	Ditto but 60°	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 80mm	nr	3		
J811.3	Ditto but 100mm	nr	1		
J811.4	Ditto but 150mm	nr	2		
J812.1	Ditto but 250mm	nr	2		
J813*.1	Ditto but 300mm	nr	6		
	<b>Air Valves</b>				
J861*.1	DN50mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>Flap valves</b>				
J88*.1	DN150mm flap valve, PN16	nr	2		
	<b>Bulk Water Meters</b>				
	<b>Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent</b>				
	<b>To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.</b>				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
<b>Page total carried forward to next page</b>					

BILL No. 8.9 - LINE WP01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.2	DN150mm x 50mm, all flanged tee	nr	2		
J323*.6	Ditto but 300mm x 80mm	nr	2		
J323*.7	Ditto but 300mm x 100mm	nr	1		
J322.2	Ditto but 250mm x 250mm	nr	1		
J323*.8	Ditto but 300mm x 250mm	nr	1		
J323*.9	Ditto but 300mm x 300mm	nr	3		
	<b>All flanged level invert tee (for washouts)</b>				
J323*.10	DN300mm x 150mm	nr	2		
	<b>Tapers</b>				
J333*.3	DN300mm x 80mm, all flanged concentric taper	nr	1		
J333*.4	Ditto but 400mm x 250mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.8	DN75/80mm stepped coupling	nr	1		
J351.9	Ditto but DN80/90mm	nr	9		
J351.10	Ditto but 110/100mm	nr	1		
J351.11	Ditto but 150/160mm	nr	2		
J352.3	Ditto but 250/315mm	nr	4		
J353.3	Ditto but 300/355mm	nr	8		
J351.12	DN80mm flange adaptor	nr	5		
J351.13	Ditto but 100mm	nr	1		
J351.14	Ditto but 150mm	nr	2		
J352.4	Ditto but 250mm	nr	3		
J353.4	Ditto but 300mm	nr	9		
	<b>Straight specials</b>				
J38*.12	DN80mm, 1.2m long all flanged pipe with puddle flange	nr	1		
J38*.13	Ditto but 300mm, 2.0m long	nr	2		
J38*.14	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J38*.15	Ditto but 150mm, 0.5m long	nr	1		
J38*.16	Ditto but 150mm, 1.2m long	nr	1		
Page total carried forward to next page					

BILL No. 8.9 - LINE WP01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J38*.17	Ditto but 250mm, 1.2m long	nr	1		
J38*.18	Ditto but 300mm, 1.2m long	nr	6		
J38*.19	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	5		
J38*.20	Ditto but 100mm, 1.2m long	nr	1		
J38*.21	Ditto but 250mm, 1.2m long	nr	3		
J38*.22	Ditto but 300mm, 1.2m long	nr	9		
<b>Bends</b>					
J611.3	DN160mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J611.4	Ditto but 45°	nr	2		
J613*.4	DN355mm, 11.25°	nr	12		
J613*.5	Ditto but 22.5°	nr	4		
J613*.6	Ditto but 60°	nr	1		
<b>Valves and penstocks</b>					
J811.5	DN50mm all flanged sluice valve, PN16	nr	2		
J811.6	Ditto but 80mm	nr	3		
J811.7	Ditto but 100mm	nr	1		
J811.8	Ditto but 150mm	nr	2		
J812.2	Ditto but 250mm	nr	2		
J813*.2	Ditto but 300mm	nr	6		
<b>Air Valves</b>					
J861*.1	DN50mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
<b>Flap valves</b>					
J88*.2	DN150mm flap valve, PN16	nr	2		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries					
<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.					
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	9		
K21*.2	Chamber of internal dimensions 1800mm x 1800mm.	nr	4		
<b>Page total carried forward to next page</b>					

BILL No. 8.9 - LINE WP01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	4		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	20		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	18		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	520		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	110		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	40		
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BILL No. 8.9 - LINE WP01					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN355mm HDPE pipe and a DN450mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	70		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	383		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	30		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	383		
L53*	Ditto but imported selected fill.	m	164		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	70		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	30		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	12		
L7**.3	Ditto but 0.2 - 0.5m <sup>3</sup>	nr	3		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	3		
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BILL No. 8.10 - LINE WP02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,600		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,600		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.32		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN90mm for washouts	m	24		
I71*.2	DN160mm	m	1,600		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN90mm for washouts	m	24		
I71*.4	DN160mm, depth not exceeding 1.5m	m	1,030		
I71*.5	Ditto but depth exceeding 1.5m	m	570		
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BILL No. 8.10 - LINE WP02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	2		
J321.2	Ditto but 150mm x 25mm	nr	2		
J321.3	Ditto but 150mm x 80mm	nr	3		
J321.4	Ditto but 150mm x 50mm	nr	1		
J321.5	Ditto but 150mm x 150mm	nr	4		
J322.1	Ditto but 250mm x 150mm	nr	1		
J323*.1	Ditto but 400mm x 150mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.7	DN150mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.1	DN150mm x 100mm, all flanged concentric taper	nr	1		
J332.1	Ditto but 250mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J352.1	DN250 Straight coupling	nr	1		
J351.1	DN80/90mm stepped coupling	nr	12		
J351.2	Ditto but 90/100mm	nr	5		
J351.3	Ditto but 100/110mm	nr	1		
J351.4	Ditto but 160/150mm	nr	17		
J353*.1	Ditto but 400/400mm	nr	2		
J351.5	DN80mm flange adaptor	nr	6		
J351.6	Ditto but 100mm	nr	2		
J351.7	Ditto but 150mm	nr	17		
J353*.2	Ditto but 400mm	nr	2		
	<b>Straight specials</b>				
J381.1	DN150mm, 1.2m long all flanged pipe with puddle flange	nr	1		
J383*.1	Ditto but 400mm, 2.0m long	nr	1		
J381.2	DN80mm, 1.2m long single flanged spigot pipewith puddle flange	nr	6		
J381.3	Ditto but 100mm, 0.5m long	nr	2		
J381.4	Ditto but 100mm, 1.2m long	nr	3		
J381.5	Ditto but 150mm, 1.2m long	nr	7		
J383*.2	Ditto but 250mm, 1.2m long	nr	1		
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BILL No. 8.10 - LINE WP02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J381.6	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.7	Ditto but 100mm, 1.2m long	nr	2		
J381.8	Ditto but 150mm, 1.2m long	nr	17		
J383*.3	Ditto but 400mm, 1.2m long	nr	2		
<b>HDPE Bends</b>					
J611.1	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J611.2	Ditto but 45°	nr	2		
J611.3	DN160mm, 11.25°	nr	8		
J611.4	Ditto but 22.5°	nr	5		
J611.5	Ditto but 30°	nr	6		
J611.6	Ditto but 45°	nr	4		
J611.7	Ditto but 90°	nr	4		
<b>Valves and penstocks</b>					
<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>					
J811.1	DN50mm all flanged sluice valve, PN16	nr	4		
J811.2	Ditto but 80mm	nr	3		
J811.3	Ditto but 100mm	nr	3		
J811.4	Ditto but 150mm	nr	10		
J811.5	Ditto but 200mm	nr	2		
J812.1	Ditto but 250mm	nr	1		
J813*.1	Ditto but 400mm	nr	1		
<b>Air Valves</b>					
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Flap valves</b>					
J88*.1	DN100mm flap valve, PN16	nr	1		
<b>Bulk Water Meters</b>					
<b>Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent. To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.</b>					
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	3		
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BILL No. 8.10 - LINE WP02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.7	DN100mm x 50mm, all flanged tee	nr	2		
J321.8	Ditto but 150mm x 25mm	nr	1		
J321.9	Ditto but 150mm x 80mm	nr	3		
J321.10	Ditto but 150mm x 50mm	nr	1		
J321.11	Ditto but 150mm x 150mm	nr	4		
J322.2	Ditto but 250mm x 150mm	nr	1		
J323*.2	Ditto but 400mm x 150mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.14	DN200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.2	DN150mm x 100mm, all flanged concentric taper	nr	1		
J332.2	Ditto but 250mm x 150mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J352.2	DN250 Straight coupling	nr	1		
J351.8	DN80/90mm stepped coupling	nr	12		
J351.9	Ditto but 90/100mm	nr	5		
J351.10	Ditto but 100/110mm	nr	1		
J351.11	Ditto but 160/150mm	nr	17		
J353*.3	Ditto but 400/400mm	nr	2		
J351.12	DN80mm flange adaptor	nr	6		
J351.13	Ditto but 100mm	nr	2		
J351.14	Ditto but 150mm	nr	17		
J353*.4	Ditto but 400mm	nr	2		
	<b>Straight specials</b>				
J381.1	DN150mm, 1.2m long all flanged pipe with puddle flange	nr	1		
J383*.1	Ditto but 400mm, 2.0m long	nr	1		
J381.2	DN80mm, 1.2m long single flanged spigot pipewith puddle flange	nr	6		
J381.3	Ditto but 100mm, 0.5m long	nr	2		
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BILL No. 8.10 - LINE WP02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J381.4	Ditto but 100mm, 1.2m long	nr	3		
J381.5	Ditto but 150mm, 1.2m long	nr	7		
J383*.2	Ditto but 250mm, 1.2m long	nr	1		
J381.6	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.7	Ditto but 100mm, 1.2m long	nr	2		
J381.8	Ditto but 150mm, 1.2m long	nr	17		
J383*.3	Ditto but 400mm, 1.2m long	nr	2		
<b>HDPE Bends</b>					
J611.8	DN90mm, 90° Bend, PN12.5 (for washouts)	nr	4		
J611.9	Ditto but 45°	nr	2		
J611.10	DN160mm, 11.25°	nr	8		
J611.11	Ditto but 22.5°	nr	5		
J611.12	Ditto but 30°	nr	6		
J611.13	Ditto but 45°	nr	4		
J611.14	Ditto but 90°	nr	4		
<b>Valves and penstocks</b>					
J811.6	DN50mm all flanged sluice valve, PN16	nr	4		
J811.7	Ditto but 80mm	nr	3		
J811.8	Ditto but 100mm	nr	3		
J811.9	Ditto but 150mm	nr	10		
J811.10	Ditto but 200mm	nr	2		
J812.2	Ditto but 250mm	nr	1		
J813*.2	Ditto but 400mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Flap valves</b>					
J88*.2	DN100mm flap valve, PN16	nr	1		
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	3		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
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BILL No. 8.10 - LINE WP02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries  <b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	14		
K21*.2	Ditto but internal dimensions 1500mm x 1200mm.	nr	4		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	10		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	33		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	2		
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BILL No. 8.10 - LINE WP02					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b>				
	<b>Note:- Blasting is NOT permitted for Item L1</b>				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	750		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	160		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	60		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN160mm HDPE pipe and a DN250mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	45		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	560		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	20		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	560		
L53*	Ditto but imported selected fill.	m	240		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	80		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	67		
L7**.2	Ditto but 0.1 - 0.2m <sup>3</sup>	nr	2		
L7**.3	Ditto but exceeding 0.2 m <sup>3</sup>	nr	2		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	4		
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BILL No. 8.11 - LINE WP03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,630		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,630		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.33		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN90mm for washouts	m	36		
I71*.2	DN160mm	m	1,630		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN90mm for washouts	m	36		
I71*.4	DN160mm, depth not exceeding 1.5m	m	1,245		
I71*.5	Ditto but depth exceeding 1.5m	m	385		
Page total carried forward to next page					

BILL No. 8.11 - LINE WP03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, oaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	4		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	3		
J321.2	Ditto but 150mm x 25mm	nr	3		
J321.3	Ditto but 150mm x 80mm	nr	4		
	<b>All flanged level invert tee</b>				
J321.4	DN150mm x 100mm	nr	3		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	16		
J351.2	DN160/150mm stepped coupling	nr	11		
J351.3	DN80mm flange adaptor	nr	8		
J351.4	Ditto but 150mm	nr	10		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	12		
J381.2	Ditto but 80mm, 0.5m long	nr	4		
J381.3	Ditto but 150mm, 1.2m long	nr	10		
J381.4	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	12		
J381.5	Ditto but 150mm, 1.2m long	nr	10		
	<b>Blank flange</b>				
J391*.1	DN150mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN90mm, 90° Bend, PN12.5	nr	3		
J611.2	Ditto but 45°	nr	3		
J611.3	DN160mm, 11.25°	nr	7		
J611.4	Ditto but 22.5°	nr	9		
J611.5	Ditto but 30°	nr	2		
J611.6	Ditto but 45°	nr	3		
J611.7	Ditto but 60°	nr	1		
J611.8	Ditto but 90°	nr	6		
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BILL No. 8.11 - LINE WP03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	3		
J811.2	Ditto but 80mm	nr	4		
J811.3	Ditto but 150mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	3		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN16	nr	3		
	<b>Bulk Water Meters</b> Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	4		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	4		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	4		
	<b>Junctions and branches</b>				
J321.5	DN100mm x 50mm, all flanged tee	nr	3		
J321.6	Ditto but 150mm x 25mm	nr	3		
J321.7	Ditto but 150mm x 80mm	nr	4		
	<b>All flanged level invert tee</b>				
J321.8	DN150mm x 80mm	nr	3		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN80/90mm stepped coupling	nr	22		
J351.6	DN160/150mm stepped coupling	nr	21		
Page total carried forward to next page					

BILL No. 8.11 - LINE WP03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J351.7	DN80mm flange adaptor	nr	14		
J351.8	Ditto but 150mm	nr	11		
<b>Straight specials</b>					
J381.6	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	8		
J381.7	Ditto but 80mm, 0.5m long	nr	3		
J381.8	Ditto but 150mm, 1.2m long	nr	10		
J381.9	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	11		
J381.10	Ditto but 150mm, 1.2m long	nr	11		
<b>Blank flange</b>					
J391*.2	DN150mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.9	DN90mm, 90° Bend, PN12.5	nr	3		
J611.10	Ditto but 45°	nr	3		
J611.11	DN160mm, 11.25°	nr	7		
J611.12	Ditto but 22.5°	nr	9		
J611.13	Ditto but 30°	nr	2		
J611.14	Ditto but 45°	nr	3		
J611.15	Ditto but 60°	nr	1		
J611.16	Ditto but 90°	nr	6		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN16	nr	3		
J811.5	Ditto but 80mm	nr	7		
J811.6	Ditto but 150mm	nr	5		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	3		
<b>Flap valves</b>					
J88*.1	DN80mm flap valve, PN16	nr	3		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	4		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	4		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
<b>Page total carried forward to next page</b>					

BILL No. 8.11 - LINE WP03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> <b>Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries</b>  <b>In Situ Chambers</b> <b>Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.</b>				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	19		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	8		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	30		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	260		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	66		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	3		
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BILL No. 8.11 - LINE WP03					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	770		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	160		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	60		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	571		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	295		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	571		
L53*	Ditto but imported selected fill.	m	245		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	20		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m3	nr	87		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	3		
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BILL No. 8.12 - LINE WP04					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.1	DN150mm x 25mm, all flanged tee	nr	2		
J321.2	Ditto but 150mm x 80mm	nr	3		
J323*.1	Ditto but 500mm x 250mm	nr	1		
	<b>Tapers</b>				
J332.1	DN250mm x 150mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	12		
J353*.1	Ditto but 500mm	nr	2		
J351.2	DN150/160mm stepped coupling	nr	12		
J351.3	DN80mm flange adaptor	nr	6		
J351.4	Ditto but 150mm	nr	6		
J353*.2	Ditto but 500mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.2	Ditto but 150mm, 1.2m long	nr	5		
J383*.1	Ditto but 500mm, 1.2m long	nr	1		
J381.3	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.4	Ditto but 150mm, 1.2m long	nr	7		
J383*.2	Ditto but 500mm, 1.2m long	nr	2		
	<b>Blank flange</b>				
J391*.1	DN150mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN160mm, 11.25°	nr	7		
J611.2	Ditto but 22.5°	nr	5		
J611.3	Ditto but 30°	nr	3		
J611.4	Ditto but 45°	nr	1		
J611.5	Ditto but 60°	nr	1		
J611.6	Ditto but 90°	nr	1		
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BILL No. 8.12 - LINE WP04					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN80mm all flanged sluice valve, PN16	nr	3		
J811.2	Ditto but 150mm	nr	2		
J813*.1	Ditto but 500mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	3		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	3		
	<b>Junctions and branches</b>				
J321.3	DN150mm x 25mm, all flanged tee	nr	2		
J321.4	Ditto but 150mm x 80mm	nr	3		
J323*.2	Ditto but 500mm x 250mm	nr	1		
	<b>Tapers</b>				
J332.2	DN250mm x 150mm, all flanged concentric taper	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN80/90mm stepped coupling	nr	12		
J353*.3	Ditto but 500mm	nr	2		
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BILL No. 8.12 - LINE WP04					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J351.6	DN150/160mm stepped coupling	nr	12		
J351.7	DN80mm flange adaptor	nr	6		
J351.8	Ditto but 150mm	nr	6		
J353*.4	Ditto but 500mm	nr	1		
<b>Straight specials</b>					
J381.5	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	6		
J381.6	Ditto but 150mm, 1.2m long	nr	5		
J383.3	Ditto but 500mm, 1.2m long	nr	1		
J381.7	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	6		
J381.8	Ditto but 150mm, 1.2m long	nr	7		
J383.4	Ditto but 500mm, 1.2m long	nr	2		
<b>Blank flange</b>					
J391*.2	DN150mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.7	DN160mm, 11.25°	nr	7		
J611.8	Ditto but 22.5°	nr	5		
J611.9	Ditto but 30°	nr	3		
J611.10	Ditto but 45°	nr	1		
J611.11	Ditto but 60°	nr	1		
J611.12	Ditto but 90°	nr	1		
<b>Valves and penstocks</b>					
J811.3	DN80mm all flanged sluice valve, PN16	nr	3		
J811.4	Ditto but 150mm	nr	2		
J813*.2	Ditto but 500mm	nr	2		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	3		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	3		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	3		
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BILL No. 8.12 - LINE WP04					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries  <b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	12		
K21*.2	Ditto but internal dimensions 3000mm x 1500mm.	nr	1		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	2		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	1		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	200		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	38		
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BILL No. 8.12 - LINE WP04					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	690		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	150		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	60		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	515		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	210		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	515		
L53*	Ditto but imported selected fill.	m	221		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	20		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**.1	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	59		
L7**.2	Ditto but 0.1 - 0.5m <sup>3</sup>	nr	1		
L7**.3	Ditto but exceeding 0.5 m <sup>3</sup>	nr	1		
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BILL No. 8.13 - LINE WP05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,460		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,460		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.29		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	24		
I71*.2	DN110mm	m	1,460		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	24		
I71*.4	DN110mm, depth not exceeding 1.5m	m	1,089		
I71*.5	Ditto but depth exceeding 1.5m	m	371		
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BILL No. 8.13 - LINE WP05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	4		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	2		
J321.2	Ditto but 100mm x 25mm	nr	2		
J321.3	Ditto but 100mm x 80mm	nr	4		
J321.4	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	4		
J351.2	DN80/90mm stepped coupling	nr	16		
J351.3	Ditto but 100mm	nr	2		
J351.4	DN110/100mm stepped coupling	nr	22		
J351.5	DN50mm flange adaptor	nr	4		
J351.6	Ditto but 80mm	nr	8		
J351.7	Ditto but 100mm	nr	10		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	8		
J381.2	Ditto but 100mm, 0.5m long	nr	2		
J381.3	Ditto but 100mm, 1.2m long	nr	10		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.5	Ditto but 80mm, 1.2m long	nr	8		
J381.6	Ditto but 100mm, 1.2m long	nr	11		
	<b>Blank flange</b>				
J391*.1	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN12.5	nr	3		
J611.2	Ditto but 45°	nr	3		
J611.3	DN110mm, 11.25°	nr	7		
J611.4	Ditto but 22.5°	nr	7		
J611.5	Ditto but 30°	nr	3		
J611.6	Ditto but 45°	nr	1		
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BILL No. 8.13 - LINE WP05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	4		
J811.2	Ditto but 80mm	nr	4		
J811.3	Ditto but 100mm	nr	4		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN16	nr	2		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	4		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	4		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	4		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	4		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee	nr	3		
J321.7	Ditto but 100mm x 25mm	nr	3		
J321.8	Ditto but 100mm x 80mm	nr	4		
J321.9	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	3		
Page total carried forward to next page					

BILL No. 8.13 - LINE WP05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.8	DN50mm straight coupling	nr	6		
J351.9	DN80/90mm stepped coupling	nr	16		
J351.10	Ditto but 100mm	nr	2		
J351.11	DN110/100mm stepped coupling	nr	22		
J351.12	DN50mm flange adaptor	nr	6		
J351.13	Ditto but 80mm	nr	8		
J351.14	Ditto but 100mm	nr	14		
<b>Straight specials</b>					
J381.7	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	8		
J381.8	Ditto but 100mm, 0.5m long	nr	3		
J381.9	Ditto but 100mm, 1.2m long	nr	10		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	3		
J381.11	Ditto but 80mm, 1.2m long	nr	8		
J381.12	Ditto but 100mm, 1.2m long	nr	14		
<b>Blank flange</b>					
J391*.2	DN100mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.7	DN50mm, 90° Bend, PN12.5	nr	3		
J611.8	Ditto but 45°	nr	3		
J611.9	DN100mm, 11.25°	nr	7		
J611.10	Ditto but 22.5°	nr	7		
J611.11	Ditto but 30°	nr	3		
J611.12	Ditto but 45°	nr	1		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN16	nr	6		
J811.5	Ditto but 80mm	nr	4		
J811.6	Ditto but 100mm	nr	8		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	3		
<b>Flap valves</b>					
J88*.2	DN50mm flap valve, PN12.5	nr	3		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	4		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	4		
Page total carried forward to next page					

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BILL No. 8.13 - LINE WP05					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	690		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	150		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	60		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	10		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	511		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	520		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	511		
L53*	Ditto but imported selected fill.	m	219		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	20		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	58		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	3		
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BILL No. 8.14 - LINE WP08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Junctions and branches</b>				
J321.1	DN100mm x 25mm, all flanged tee	nr	1		
J321.2	Ditto but 150mm x 100mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN150mm straight coupling	nr	2		
J351.2	DN110/100mm stepped coupling	nr	4		
J351.3	DN100mm flange adaptor	nr	2		
	<b>Straight specials</b>				
J381.1	DN100mm, 1.2m long single flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 150mm, 1.2m long	nr	2		
J381.3	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
	<b>Blank flange</b>				
J391*.1	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN110mm, 22.5°	nr	2		
J611.2	Ditto but 30°	nr	2		
J611.3	Ditto but 45°	nr	5		
J611.4	Ditto but 60°	nr	1		
J611.5	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN100mm all flanged sluice valve, PN16	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Junctions and branches</b>				
J321.3	DN100mm x 25mm, all flanged tee	nr	1		
J321.4	Ditto but 150mm x 100mm	nr	1		
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BILL No. 8.14 - LINE WP08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.4	DN150mm straight coupling	nr	2		
J351.5	DN110/100mm stepped coupling	nr	4		
J351.6	DN100mm flange adaptor	nr	2		
	<b>Straight specials</b>				
J381.5	DN100mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.6	Ditto but 150mm, 1.2m long	nr	2		
J381.7	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
	<b>Blank flange</b>				
J391*.2	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.6	DN100mm, 22.5°	nr	2		
J611.7	Ditto but 30°	nr	2		
J611.8	Ditto but 45°	nr	5		
J611.9	Ditto but 60°	nr	1		
J611.10	Ditto but 90°	nr	1		
	<b>Valves and penstocks</b>				
J811.2	DN100mm all flanged sluice valve, PN12.5	nr	1		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN12.5, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	2		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	1		
K6**.2	Allow for crossing existing surface drains, open quarries, streams, etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	1		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
Page total carried forward to next page					

BILL No. 8.14 - LINE WP08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	5		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	11		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b> Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional) Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	160		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	40		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	20		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	116		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
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BILL No. 8.14 - LINE WP08					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	116		
L53*	Ditto but imported selected fill.	m	50		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	15		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	28		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in lison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	1		
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BILL No. 8.15 - LINE WP09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	1,040		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	1,040		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.21		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN90mm for washouts	m	24		
I71*.2	DN160mm	m	1,040		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN90mm for washouts	m	24		
I71*.4	DN160mm, depth not exceeding 1.5m	m	500		
I71*.5	Ditto but depth exceeding 1.5m	m	540		
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BILL No. 8.15 - LINE WP09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, oaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.2	Ditto but 150mm x 25mm	nr	2		
J321.3	Ditto but 150mm x 80mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.4	DN150mm x 100mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN80/90mm stepped coupling	nr	8		
J351.2	DN160/150mm stepped coupling	nr	7		
J351.3	DN80mm flange adaptor	nr	4		
J351.4	Ditto but 150mm	nr	6		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 100mm, 0.5m long	nr	2		
J381.3	Ditto but 150mm, 1.2m long	nr	7		
J381.4	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.5	Ditto but 150mm, 1.2m long	nr	6		
	<b>Blank flange</b>				
J391*.1	DN150mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN90mm, 90° Bend, PN12.5	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN160mm, 11.25°	nr	2		
J611.4	Ditto but 22.5°	nr	6		
J611.5	Ditto but 30°	nr	3		
J611.6	Ditto but 45°	nr	1		
J611.7	Ditto but 60°	nr	3		
J611.8	Ditto but 90°	nr	9		
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BILL No. 8.15 - LINE WP09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 100mm	nr	2		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.1	DN100mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.5	DN100mm x 50mm, all flanged tee (for washouts)	nr	2		
J321.6	Ditto but 150mm x 25mm	nr	2		
J321.7	Ditto but 150mm x 80mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.8	DN150mm x 100mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.5	DN80/90mm stepped coupling	nr	8		
J351.6	DN160/150mm stepped coupling	nr	7		
J351.7	DN80mm flange adaptor	nr	4		
J351.8	Ditto but 150mm	nr	6		
Page total carried forward to next page					



BILL No. 8.15 - LINE WP09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Straight specials</b>				
J381.6	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J381.7	Ditto but 100mm, 0.5m long	nr	2		
J381.8	Ditto but 150mm, 1.2m long	nr	7		
J381.9	DN80mm, 1.2m long plain ended pipe with puddle flange	nr	4		
J381.10	Ditto but 150mm, 1.2m long	nr	6		
	<b>Blank flange</b>				
J391*.2	DN150mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.9	DN80mm, 90° Bend, PN12.5	nr	1		
J611.10	Ditto but 45°	nr	1		
J611.11	DN160mm, 11.25°	nr	2		
J611.12	Ditto but 22.5°	nr	6		
J611.13	Ditto but 30°	nr	3		
J611.14	Ditto but 45°	nr	1		
J611.15	Ditto but 60°	nr	3		
J611.16	Ditto but 90°	nr	9		
	<b>Valves and penstocks</b>				
J811.4	DN50mm all flanged sluice valve, PN16	nr	2		
J811.5	Ditto but 100mm	nr	2		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.2	DN80mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	10		
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BILL No. 8.15 - LINE WP09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	4		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	8		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	15		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	75		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	30		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	2		
	<b><u>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u></b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	490		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	100		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	40		
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BILL No. 8.15 - LINE WP09					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	364		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	100		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	364		
L53*	Ditto but imported selected fill.	m	156		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	20		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**1	Class 15/20 mass concrete, volume n.e 0.1m3	nr	57		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in lision with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	1		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 8.16 - LINE WP10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	550		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	550		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.11		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN110mm	m	550		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	12		
I71*.4	DN110mm, depth not exceeding 1.5m	m	370		
I71*.5	Ditto but depth exceeding 1.5m	m	180		
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BILL No. 8.16 - LINE WP10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	1		
J321.2	Ditto but 100mm x 80mm	nr	2		
J321.3	Ditto but 150mm x 80mm	nr	1		
J321.4	Ditto but 150mm x 100mm	nr	1		
J321.5	Ditto but 250mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.6	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	8		
J351.3	DN75/80mm stepped coupling	nr	1		
J351.4	Ditto but 110/100mm	nr	8		
J351.5	Ditto but 160/150mm	nr	1		
J351.6	Ditto but 250mm	nr	2		
J351.7	DN50mm flange adaptor	nr	1		
J351.8	Ditto but 80mm	nr	4		
J351.9	Ditto but 100mm	nr	5		
J351.10	Ditto but 150mm	nr	1		
J351.11	Ditto but 250mm	nr	1		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 50mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	3		
J381.4	Ditto but 250mm, 1.2m long	nr	1		
J381.5	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.6	Ditto but 80mm, 1.2m long	nr	4		
J381.7	Ditto but 100mm, 1.2m long	nr	5		
J381.8	Ditto but 150mm, 1.2m long	nr	1		
J381.9	Ditto but 250mm, 1.2m long	nr	1		
	<b>Blank flange</b>				
J391*.1	DN150mm blank flange	nr	1		
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BILL No. 8.16 - LINE WP10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN12.5	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	4		
J611.4	Ditto but 22.5°	nr	2		
J611.5	Ditto but 30°	nr	1		
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 80mm	nr	3		
J811.3	Ditto but 100mm	nr	2		
J811.4	Ditto but 150mm	nr	1		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'wolman' water meters, PN16	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.7	DN50mm x 50mm, all flanged tee	nr	1		
J321.8	Ditto but 100mm x 80mm	nr	2		
J321.9	Ditto but 150mm x 80mm	nr	1		
J321.10	Ditto but 150mm x 100mm	nr	1		
J321.11	Ditto but 250mm x 100mm	nr	1		
Page total carried forward to next page					

BILL No. 8.16 - LINE WP10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	All flanged level invert tee (for washouts)				
J321.12	DN100mm x 50mm	nr	1		
	Adaptors/Couplings/Stepped couplings				
J351.12	DN50mm straight coupling	nr	2		
J351.13	DN80/90mm stepped coupling	nr	8		
J351.14	DN75/80mm stepped coupling	nr	1		
J351.15	Ditto but 110/100mm	nr	8		
J351.16	Ditto but 160/150mm	nr	1		
J351.17	Ditto but 250mm	nr	2		
J351.18	DN50mm flange adaptor	nr	1		
J351.19	Ditto but 80mm	nr	4		
J351.20	Ditto but 100mm	nr	5		
J351.21	Ditto but 150mm	nr	1		
J351.22	Ditto but 250mm	nr	1		
	Straight specials				
J381.10	DN80mm, 1.2m long single flanged spigot pipe with puddle flange	nr	4		
J381.11	Ditto but 50mm, 0.5m long	nr	1		
J381.12	Ditto but 100mm, 1.2m long	nr	3		
J381.13	Ditto but 250mm, 1.2m long	nr	1		
J381.14	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.15	Ditto but 80mm, 1.2m long	nr	4		
J381.16	Ditto but 100mm, 1.2m long	nr	5		
J381.17	Ditto but 150mm, 1.2m long	nr	1		
J381.18	Ditto but 250mm, 1.2m long	nr	1		
	Blank flange				
J391*.2	DN150mm blank flange	nr	1		
	HDPE Bends				
J611.6	DN50mm, 90° Bend, PN12.5	nr	1		
J611.7	Ditto but 45°	nr	1		
J611.8	DN110mm, 11.25°	nr	4		
J611.9	Ditto but 22.5°	nr	2		
J611.10	Ditto but 30°	nr	1		
	Valves and penstocks				
J811.5	DN50mm all flanged sluice valve, PN16	nr	2		
J811.6	Ditto but 80mm	nr	3		
J811.7	Ditto but 100mm	nr	2		
J811.8	Ditto but 150mm	nr	1		
Page total carried forward to next page					

BILL No. 8.16 - LINE WP10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	9		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	20		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	14		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
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BILL No. 8.16 - LINE WP10					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	260		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	60		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	20		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN110mm HDPE pipe and a DN200mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	15		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	193		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	30		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	193		
L53*	Ditto but imported selected fill.	m	83		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	40		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	30		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	2		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 8.17 - LINE WP14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	840		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	840		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.17		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	24		
I71*.2	DN110mm	m	840		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	24		
I71*.4	DN110mm, depth not exceeding 1.5m	m	815		
I71*.5	Ditto but depth exceeding 1.5m	m	25		
Page total carried forward to next page					

BILL No. 8.17 - LINE WP14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	2		
J321.2	Ditto but 100mm x 25mm	nr	2		
J321.3	Ditto but 100mm x 80mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.4	DN100mm x 50mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	8		
J351.3	DN110/100mm stepped coupling	nr	7		
J351.4	DN50mm flange adaptor	nr	2		
J351.5	Ditto but 80mm	nr	4		
J351.6	Ditto but 100mm	nr	6		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.2	Ditto but 50mm, 0.5m long	nr	2		
J381.3	Ditto but 100mm, 1.2m long	nr	6		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.5	Ditto but 80mm, 1.2m long	nr	4		
J381.6	Ditto but 100mm, 1.2m long	nr	7		
	<b>Blank flange</b>				
J391*.1	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN12.5	nr	2		
J611.2	Ditto but 45°	nr	2		
J611.3	DN110mm, 11.25°	nr	6		
J611.4	Ditto but 22.5°	nr	3		
J611.5	Ditto but 30°	nr	3		
J611.6	Ditto but 45°	nr	6		
J611.7	Ditto but 90°	nr	4		
Page total carried forward to next page					

BILL No. 8.17 - LINE WP14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	4		
J811.2	Ditto but 80mm	nr	2		
J811.3	Ditto but 100mm	nr	1		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN16	nr	2		
	<b>Bulk Water Meters</b> Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	2		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	2		
	<b>Junctions and branches</b>				
J321.5	DN50mm x 50mm, all flanged tee	nr	2		
J321.6	Ditto but 100mm x 25mm	nr	2		
J321.7	Ditto but 100mm x 80mm	nr	2		
	<b>All flanged level invert tee (for washouts)</b>				
J321.8	DN100mm x 50mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN50mm straight coupling	nr	2		
J351.8	DN80/90mm stepped coupling	nr	8		
Page total carried forward to next page					

BILL No. 8.17 - LINE WP14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J351.9	DN100mm stepped coupling	nr	7		
J351.10	DN50mm flange adaptor	nr	2		
J351.11	Ditto but 80mm	nr	4		
J351.12	Ditto but 100mm	nr	6		
<b>Straight specials</b>					
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	4		
J381.8	Ditto but 100mm, 0.5m long	nr	2		
J381.9	Ditto but 100mm, 1.2m long	nr	6		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.11	Ditto but 80mm, 1.2m long	nr	4		
J381.12	Ditto but 100mm, 1.2m long	nr	7		
<b>Blank flange</b>					
J391*.2	DN100mm blank flange	nr	1		
<b>HDPE Bends</b>					
J611.8	DN80mm, 90° Bend, PN12.5	nr	2		
J611.9	Ditto but 45°	nr	2		
J611.10	DN110mm, 11.25°	nr	6		
J611.11	Ditto but 22.5°	nr	3		
J611.12	Ditto but 30°	nr	3		
J611.13	Ditto but 45°	nr	6		
J611.14	Ditto but 90°	nr	4		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN16	nr	4		
J811.5	Ditto but 80mm	nr	2		
J811.6	Ditto but 100mm	nr	1		
<b>Air Valves</b>					
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
<b>Flap valves</b>					
J88*.2	DN80mm flap valve, PN16	nr	2		
<b>Bulk Water Meters</b>					
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	2		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	2		
<b>Hydrants</b>					
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	2		
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BILL No. 8.17 - LINE WP14					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	400		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	90		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	40		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	294		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	36		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	294		
L53*	Ditto but imported selected fill.	m	126		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	26		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	59		
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BILL No. 8.18 - LINE WP15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	860		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	860		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	0.17		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm for washouts	m	12		
I71*.2	DN110mm	m	860		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.3	DN50mm for washouts	m	12		
I71*.4	DN110mm, depth not exceeding 1.5m	m	830		
I71*.5	Ditto but depth exceeding 1.5m	m	30		
Page total carried forward to next page					



BILL No. 8.18 - LINE WP15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Bends</b>				
J311.1	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN50mm x 50mm, all flanged tee	nr	2		
J321.2	Ditto but 100mm x 25mm	nr	2		
J321.3	Ditto but 100mm x 80mm	nr	1		
J321.4	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.5	DN100mm x 50mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm straight coupling	nr	2		
J351.2	DN80/90mm stepped coupling	nr	4		
J351.3	DN110/100mm stepped coupling	nr	11		
J351.4	DN50mm flange adaptor	nr	1		
J351.5	Ditto but 80mm	nr	2		
J351.6	Ditto but 100mm	nr	5		
	<b>Straight specials</b>				
J381.1	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 100mm, 0.5m long	nr	1		
J381.3	Ditto but 100mm, 1.2m long	nr	5		
J381.4	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.5	Ditto but 80mm, 1.2m long	nr	2		
J381.6	Ditto but 100mm, 1.2m long	nr	5		
	<b>Blank flange</b>				
J391*.1	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.1	DN50mm, 90° Bend, PN12.5	nr	1		
J611.2	Ditto but 45°	nr	1		
J611.3	DN110mm, 11.25°	nr	7		
J611.4	Ditto but 22.5°	nr	8		
J611.5	Ditto but 30°	nr	2		
J611.6	Ditto but 45°	nr	2		
J611.7	Ditto but 60°	nr	1		
J611.8	Ditto but 90°	nr	5		
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BILL No. 8.18 - LINE WP15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN50mm all flanged sluice valve, PN16	nr	2		
J811.2	Ditto but 80mm	nr	1		
J811.3	Ditto but 100mm	nr	3		
	<b>Air Valves</b>				
J861*.1	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.1	DN50mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
	Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
	To be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
J91*.1	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.2	DN80mm flanged Y-type strainers, PN16	nr	1		
	<b>Hydrants</b>				
J91*.3	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.				
	<b>Bends</b>				
J311.2	DN80mm, 90° Bend	nr	1		
	<b>Junctions and branches</b>				
J321.6	DN50mm x 50mm, all flanged tee	nr	2		
J321.7	Ditto but 100mm x 25mm	nr	2		
J321.8	Ditto but 100mm x 80mm	nr	1		
J321.9	Ditto but 100mm x 100mm	nr	1		
	<b>All flanged level invert tee (for washouts)</b>				
J321.10	DN100mm x 50mm	nr	1		
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BILL No. 8.18 - LINE WP15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.7	DN50mm straight coupling	nr	2		
J351.8	DN80/90mm stepped coupling	nr	4		
J351.9	DN110/100mm stepped coupling	nr	11		
J351.10	DN50mm flange adaptor	nr	1		
J351.11	Ditto but 80mm	nr	2		
J351.12	Ditto but 100mm	nr	5		
	<b>Straight specials</b>				
J381.7	DN80mm, 1.2m long flanged spigot pipe with puddle flange	nr	2		
J381.8	Ditto but 100mm, 0.5m long	nr	1		
J381.9	Ditto but 100mm, 1.2m long	nr	5		
J381.10	DN50mm, 1.2m long plain ended pipe with puddle flange	nr	1		
J381.11	Ditto but 80mm, 1.2m long	nr	2		
J381.12	Ditto but 100mm, 1.2m long	nr	5		
	<b>Blank flange</b>				
J391*.2	DN100mm blank flange	nr	1		
	<b>HDPE Bends</b>				
J611.9	DN50mm, 90° Bend, PN16	nr	1		
J611.10	Ditto but 45°	nr	1		
J611.11	DN110mm, 11.25°	nr	7		
J611.12	Ditto but 22.5°	nr	8		
J611.13	Ditto but 30°	nr	2		
J611.14	Ditto but 45°	nr	2		
J611.15	Ditto but 60°	nr	1		
J611.16	Ditto but 90°	nr	5		
	<b>Valves and penstocks</b>				
J811.4	DN50mm all flanged sluice valve, PN16	nr	2		
J811.5	Ditto but 80mm	nr	1		
J811.6	Ditto but 100mm	nr	3		
	<b>Air Valves</b>				
J861*.2	DN25mm reinforced polyamide combination air valve, PN16, including required 25mm dia. fittings i.e. HDPE threaded flange, HDPE threaded nipple and brass gate valve.	nr	2		
	<b>Flap valves</b>				
J88*.2	DN50mm flap valve, PN16	nr	1		
	<b>Bulk Water Meters</b>				
J91*.4	DN80mm flanged 'woltman' water meters, PN16	nr	1		
J91*.5	DN80mm flanged Y-type strainers, PN16	nr	1		
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BILL No. 8.18 - LINE WP15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Hydrants</b>				
J91*.6	DN80mm fire hydrant inclusive of DN90 PN10 HDPE connector pipes (DWG Ref:6000002-W&S-C-S-006) n.e.2m	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	8		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	2		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				-
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	44		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
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BILL No. 8.18 - LINE WP15					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	410		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	90		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	40		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	301		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	20		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	301		
L53*	Ditto but imported selected fill.	m	129		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	20		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m <sup>3</sup>	nr	63		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liaison with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	2		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 9.1 - TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	24,623		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	24,623		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	2.32		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm	m	8,750		
I71*.2	DN63mm	m	10,010		
I71*.3	DN75mm	m	3,575		
I71*.4	DN90mm	m	1,115		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.5	DN50mm, depth not exceeding 1.5m	m	8,750		
I71*.6	Ditto but DN63mm	m	10,010		
I71*.7	Ditto but DN75mm	m	3,575		
I71*.8	Ditto but DN90mm	m	781		
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BILL No. 9.1 - TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
I71*.9	DN90mm, depth exceeding 1.5m	m	335		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.				
	<b>Junctions and branches</b>				
J321.1	DN100mm x 50mm, all flanged tee	nr	44		
J321.2	Ditto but 100mm x 80mm	nr	11		
J321.3	Ditto but 100mm x 100mm	nr	6		
J321.4	Ditto but 150mm x 50mm	nr	20		
J321.5	Ditto but 150mm x 80mm	nr	5		
J321.6	Ditto but 150mm x 100mm	nr	3		
J321.7	Ditto but 200mm x 50mm	nr	16		
J321.8	Ditto but 200mm x 80mm	nr	4		
J321.9	Ditto but 200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.1	DN150mm x 80mm, all flanged concentric taper	nr	8		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN50mm Couplings	nr	160		
J351.2	Ditto but 80mm	nr	40		
J351.3	Ditto but 100mm	nr	20		
J351.4	Ditto but 150mm	nr	55		
J351.5	Ditto but 200mm	nr	44		
J351.6	DN50mm flange adaptor	nr	80		
J351.7	Ditto but 80mm	nr	20		
J351.8	Ditto but 100mm	nr	10		
J351.9	Ditto but 150mm	nr	30		
J351.10	Ditto but 200mm	nr	30		
	<b>Straight specials</b>				
J381.1	DN50mm, 1.2m long single flanged spigot pipe	nr	80		
J381.2	Ditto but 80mm	nr	20		
J381.3	Ditto but 100mm	nr	10		
J381.4	Ditto but 150mm	nr	28		
J381.5	Ditto but 200mm	nr	22		
J381.6	DN50mm, 1.2m long plain ended pipe	nr	80		
J381.7	Ditto but 80mm	nr	20		
J381.8	Ditto but 100mm	nr	10		
J381.9	Ditto but 150mm	nr	28		
J381.10	Ditto but 200mm	nr	22		
Page total carried forward to next page					

BILL No. 9.1 - TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>HDPE Bends</b>				
J611.1	DN50mm, all bends	nr	20		
J611.2	Ditto but DN63mm	nr	40		
J611.3	Ditto but DN75mm	nr	20		
J611.4	Ditto but DN90mm	nr	10		
	<b>HDPE End Plugs</b>				
J691.1	DN50mm	nr	20		
J691.2	Ditto but DN63mm	nr	40		
J691.3	Ditto but DN75mm	nr	20		
J691.4	Ditto but DN90mm	nr	10		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	80		
J811.2	Ditto but 80mm	nr	20		
J811.3	Ditto but 100mm	nr	10		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Junctions and branches</b>				
J321.10	DN100mm x 50mm, all flanged tee	nr	44		
J321.11	Ditto but 100mm x 80mm	nr	11		
J321.12	Ditto but 100mm x 100mm	nr	6		
J321.13	Ditto but 150mm x 50mm	nr	20		
J321.14	Ditto but 150mm x 80mm	nr	5		
J321.15	Ditto but 150mm x 100mm	nr	3		
J321.16	Ditto but 200mm x 50mm	nr	16		
J321.17	Ditto but 200mm x 80mm	nr	4		
J321.18	Ditto but 200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.2	DN150mm x 80mm, all flanged concentric taper	nr	8		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.11	DN50mm Couplings	nr	160		
J351.12	Ditto but 80mm	nr	40		
J351.13	Ditto but 100mm	nr	20		
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BILL No. 9.1 - TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J351.14	Ditto but 150mm	nr	55		
J351.15	Ditto but 200mm	nr	44		
J351.16	DN50mm flange adaptor	nr	80		
J351.17	Ditto but 80mm	nr	20		
J351.18	Ditto but 100mm	nr	10		
J351.19	Ditto but 150mm	nr	30		
J351.20	Ditto but 200mm	nr	30		
<b>Straight specials</b>					
J381.11	DN50mm, 1.2m long single flanged spigot pipe	nr	80		
J381.12	Ditto but 80mm	nr	20		
J381.13	Ditto but 100mm	nr	10		
J381.14	Ditto but 150mm	nr	28		
J381.15	Ditto but 200mm	nr	22		
J381.16	DN50mm, 1.2m long plain ended pipe	nr	80		
J381.17	Ditto but 80mm	nr	20		
J381.18	Ditto but 100mm	nr	10		
J381.19	Ditto but 150mm	nr	28		
J381.20	Ditto but 200mm	nr	22		
<b>HDPE Bends</b>					
J611.5	DN50mm, all bends	nr	20		
J611.6	Ditto but DN63mm	nr	40		
J611.7	Ditto but DN75mm	nr	20		
J611.8	Ditto but DN90mm	nr	10		
<b>HDPE End Plugs</b>					
J691.5	DN50mm	nr	20		
J691.6	Ditto but DN63mm	nr	40		
J691.7	Ditto but DN75mm	nr	20		
J691.8	Ditto but DN90mm	nr	10		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN16	nr	80		
J811.5	Ditto but 80mm	nr	20		
J811.6	Ditto but 100mm	nr	10		
Page total carried forward to next page					

BILL No. 9.1 - TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	110		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	240		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	20		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	240		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	60		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	165		
Page total carried forward to next page					

BILL No. 9.1 - TERTIARY MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**1	Excavation in trench for rock class "A"	m <sup>3</sup>	1,260		
L1**2	Excavation in trench for rock class "B"	m <sup>3</sup>	260		
L1**3	Excavation in trench for rock class "C"	m <sup>3</sup>	100		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	939		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	310		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	939		
L53*	Ditto but imported selected fill.	m	402		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	120		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	32		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 9.2 - EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<p><b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.</p>				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	4,763		
A26*.2	Disinfection of Pipeline; Flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	4,763		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	1		
	<p><b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.</p>				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN50mm	m	2,404		
I71*.2	DN63mm	m	1,225		
I71*.3	DN75mm	m	692		
I71*.4	DN90mm	m	216		
	<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.5	DN50mm, depth not exceeding 1.5m	m	2,404		
I71*.6	Ditto but DN63mm	m	1,225		
I71*.7	Ditto but DN75mm	m	692		
I71*.8	Ditto but DN90mm	m	151		
I71*.9	DN90mm, depth exceeding 1.5m	m	65		
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BILL No. 9.2 - EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>					
Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, washers etc as applicable.					
<b>Junctions and branches</b>					
J321.1	DN100mm x 50mm, all flanged tee	nr	15		
J321.2	Ditto but 100mm x 80mm	nr	8		
J321.3	Ditto but 100mm x 100mm	nr	8		
J321.4	Ditto but 150mm x 50mm	nr	5		
J321.5	Ditto but 150mm x 80mm	nr	3		
J321.6	Ditto but 150mm x 100mm	nr	3		
J321.7	Ditto but 200mm x 50mm	nr	4		
J321.8	Ditto but 200mm x 80mm	nr	2		
J321.9	Ditto but 200mm x 100mm	nr	2		
<b>Tapers</b>					
J331.1	DN80mm x 50mm, all flanged concentric taper	nr	1		
J331.2	Ditto but 150mm x 80mm	nr	2		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.1	DN50mm Couplings	nr	24		
J351.2	Ditto but 80mm	nr	24		
J351.3	Ditto but 100mm	nr	18		
J351.4	Ditto but 150mm	nr	18		
J351.5	Ditto but 200mm	nr	8		
J351.6	DN50mm flange adaptor	nr	12		
J351.7	Ditto but 80mm	nr	12		
J351.8	Ditto but 100mm	nr	9		
J351.9	Ditto but 150mm	nr	10		
J351.10	Ditto but 200mm	nr	10		
<b>Straight specials</b>					
J381.1	DN50mm, 1.2m long single flanged spigot pipe	nr	12		
J381.2	Ditto but 80mm	nr	12		
J381.3	Ditto but 100mm	nr	9		
J381.4	Ditto but 150mm	nr	9		
J381.5	Ditto but 200mm	nr	4		
J381.6	DN50mm, 1.2m long plain ended pipe	nr	12		
J381.7	Ditto but 80mm	nr	12		
J381.8	Ditto but 100mm	nr	9		
J381.9	Ditto but 150mm	nr	9		
J381.10	Ditto but 200mm	nr	4		
Page total carried forward to next page					

BILL No. 9.2 - EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>HDPE Bends</b>				
J611.1	DN50mm, all bends	nr	30		
J611.2	Ditto but DN63mm	nr	20		
J611.3	Ditto but DN75mm	nr	10		
J611.4	Ditto but DN90mm	nr	10		
	<b>HDPE End Plugs</b>				
J691.1	DN50mm	nr	30		
J691.2	Ditto but DN63mm	nr	10		
J691.3	Ditto but DN75mm	nr	10		
J691.4	Ditto but DN90mm	nr	10		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.1	DN50mm all flanged sluice valve, PN10	nr	12		
J811.2	Ditto but 80mm	nr	12		
J811.3	Ditto but 100mm	nr	9		
	<b>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</b>				
	<b>Junctions and branches</b>				
J321.10	DN100mm x 50mm, all flanged tee	nr	15		
J321.11	Ditto but 100mm x 80mm	nr	8		
J321.12	Ditto but 100mm x 100mm	nr	8		
J321.13	Ditto but 150mm x 50mm	nr	5		
J321.14	Ditto but 150mm x 80mm	nr	3		
J321.15	Ditto but 150mm x 100mm	nr	3		
J321.16	Ditto but 200mm x 50mm	nr	4		
J321.17	Ditto but 200mm x 80mm	nr	2		
J321.18	Ditto but 200mm x 100mm	nr	2		
	<b>Tapers</b>				
J331.1	DN80mm x 50mm, all flanged concentric taper	nr	1		
J331.2	Ditto but 150mm x 80mm	nr	2		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.11	DN50mm Couplings	nr	24		
J351.12	Ditto but 80mm	nr	24		
J351.13	Ditto but 100mm	nr	18		
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BILL No. 9.2 - EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J351.14	Ditto but 150mm	nr	18		
J351.15	Ditto but 200mm	nr	8		
J351.16	DN50mm flange adaptor	nr	12		
J351.17	Ditto but 80mm	nr	12		
J351.18	Ditto but 100mm	nr	9		
J351.19	Ditto but 150mm	nr	10		
J351.20	Ditto but 200mm	nr	10		
<b>Straight specials</b>					
J381.11	DN50mm, 1.2m long single flanged spigot pipe	nr	12		
J381.12	Ditto but 80mm	nr	12		
J381.13	Ditto but 100mm	nr	9		
J381.14	Ditto but 150mm	nr	9		
J381.15	Ditto but 200mm	nr	4		
J381.16	DN50mm, 1.2m long plain ended pipe	nr	12		
J381.17	Ditto but 80mm	nr	12		
J381.18	Ditto but 100mm	nr	9		
J381.19	Ditto but 150mm	nr	9		
J381.20	Ditto but 200mm	nr	4		
<b>HDPE Bends</b>					
J611.5	DN50mm, all bends	nr	30		
J611.6	Ditto but DN63mm	nr	20		
J611.7	Ditto but DN75mm	nr	10		
J611.8	Ditto but DN90mm	nr	10		
<b>HDPE End Plugs</b>					
J691.5	DN50mm	nr	30		
J691.6	Ditto but DN63mm	nr	10		
J691.7	Ditto but DN75mm	nr	10		
J691.8	Ditto but DN90mm	nr	10		
<b>Valves and penstocks</b>					
J811.4	DN50mm all flanged sluice valve, PN16	nr	12		
J811.5	Ditto but 80mm	nr	12		
J811.6	Ditto but 100mm	nr	9		
Page total carried forward to next page					

BILL No. 9.2 - EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries				
	<b>In Situ Chambers</b> Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.				
K21*	Chamber of internal dimensions 1200mm x 1200mm.	nr	33		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	50		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	20		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	50		
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	12		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	10		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	50		
Page total carried forward to next page					



BILL No. 9.2 - EXISTING TERTIARY MAINS TO BE REPLACED					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)				
	Note:- Blasting is NOT permitted for Item L1				
	Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	1,600		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	330		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	130		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	1,191		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	72		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	1,191		
L53*	Ditto but imported selected fill.	m	510		
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murrum road crossings and aerial crossings in two layers as directed by the Engineer.	m	50		
	<b>Concrete supports, thrust blocks, stools and anchor blocks</b>				
L7**	Class 15/20 mass concrete, volume n.e 0.1m3	nr	92		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 10.1 - SUPPLY OF PIPES, FITTINGS & ACCESSORIES FOR NEW CONSUMER CONNECTIONS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>Notes</b>				
	1) The works under this Bill entail supply of pipes, fittings and other accessories and the actual installation works of New Consumer Connections being done under the Project				
	2) The Installation Works for New Consumer Connections will be carried out by a <b>Nominated Sub-Contractor</b> who will be appointed by the Client and then enter into a Sub-Contract Agreement with the Main Contractor.				
	3) Pipes, Fittings and Accessories for the New Consumer Connections will be procured by the Main Contractor and handed over to the Water Company as directed by the Engineer. The Water Company will issue Pipes and Fittings to the Nominated Sub-Contractor to carry out the Installation Works upon customer application and payment of requisite fees to the WCB.				
	4) Payment to the Nominated Sub-Contractor will be made through the Main Contractor after certification by the Engineer and WSP. An Item for percentage mark up for the Main Contractor's attendance upon the Nominated Sub-Contractor has been included under this Bill				
	<b>CLASS I: PIPEWORK - PIPES</b>				-
	<b>Supply of Pipes and Fittings for Consumer Connection Works</b>				-
	Typical arrangement of pipes and fittings for a consumer connection are shown in standard drawings.				
	The Pipes and Fittings to be supplied and installed under this Item are for 2,000 Nr. New Consumer Connections.				
	Supply, Transport to Site and hand over to the Water Company the following Pipes and Fittings for New Consumer Connections. Rates to include all necessary Jointing Material/ Fittings. All pipes and fittings to be pressure Class PN 10 Rating.				
I712.1	DN15mm, HDPE pipe	m	20,000		
I712.2	Ditto but 32mm	m	400		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	<b>90° HDPE Elbows</b>				
J611	DN15mm	nr	2,000		
	<b>Brass Ferrule</b>				
J621.1	DN32mm	nr	200		
J621.2	DN15mm	nr	500		
	<b>HDPE Equal Tee</b>				
J621.3	DN32mm x 32mm	nr	200		
	<b>End Cap</b>				
J641.1	DN15mm	nr	2,000		
	<b>Stop Cocks</b>				
J641.2	15mm dia Stop Cock, make Pegler or approved equivalent.	nr	2,000		
	<b>HDPE Saddle Clamps</b>				
J651.1	DN50mm x 32mm	nr	200		
J651.2	DN40mm x 15mm	nr	600		
J651.3	DN32mm x 15mm	nr	500		
	<b>HDPE Adaptor</b>				
	Flange Adaptor (Stub end) complete with metal back up ring				
J651.4	DN15mm	nr	4,000		
Page total carried forward to next page					

BILL No. 10.1 - SUPPLY OF PIPES, FITTINGS & ACCESSORIES FOR NEW CONSUMER CONNECTIONS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>HDPE Reducing Coupler</b>				
J651.5	DN32mm x 15mm	nr	400		
	<b>Consumer Water Meters and Stop Cocks</b>				
	<b>Consumer Water Meters</b>				
	<i>Note: All Water Meters to be MID approved and to conform with EN ISO 4064: 2014, and KS OMIL R 49:2006 Specifications for Domestic Water Meters or approved equivalent.</i>				
J91*.1	15mm dia Consumer Plastic Water Meters, Single-Jet, Composite Body, Plastic Register. Type, Aquila or approved equivalent. The Meters to include inbuilt Meter Strainers & Non-Return Mechanism. Rate to include for Supply of Meters Liner (2Nr for each Meter). All Meters to be engraved with word "MOWASSCO" or as directed by the Engineer	nr	2,000		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLERIES</b>				
	<b>Meter Boxes</b>				
K37*	Standard Plastic Meter Boxes with cover and opening key, minimum dimensions: length-265mm. width-150mm & height-180mm.	nr	2,000		
	<b>The Nominated Sub-Contractor will carry out works to connect new consumers to the network upon approval by the WSP. The Nominated Sub-Contractor will collect the required pipes and fittings from the water company's store and carry out the installation works progressively as the water company verifies and approves the new customers to be connected. (Ref Clause 1120 in the Contract Specifications)</b>				
K861.1	Allow a P.C. Sum of KES. 4,500/- for installation of each new Consumer Connection by a Nominated Sub-Contractor to be appointed by the Client after the award of the Main Works Contract.	nr	2,000	4,500	9,000,000.00
K861.2	Add ----% for profit, administration, attendance upon, overheads, etc. for Item 2.1.1 above.	%			
<b>PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE</b>					

BILL No. 10.2 - REINSTATEMENT OF EXISTING CONSUMER CONNECTIONS AFTER LAYING OF NEW MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>Notes</b> 1) The works under this Bill entail the Reinstatement of Consumer Connections that already exist on the Pipelines that are being replaced/ decommissioned under the Project. Consumer Connections that are on the replaced/ decommissioned lines have to be transferred to the new mains area, these mains have been commissioned. 2) The Reinstatement of Existing Consumer Connections will be carried out by a <u>Nominated Sub-Contractor</u> who will be appointed by the Client and then enter into a Sub-Contract Agreement with the Main Contractor. 3) Pipes, Fittings and Accessories for the connections will be procured by the Main Contractor and handed over to the Water Company as directed by the Engineer. MOWASSCO will issue the Pipes and Fittings to the Nominated Sub-Contractor to carry out the Installation Works upon verification of the Existing Connections. 4) Payment to the Nominated Sub-Contractor will be made through the Main Contractor after certification by the Engineer and MOWASSCO. An Item for percentage mark up for the Main Contractor's attendance upon the Nominated Sub-Contractor has been Included under this Bill.				
	<b>CLASS I: PIPEWORK - PIPES</b>  <u>Supply of Pipes and Fittings to be used for Reinstatement of Existing Consumer Connections</u>  Typical arrangement of pipes and fittings for a consumer connection are shown in standard drawings.  The Pipes and Fittings to be supplied under this Item are for <u>2300 Nr.</u> Consumer Connections.  Supply, Transport to Site and hand over to the Water Company the following Pipes and Fittings for Consumer New Connections. Rates to Include all necessary Jointing Material/ Fittings. All pipes and fittings to be pressure Class PN 10 Rating.				- -
I712.1	DN15mm HDPE pipe	m	23,000		
I712.2	Ditto but 32mm	m	460		
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>  <b>Fittings</b>  <b>90° HDPE Elbows</b>				
J611	DN15mm	nr	2,300		
	<b>Brass Ferrule</b>				
J621.1	DN32mm	nr	230		
J621.2	DN15mm	nr	575		
	<b>HDPE Equal Tee</b>				
J621.3	DN32mm x 32mm	nr	230		
	<b>HDPE End Cap</b>				
J641.1	DN15mm	nr	2,300		
	<b>Stop Cocks</b>				
J641.2	15mm dia Stop Cock, make Pegler or approved equivalent.	nr	2,300		
<b>Page total carried forward to next page</b>					

BILL No. 10.2 - REINSTATEMENT OF EXISTING CONSUMER CONNECTIONS AFTER LAYING OF NEW MAINS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>HDPE Saddle Clamps</b>				
J651.1	DN50mm x 32mm saddle clamp	nr	230		
J651.2	Ditto but 40mm x 15mm	nr	690		
J651.3	Ditto but 32mm x 15mm	nr	575		
	<b>HDPE Adaptor</b> Flange Adaptor (Stub end) complete with metal back up ring				
J651.4	DN15mm	nr	4,600		
	<b>HDPE Reducing Coupler</b>				
J651.5	DN32mm x 15mm	nr	460		
	<b>Consumer Water Meters</b>				
	<i>Note: All Water Meters to be MID approved and to conform with EN ISO 4064: 2014, and KS OMIL R 49:2006 Specifications for Domestic Water Meters or approved equivalent.</i>				
J91*.1	15mm dia Consumer Plastic Water Meters, Single-Jet, Composite Body, Plastic Register. Type, Aquila or approved equivalent. The Meters to include inbuilt Meter Strainers & Non-Return Mechanism. Rate to include for Supply of Meters Liner (2Nr for each Meter). All Meters to be engraved with word "MOWASSCO" or as directed by the Engineer	nr	2,300		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	<b>Meter Boxes</b>				
K37*	Standard Plastic Meter Boxes with cover and opening key, minimum dimensions: length-265mm. width-150mm & height-180mm.	nr	2,300		
	<b>Reconnection of Consumer Connections</b>				
	<b>Under this Item, upon completion of new pipelines and decommissioning of old pipelines by the Main Contractor, the Nominated Sub-Contractor will carry out works to reconnect consumers who were previously connected to the old pipelines. The Nominated Sub-Contractor will collect the required pipes and fittings from the water company's store and carry out the installation works progressively as the water company verifies and approves the customers to be re-connected. (Ref. Clause 1120 in the Contract Specifications)</b>				
K861.1	Allow a P.C. Sum of KES. 4,500/- per connecion, for reinstatement of Existing Consumer Connections by a Nominated Sub-Contractor to be appointed by the Client after the award of the Main Works Contract.	Item	2,300	4,500	10,350,000.00
K861.2	Add .....% for profit, administration, attendance upon, overheads, etc. for Item 2.1.1 above.	%			
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					

BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	All meters to be sourced from a local supplier with proof that the supplier is an appointed local agent for a manufacturer of the meters. The meters will be witness tested before delivery to the project.				
	All fittings and specials to be supplied with bolts, washers, nuts, gaskets, packing, jointing material etc. and should match diameters of relevant existing mains All diameters are nominal				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Method related charges for installation of new appurtenances along distribution and transmission pipelines</b>				
A322.1	Allow for exposing of pipes, cutting, connecting new fittings, making good and removal of all waste materials and leaving the site in a neat and clean state free from any debris etc. Dismantled pipes, fittings and fixtures to be delivered to the storage yard as directed by the Engineer. The Contractor to include for any mobile equipment e.g. generators, drills, pumps etc. to successfully complete the works	m	52		
A322.2	Dealing with water flow and maintaining continuity of supply by fixing requisite pipe diameter / material as make up piece and other required fittings.	m	52		
A322.3	Requisite preparation works for installation of new appurtenances within existing chambers	m	52		
A322.4	Allow for any other method related charges the Bidder feels may be required.	m	52		
i)	.....				
ii)	.....				
iii)	.....				
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<u>Supply, transport to site and store in secure place bulk water meter connector pipe.</u>				
	<b>Plain ended epoxy coated FBE steel pipe pieces - PN 16 (Mark No. 6)</b>				
I43*.1	DN350mm, length 3500mm for each water meter	nr	5		
I43*.2	Ditto but DN400mm, length 4000mm	nr	2		
I43*.3	DN600mm, length 3500mm for each water meter	nr	2		
I43*.4	Ditto but DN800mm, length 4000mm	nr	1		
	<b>High density polyethylene pipes (HDPE) - PN 12.5</b>				
I71*.1	DN75mm, length 800mm for each water meter	nr	1		
I71*.2	Ditto but DN110mm, length 1000mm	nr	8		
I71*.3	Ditto but DN160mm, length 1500mm	nr	23		
I72*.1	Ditto but DN225mm, length 2000mm	nr	7		
I73*.1	Ditto but DN315mm, length 2500mm	nr	3		
	<u>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</u>				
	<b>Plain ended epoxy coated FBE steel pipe pieces - PN 16 (Mark No. 6)</b>				
I43*.5	DN350mm, length 3500mm for each water meter	nr	5		
I43*.6	Ditto but DN400mm, length 4000mm	nr	2		
Page total carried forward to next page					

BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
I43*.7	DN600mm, length 3500mm for each water meter	nr	2		
I43*.8	Ditto but DN800mm, length 4000mm	nr	1		
<b>High density polyethylene pipes (HDPE) - PN 12.5</b>					
I71*.4	DN75mm, length 800mm for each water meter	nr	1		
I71*.5	Ditto but DN110mm, length 1000mm	nr	8		
I71*.6	Ditto but DN160mm, length 1500mm	nr	23		
I72*.2	Ditto but DN225mm, length 2000mm	nr	7		
I73*.2	Ditto but DN315mm, length 2500mm	nr	3		
<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>					
<u>Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, oaskets etc as applicable.</u>					
<b>All flanged epoxy coated FBE steel 45° bends (Mark No. 8)</b>					
J311.1	DN80mm	nr	4		
J311.2	Ditto but DN100mm	nr	32		
J311.3	Ditto but DN150mm	nr	92		
J311.4	Ditto but DN200mm	nr	28		
J312.1	Ditto but DN250mm	nr	12		
J313.1	Ditto but DN350mm	nr	20		
J313.2	Ditto but DN400mm	nr	8		
J313.3	Ditto but DN600mm	nr	8		
J313.4	Ditto but DN800mm	nr	4		
<b>Epoxy coated FBE mechanical couplings (Mark No. 1)</b>					
J351.1	DN80mm	nr	4		
J351.2	Ditto but DN100mm	nr	32		
J351.3	Ditto but DN150mm	nr	92		
J351.4	Ditto but DN200mm	nr	28		
J352.1	Ditto but DN250mm	nr	12		
J353.1	Ditto but DN350mm	nr	20		
J353.2	Ditto but DN400mm	nr	8		
J353.3	Ditto but DN600mm	nr	8		
J353.4	Ditto but DN800mm	nr	4		
<b>Epoxy coated FBE flange adaptors (Mark No. 4)</b>					
J351.5	DN80mm	nr	2		
J351.6	Ditto but DN100mm	nr	16		
J351.7	Ditto but DN150mm	nr	46		
J351.8	Ditto but DN200mm	nr	14		
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BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J352.2	Ditto but DN250mm	nr	6		
J353.5	Ditto but DN350mm	nr	10		
J353.6	Ditto but DN400mm	nr	4		
J353.7	Ditto but DN600mm	nr	8		
J353.8	Ditto but DN800mm	nr	4		
	<b>1.2m long all flanged epoxy coated FBE steel pipes with puddle flange (Mark No. 9)</b>				
J381.1	DN80mm	nr	1		
J381.2	Ditto but DN100mm	nr	8		
J381.3	Ditto but DN150mm	nr	23		
J381.4	Ditto but DN200mm	nr	7		
J382.1	Ditto but DN250mm	nr	3		
J383.1	Ditto but DN350mm	nr	5		
J383.2	Ditto but DN400mm	nr	2		
J383.3	Ditto but DN600mm	nr	2		
J383.4	Ditto but DN800mm	nr	1		
	<b>1.2m long single flanged epoxy coated FBE steel spigot pipes (Mark Nos. 2 &amp; 7)</b>				
J381.5	DN80mm	nr	2		
J381.6	Ditto but with Puddle Flange	nr	2		
J381.7	DN100mm	nr	16		
J381.8	Ditto but with Puddle Flange	nr	16		
J381.9	DN150mm	nr	46		
J381.10	Ditto but with Puddle Flange	nr	46		
J381.11	DN200mm	nr	14		
J381.12	Ditto but with Puddle Flange	nr	14		
J382.2	DN250mm	nr	6		
J382.3	Ditto but with Puddle Flange	nr	6		
J383.5	DN350mm	nr	10		
J383.6	Ditto but with Puddle Flange	nr	10		
J383.7	DN400mm	nr	4		
J383.8	Ditto but with Puddle Flange	nr	4		
J383.9	DN600mm	nr	4		
J383.10	Ditto but with Puddle Flange	nr	4		
J383.11	DN800mm	nr	2		
J383.12	Ditto but with Puddle Flange	nr	2		
Page total carried forward to next page					



BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>1.2m long plain ended epoxy coated FBE steel pipes (Mark No. 5)</b>				
J381.13	DN80mm	nr	1		
J381.14	Ditto but DN100mm	nr	8		
J381.15	Ditto but DN150mm	nr	23		
J381.16	Ditto but DN200mm	nr	7		
J382.4	Ditto but DN250mm	nr	3		
J383.13	Ditto but DN350mm	nr	5		
J383.14	Ditto but DN400mm	nr	2		
J383.15	Ditto but DN600mm	nr	2		
J383.16	Ditto but DN800mm	nr	1		
	<b>PN12.5 Sluice Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN80mm	nr	1		
J811.2	Ditto but DN100mm	nr	8		
J811.3	Ditto but DN150mm	nr	23		
J811.4	Ditto but DN200mm	nr	7		
J812.1	Ditto but DN250mm	nr	3		
J813.1	Ditto but DN350mm	nr	5		
J813.2	Ditto but DN400mm	nr	2		
J813.3	Ditto but DN600mm	nr	2		
J813.4	Ditto but DN800mm	nr	1		
	<b>PN12.5 Non-Return Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 48 with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.5	DN80mm	nr	1		
J811.6	Ditto but DN100mm	nr	8		
J811.7	Ditto but DN150mm	nr	23		
J811.8	Ditto but DN200mm	nr	7		
J812.2	Ditto but DN250mm	nr	3		
J813.5	Ditto but DN350mm	nr	5		
J813.6	Ditto but DN400mm	nr	2		
J813.7	Ditto but DN600mm	nr	2		
J813.8	Ditto but DN800mm	nr	1		
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BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>PN12.5 Smart Enabled Mechanical Water Meters</b> Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, 2 low frequency pulse emitters (index) and 1 high frequency pulse emitter (flow). Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
J91*.1	DN80mm	nr	1		
J91*.2	Ditto but DN100mm	nr	8		
J91*.3	Ditto but DN150mm	nr	23		
J91*.4	Ditto but DN200mm	nr	7		
	<b>PN12.5 Electromagnetic Water Flow Meters</b> Electromagnetic Water Flow Meters with battery life up to 20 years, $\pm 0.4\%$ of measured value $\pm 2$ mm/s accuracy independent of fluid viscosity, density and temperature, LCD Display, Pulsed DC magnetic field for zero point stability, No pressure loss, Corrosion resistant liners for long life, Integral and remote signal converter availability, grounding rings or grounding electrode, Measurement independent of flow profile, Low-power digital microcontroller (16 bit), Digital and infrared outputs, Automatic zero-point stability, certified (by NSF, OIML and MID), Data logging, IP68 protection class. Smart enabled and AMR ready as Badger ModMag Electromagnetic Water Flow Meters or similar equivalent				
J91*.5	Ditto but DN250mm	nr	3		
J91*.6	Ditto but DN350mm	nr	5		
J91*.7	Ditto but DN400mm	nr	2		
J91*.8	Ditto but DN600mm	nr	2		
J91*.9	Ditto but DN800mm	nr	1		
	<b>PN12.5 Y-Strainers</b> Strainer in cast iron (GJS 450-10)with detachable screen in stainless steel. Face-to-face dimentions according to EN 558. Both internally and externally corrosion protected with fusion bonded epoxy coating, 250 $\mu$ m blue RAL 5017, approved for drinking water.				
J91*.10	DN80mm	nr	1		
J91*.11	Ditto but DN100mm	nr	8		
J91*.12	Ditto but DN150mm	nr	23		
J91*.13	Ditto but DN200mm	nr	7		
J91*.14	Ditto but DN250mm	nr	3		
J91*.15	Ditto but DN350mm	nr	5		
J91*.16	Ditto but DN400mm	nr	2		
J91*.17	Ditto but DN600mm	nr	2		
J91*.18	Ditto but DN800mm	nr	1		
Page total carried forward to next page					

BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<u>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc, plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</u>				
	<b>All flanged epoxy coated FBE steel 45° bends (Mark No. 8)</b>				
J311.5	DN80mm	nr	4		
J311.6	Ditto but DN100mm	nr	32		
J311.7	Ditto but DN150mm	nr	92		
J311.8	Ditto but DN200mm	nr	28		
J312.2	Ditto but DN250mm	nr	12		
J313.5	Ditto but DN350mm	nr	20		
J313.6	Ditto but DN400mm	nr	8		
J313.7	Ditto but DN600mm	nr	8		
J313.8	Ditto but DN800mm	nr	4		
	<b>Epoxy coated FBE mechanical couplings (Mark No. 1)</b>				
J351.9	DN80mm	nr	4		
J351.10	Ditto but DN100mm	nr	32		
J351.11	Ditto but DN150mm	nr	92		
J351.12	Ditto but DN200mm	nr	28		
J352.3	Ditto but DN250mm	nr	12		
J353.9	Ditto but DN350mm	nr	20		
J353.10	Ditto but DN400mm	nr	8		
J353.11	Ditto but DN600mm	nr	8		
J353.12	Ditto but DN800mm	nr	4		
	<b>Epoxy coated FBE flange adaptors (Mark No. 4)</b>				
J351.13	DN80mm	nr	2		
J351.14	Ditto but DN100mm	nr	16		
J351.15	Ditto but DN150mm	nr	46		
J351.16	Ditto but DN200mm	nr	14		
J352.4	Ditto but DN250mm	nr	6		
J353.13	Ditto but DN350mm	nr	10		
J353.14	Ditto but DN400mm	nr	4		
J353.15	Ditto but DN600mm	nr	8		
J353.16	Ditto but DN800mm	nr	4		
	<b>1.2m long all flanged epoxy coated FBE steel pipes with puddle flange (Mark No. 9)</b>				
J381.17	DN80mm	nr	1		
J381.18	Ditto but DN100mm	nr	8		
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BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
J381.19	Ditto but DN150mm	nr	23		
J381.20	Ditto but DN200mm	nr	7		
J382.5	Ditto but DN250mm	nr	3		
J383.17	Ditto but DN350mm	nr	5		
J383.18	Ditto but DN400mm	nr	2		
J383.19	Ditto but DN600mm	nr	2		
J383.20	Ditto but DN800mm	nr	1		
<b>1.2m long single flanged epoxy coated FBE steel spigot pipes (Mark Nos. 2 &amp; 7)</b>					
J381.21	DN80mm	nr	2		
J381.22	Ditto but with Puddle Flange	nr	2		
J381.23	DN100mm	nr	16		
J381.24	Ditto but with Puddle Flange	nr	16		
J381.25	DN150mm	nr	46		
J381.26	Ditto but with Puddle Flange	nr	46		
J381.27	DN200mm	nr	14		
J381.28	Ditto but with Puddle Flange	nr	14		
J382.6	DN250mm	nr	6		
J382.7	Ditto but with Puddle Flange	nr	6		
J383.21	DN350mm	nr	10		
J383.22	Ditto but with Puddle Flange	nr	10		
J383.23	DN400mm	nr	4		
J383.24	Ditto but with Puddle Flange	nr	4		
J383.25	DN600mm	nr	4		
J383.26	Ditto but with Puddle Flange	nr	4		
J383.27	DN800mm	nr	2		
J383.28	Ditto but with Puddle Flange	nr	2		
<b>1.2m long plain ended epoxy coated FBE steel pipes (Mark No. 5)</b>					
J381.29	DN80mm	nr	1		
J381.30	Ditto but DN100mm	nr	8		
J381.31	Ditto but DN150mm	nr	23		
J381.32	Ditto but DN200mm	nr	7		
J382.8	Ditto but DN250mm	nr	3		
J383.29	Ditto but DN350mm	nr	5		
J383.30	Ditto but DN400mm	nr	2		
J383.31	Ditto but DN600mm	nr	2		
J383.32	Ditto but DN800mm	nr	1		
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BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>PN12.5, Sluice Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.9	DN80mm	nr	1		
J811.10	Ditto but DN100mm	nr	8		
J811.11	Ditto but DN150mm	nr	23		
J811.12	Ditto but DN200mm	nr	7		
J812.3	Ditto but DN250mm	nr	3		
J813.9	Ditto but DN350mm	nr	5		
J813.10	Ditto but DN400mm	nr	2		
J813.11	Ditto but DN600mm	nr	2		
J813.12	Ditto but DN800mm	nr	1		
	<b>PN12.5, Non-Return Valves</b> Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 48 with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.13	DN80mm	nr	1		
J811.14	Ditto but DN100mm	nr	8		
J811.15	Ditto but DN150mm	nr	23		
J811.16	Ditto but DN200mm	nr	7		
J812.4	Ditto but DN250mm	nr	3		
J813.13	Ditto but DN350mm	nr	5		
J813.14	Ditto but DN400mm	nr	2		
J813.15	Ditto but DN600mm	nr	2		
J813.16	Ditto but DN800mm	nr	1		
	<b>PN12.5, Smart Enabled Mechanical Water Meters</b> Flanged bulk water meter, with calibratable and exchangeable measuring insert, Sealed measuring insert for better accuracy, Hydraulic bearing relief, Encapsulated and rotating glass/copper counter, IP68, Integrated measurement outputs as standard, 2 low frequency pulse emitters (index) and 1 high frequency pulse emitter (flow). Smart enabled and AMR ready as WESAN WP bulk water meter or similar equivalent				
J91*.19	DN80mm	nr	1		
J91*.20	Ditto but DN100mm	nr	8		
J91*.21	Ditto but DN150mm	nr	23		
J91*.22	Ditto but DN200mm	nr	7		
Page total carried forward to next page					

BILL No. 11 - BULK WATER METERS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>PN12.5, Electromagnetic Water Flow Meters</b> Electromagnetic Water Flow Meters with battery life up to 20 years, $\pm 0.4\%$ of measured value $\pm 2$ mm/s accuracy independent of fluid viscosity, density and temperature, LCD Display, Pulsed DC magnetic field for zero point stability, No pressure loss, Corrosion resistant liners for long life, Integral and remote signal converter availability, grounding rings or grounding electrode, Measurement independent of flow profile, Low-power digital microcontroller (16 bit), Digital and infrared outputs, Automatic zero-point stability, certified (by NSF, OIML and MID), Data logging, IP68 protection class. Smart enabled and AMR ready as Badger ModMag Electromagnetic Water Flow Meters or similar equivalent				
J91*.23	Ditto but DN250mm	nr	3		
J91*.24	Ditto but DN350mm	nr	5		
J91*.25	Ditto but DN400mm	nr	2		
J91*.26	Ditto but DN600mm	nr	2		
J91*.27	Ditto but DN800mm	nr	1		
	<b>PN12.5, Y-Strainers</b> Strainer in cast iron (GJS 450-10)with detachable screen in stainless steel. Face-to-face dimensions according to EN 558. Both internally and externally corrosion protected with fusion bonded epoxy coating, 250 $\mu$ m blue RAL 5017, approved for drinking water.				
J91*.28	DN80mm	nr	1		
J91*.29	Ditto but DN100mm	nr	8		
J91*.30	Ditto but DN150mm	nr	23		
J91*.31	Ditto but DN200mm	nr	7		
J91*.32	Ditto but DN250mm	nr	3		
J91*.33	Ditto but DN350mm	nr	5		
J91*.34	Ditto but DN400mm	nr	2		
J91*.35	Ditto but DN600mm	nr	2		
J91*.36	Ditto but DN800mm	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	<b>Construction of valve &amp; meter chambers</b>				
K21*.1	Excavate for, provide all materials and construct special water proofed valve chamber internal dimensions 1200mm x 1200mm to depth n.e 2.0m. Include for supply and fixing of precast covers, indicator posts, step irons, concrete, reinforcement, formwork, joints, finishes, backfilling and removal of surplus material	nr	81		
K21*.2	Ditto but 1500mm x 1200mm	nr	3		
K21*.3	Ditto but 1500mm x 1500mm	nr	7		
K21*.4	Ditto but 2000mm x 1200mm	nr	5		
K21*.5	Ditto but 2600mm x 1500mm	nr	2		
K21*.6	Ditto but 1800mm x 1800mm	nr	6		
K21*.7	Ditto but 3600mm x 1800mm	nr	2		
K21*.8	Ditto but 4200mm x 1800mm	nr	1		
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BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE:</b> The pipeline will be laid on wayleaves with existing active services both on the surface (electricity, etc) and buried (existing community water pipelines, fiber optic cables, etc.) and with limited working space for mechanical excavation equipment. The Contractor's rates should allow for any measures necessary to deal with the terrain, provision of access to the work sites, mitigation against interruption of existing water supply. The costs for compliance shall be deemed to be covered in the Contractor's rates.				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A26*.1	Pipeline pressure testing and commissioning, including provision of all the required equipment, materials and works necessary for testing.	m	15,370		
A26*.2	Disinfection of pipeline; flushing with clear water, filling with water containing 0.05g/l Calcium Hypochlorite, left for 24 hours, including all the required equipment, materials, chemicals and water. Rate includes laboratory testing for measurement of residual chlorine, flushing with clean water and the safe disposal of the disinfecting water to the Engineer's approval.	m	15,370		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE</b>				
D11*	General site clearance along the pipeline alignment	ha	3.07		
	<b>Tree Cutting (Provisional)</b> Cut down trees, grub up roots and cart away to tips. Girth shall be measured 1.0m above ground level.				
D21*.1	Girth: 0.5 m - 1.0 m	nr	1		
D21*.2	Girth: 1.0 m - 2 m	nr	1		
	<b>Buildings and Other Structures</b>				
D4**	Allow for demolition and removal of buildings and all other structures including all brickwork, concrete, masonry, metal, timber and other materials from the wayleave. The rate includes for removal of all waste material.	sum	1		
D4**.2	Allow for excavation and identification of extent/limits of existing pipelines including excavation, alignment, levels and other details at this pipelines interconnection points. Include for backfilling of excavated areas and production of ACAD drawings showing details of pipelines.	sum	1		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>Supply, transport to site and store in secure place. High density polyethylene pipes (HDPE) - PN 12.5</b>				
	<b>Additional Epoxy-Coated and Cement/Epoxy Lined Steel Pipelines</b>				
I3**.1	DN800 Line at the additional Mazeras Reservoir Outlet	m	250		
	<b>Additional HDPE Pipelines (PN12.5)</b>				
I7**.1	DN400 Line near the Airport Entrance Roundabout	m	300		
I7**.2	DN400 Line from Chanqamwe Tank to Chanqamwe KRA	m	575		
I7**.3	DN160 Line Proposed at Bomu (adjacent to the airport runway)	m	1,250		
I7**.4	DN180 Line Proposed at Doshi, Miritini	m	200		
I7**.5	DN250 Proposed road crossing at Kenol Petrol Station	m	60		
I7**.6	DN315 Proposed road crossing at Doshi, Miritini	m	60		
Page total carried forward to next page					

BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
I7**.7	DN315 Line Proposed from Magongo road (adjacent to the airport runway)	m	600		
I7**.8	DN315 along Magongo Road from Changamwe Police Divisional Headquarters to Refinery Road	m	650		
<b>HDPE Pipelines Replacing Existing Smaller Diameter Pipelines (PN12.5)</b>					
I7**.9	DN75mm for replacing existing smaller diameter pipelines	m	200		
I7**.10	DN90mm for replacing existing smaller diameter pipelines	m	1,560		
I7**.11	Ditto but DN110mm	m	2,480		
I7**.12	Ditto but DN160mm	m	3,200		
I7**.13	Ditto but DN200mm	m	4,235		
<b>Transport from site store, lay and joint pipes by 'butt fusion' welding in trench; include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement. High density polyethylene pipes (HDPE) - PN 12.5</b>					
<b>Additional Epoxy-Coated and Cement/Epoxy Lined Steel Pipelines</b>					
I3**.2	DN800 Line at the additional Mazeras Reservoir Outlet	m	250		
<b>Additional HDPE Pipelines (PN12.5)</b>					
I7**.14	DN350 Line near the Airport Entrance Roundabout	m	300		
I7**.15	DN350 Line from Changamwe Tank to Changamwe KRA	m	575		
I7**.16	DN160 Line Proposed at Bomu (adjacent to the airport runway)	m	1,250		
I7**.17	DN180 Line Proposed at Doshi, Miritini	m	200		
I7**.18	DN250 Proposed road crossing at Kenol Petrol Station	m	60		
I7**.19	DN315 Proposed road crossing at Doshi, Miritini	m	60		
I7**.20	DN315 Line Proposed from Magongo road (adjacent to the airport runway)	m	600		
I7**.21	DN315 along Magongo Road from Changamwe Police Divisional Headquarters to Refinery Road	m	650		
<b>HDPE Pipelines Replacing Existing Smaller Diameter Pipelines (PN12.5)</b>					
I7**.18	DN75mm for replacing existing smaller diameter pipelines	m	200		
I7**.19	DN90mm for replacing existing smaller diameter pipelines	m	1,560		
I7**.20	Ditto but DN110mm	m	2,480		
I7**.21	Ditto but DN160mm	m	3,200		
I7**.22	Ditto but DN200mm	m	4,235		
Page total carried forward to next page					



BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>CLASS J: PIPEWORK - FITTINGS AND VALVES</b>				
	Supply, transport to site and store in secure place, epoxy FBE coated and lined steel pipe fittings. Include supply of jointing materials, bolts, nuts, gaskets etc as applicable.				
	<b>Bends</b>				
J311.1	DN100mm, 90° Bend	nr	1		
J311.2	Ditto but 250mm	nr	2		
J311.3	Ditto but 350mm	nr	1		
J311.4	Ditto but 400mm	nr	1		
J311.5	Ditto but 600mm	nr	1		
	<b>Junctions and branches</b>				
J321.1	DN150mm x 150mm, all flanged tee	nr	2		
J321.2	Ditto but 200mm x 100mm	nr	1		
J321.3	Ditto but 250mm x 250mm	nr	0		
J321.4	Ditto but 350mm x 350mm	nr	2		
J321.5	Ditto but 400mm x 200mm	nr	1		
J321.6	Ditto but 500mm x 250mm	nr	1		
J321.7	Ditto but 500mm x 400mm	nr	2		
J321.8	Ditto but 500mm x 500mm	nr	1		
J321.9	Ditto but 600mm x 200mm	nr	1		
J321.10	Ditto but 600mm x 250mm	nr	2		
J321.11	Ditto but 600mm x 500mm	nr	1		
	<b>All flanged Reducers</b>				
J321.12	DN250mm x 150mm	nr	1		
J321.13	Ditto but 400mm x 250mm	nr	1		
J321.14	Ditto but 400mm x 350mm	nr	1		
	<b>Adaptors/Couplings/Stepped couplings</b>				
J351.1	DN250mm straight coupling	nr	2		
J351.2	Ditto but 350mm	nr	5		
J351.3	Ditto but 400mm	nr	1		
J351.4	Ditto but 500mm	nr	2		
J351.5	Ditto but 600mm	nr	2		
J351.6	DN110/100mm stepped coupling	nr	3		
J351.7	Ditto but 160/150mm	nr	5		
J351.8	Ditto but 200/200mm	nr	3		
J351.9	Ditto but 315/250mm	nr	4		
J351.10	Ditto but 400/400mm	nr	2		
J351.11	Ditto but 600/525mm	nr	2		
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BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
<b>Sum Carried forward from previous page</b>					
J351.12	DN100mm flange adaptors	nr	2		
J351.13	Ditto but 150mm	nr	4		
J351.14	Ditto but 200mm	nr	2		
J351.15	Ditto but 250mm	nr	7		
J351.16	Ditto but 350mm	nr	2		
J351.17	Ditto but 400mm	nr	2		
J351.18	Ditto but 600mm	nr	2		
	<b>Straight specials</b>				
J381.1	DN250mm, 1.2m long Double flanged spigot pipe with puddle flange	nr	2		
J381.2	Ditto but 400mm	nr	1		
J381.3	Ditto but 500mm	nr	1		
J381.4	Ditto but 600mm, 2.4m long	nr	1		
J381.5	DN100mm, 1.2m long single flanged pipe with puddle flange	nr	1		
J381.6	Ditto but 150mm	nr	3		
J381.7	Ditto but 200mm	nr	1		
J381.8	Ditto but 250mm	nr	3		
J381.9	Ditto but 350mm	nr	4		
J381.10	Ditto but 400mm	nr	1		
J381.11	Ditto but 500mm	nr	3		
J381.12	Ditto but 600mm, 2.4m long	nr	2		
J381.13	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.14	Ditto but 150mm	nr	3		
J381.15	Ditto but 200mm	nr	2		
J381.16	Ditto but 250mm	nr	3		
J381.17	Ditto but 350mm	nr	2		
J381.18	Ditto but 400mm	nr	2		
J381.19	Ditto but 600mm, 2.4m long	nr	2		
	<b>HDPE Bends</b>				
J611.1	DN110mm, all bends, PN12.5	nr	1		
J611.2	Ditto but DN160	nr	1		
J611.3	Ditto but DN200	nr	4		
J611.4	Ditto but DN250	nr	2		
J611.5	Ditto but DN315	nr	1		
<b>Page total carried forward to next page</b>					

BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Valves and penstocks</b>				
	Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent				
J811.1	DN100mm all flanged sluice valve, PN10	nr	1		
J811.2	Ditto but 150mm	nr	4		
J811.3	Ditto but 200mm	nr	1		
J811.4	Ditto but 250mm	nr	6		
J811.5	Ditto but 350mm	nr	3		
J811.6	Ditto but 400mm	nr	1		
	<b>Pressure reducing valves</b>				
J87*.1	DN100mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
J87*.2	DN200mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
J87*.3	DN400mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
	<b>PN16, Y-Strainers</b> Strainer in cast iron (GJS 450-10)with detachable screen in stainless steel. Face-to-face dimensions according to EN 558. Both internally and externally corrosion protected with fusion bonded epoxy coating, 250 µm blue RAL 5017, approved for drinking water.				
J93*.1	DN100mm	nr	1		
J93*.2	DN200mm	nr	1		
J93*.3	DN400mm	nr	1		
	<u>Transport from site store, lay, fix and joint fittings include for all fitting accessories such as gaskets, butt fusion welding, bolting, etc. plus excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation trenches, backfilling and final reinstatement.</u>				
	<b>Bends</b>				
J311.6	DN100mm, 90° Bend	nr	1		
J311.7	Ditto but 250mm	nr	2		
J311.8	Ditto but 350mm	nr	1		
J311.9	Ditto but 400mm	nr	1		
J311.10	Ditto but 600mm	nr	1		
Page total carried forward to next page					

BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
<b>Junctions and branches</b>					
J321.15	DN150mm x 150mm, all flanged tee	nr	2		
J321.16	Ditto but 200mm x 100mm	nr	1		
J321.17	Ditto but 250mm x 250mm	nr	0		
J321.18	Ditto but 350mm x 350mm	nr	2		
J321.19	Ditto but 400mm x 200mm	nr	1		
J321.20	Ditto but 500mm x 250mm	nr	1		
J321.21	Ditto but 500mm x 400mm	nr	2		
J321.22	Ditto but 500mm x 500mm	nr	1		
J321.23	Ditto but 600mm x 200mm	nr	1		
J321.24	Ditto but 600mm x 250mm	nr	2		
J321.25	Ditto but 600mm x 500mm	nr	1		
<b>All flanged Reducers</b>					
J321.26	DN250mm x 150mm	nr	1		
J321.27	Ditto but 400mm x 250mm	nr	1		
J321.28	Ditto but 400mm x 350mm	nr	1		
<b>Adaptors/Couplings/Stepped couplings</b>					
J351.19	DN250mm straight coupling	nr	2		
J351.20	Ditto but 350mm	nr	5		
J351.21	Ditto but 400mm	nr	1		
J351.22	Ditto but 500mm	nr	2		
J351.23	Ditto but 600mm	nr	2		
J351.24	DN110/100mm stepped coupling	nr	3		
J351.25	Ditto but 160/150mm	nr	5		
J351.26	Ditto but 200/200mm	nr	3		
J351.27	Ditto but 315/250mm	nr	4		
J351.28	Ditto but 400/400mm	nr	2		
J351.29	Ditto but 600/525mm	nr	2		
J351.30	DN100mm flange adaptors	nr	2		
J351.31	Ditto but 150mm	nr	4		
J351.32	Ditto but 200mm	nr	2		
J351.33	Ditto but 250mm	nr	7		
J351.34	Ditto but 350mm	nr	2		
J351.35	Ditto but 400mm	nr	2		
J351.36	Ditto but 600mm	nr	2		
Page total carried forward to next page					

BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Straight specials</b>				
J381.20	DN250mm, 1.2m long Double flanged spigot pipe with puddle flange	nr	2		
J381.21	Ditto but 400mm	nr	1		
J381.22	Ditto but 500mm	nr	1		
J381.23	Ditto but 600mm, 2.4m long	nr	1		
J381.24	DN100mm, 1.2m long single flanged pipe with puddle flange	nr	1		
J381.25	Ditto but 150mm	nr	3		
J381.26	Ditto but 200mm	nr	1		
J381.27	Ditto but 250mm	nr	3		
J381.28	Ditto but 350mm	nr	4		
J381.29	Ditto but 400mm	nr	1		
J381.30	Ditto but 500mm	nr	3		
J381.31	Ditto but 600mm, 2.4m long	nr	2		
J381.32	DN100mm, 1.2m long plain ended pipe with puddle flange	nr	2		
J381.33	Ditto but 150mm	nr	3		
J381.34	Ditto but 200mm	nr	2		
J381.35	Ditto but 250mm	nr	3		
J381.36	Ditto but 350mm	nr	2		
J381.37	Ditto but 400mm	nr	2		
J381.38	Ditto but 600mm, 2.4m long	nr	2		
	<b>HDPE Bends</b>				
J611.6	DN110mm, all bends, PN12.5	nr	1		
J611.7	Ditto but DN160	nr	1		
J611.8	Ditto but DN200	nr	4		
J611.9	Ditto but DN250	nr	2		
J611.10	Ditto but DN315	nr	1		
	<b>Valves and penstocks</b>				
	<b>Ductile cast iron (GJS-500-7) resilient seat sluice valve, full bore, face to face dimensions to EN 558, ser. 15 (DIN F5) with flanged end connections. Valve body and bonnet both internally and externally corrosion protected with drinking water approved, 250 µm blue RAL 5017 fusion bonded epoxy (FBE). To be supplied complete with extension spindles of appropriate lengths approved by the Engineer and tee-key. As AVK or similar equivalent</b>				
J811.7	DN100mm all flanged sluice valve, PN10	nr	1		
J811.8	Ditto but 150mm	nr	4		
J811.9	Ditto but 200mm	nr	1		
J811.10	Ditto but 250mm	nr	6		
J811.11	Ditto but 350mm	nr	3		
J811.12	Ditto but 400mm	nr	1		
Page total carried forward to next page					

BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Pressure reducing valves</b>				
J87*.4	DN100mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
J87*.5	DN200mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
J87*.6	DN400mm diaphragm operated pressure reducing valve to EN 1074-5, PN16. Similar or equivalent to AVK pressure reducing control valve.	nr	1		
	<b>PN16, Y-Strainers</b> <b>Strainer in cast iron (GJS 450-10)with detachable screen in stainless steel. Face-to-face dimentions according to EN 558. Both internally and externally corrosion protected with fusion bonded epoxy coating, 250 µm blue RAL 5017, approved for drinking water.</b>				
J93*.4	DN100mm	nr	1		
J93*.5	DN200mm	nr	1		
J93*.6	DN400mm	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b> <b>Includes manholes and other chambers, ducts, culverts, crossings, thrust blocks, anchor blocks, reinstatement and other pipework ancillaries</b>				
	<b>In Situ Chambers</b> <b>Provide all materials and construct cast concrete chambers. Include for supply and fixing of removable precast concrete covers, step irons, compacted granular fill, etc. All as detailed in standard drawings.</b>				
K21*.1	Chamber of internal dimensions 1200mm x 1200mm.	nr	6		
K21*.2	Ditto but 2000mm x 2000mm	nr	10		
	<b>Crossings</b>				
K6**.1	Allow for crossing existing hedges, walls and fences and reinstating these after construction of the water main is completed.	m	5		
K6**.2	Allow for crossing existing surface drains, open quarries, streams,etc as shown in the drawings and to the satisfaction of the Engineer. Include for provision of diverting the drains and keeping them operational during construction	nr	5		
K6**.3	Allow for crossing existing underground services and utilities i.e. water lines, sewerlines, telephone/electricity ducts, fibre optic cable duct etc. including reinstatement to the original status and liaison with the relevant body for inspection/approval during execution of the works. Pilot excavation shall be done to establish exact location of any buried services prior to actual excavation. The rate shall be deemed to include all pilot excavations, repairs and reinstatement of any damages to the existing buried services as a result of execution of the works.	Item	L.S		
	<b>Reinstatement</b> <b>Breaking up of road, installation of an appropriately sized epoxy FBE coated steel pipe sleeve including temporary and permanent reinstatement of road as per details in standard drawings and to the satisfaction of the Engineer. Contractor to allow for provision of requisite diversion signage, controls and safety precaution in his rates.</b>				
K73*.1	Murram/Earth road reinstated with 200mm thick well graded gravel wearing course compacted to 95% MDD (AASHTO T180) in layers of minimum 150mm thickness using an 8-10 tonne roller.	m	5		
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BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
K73*.2	Concrete block paved road reinstated with 50mm thick sand bedding, 150mm thick compacted hand packed stone base and 200mm thick natural gravel subbase compacted to 95% MDD (AASHTO T180).	m	10		
	<b>Reinstatement of footpaths</b>				
K74*	Breaking up, temporary and permanent reinstatement of tarmac, concrete and concrete block paved footpaths as per details in standard drawings.	m	5		
	<b>Other Pipework Ancillaries</b>				
K82*	Supply and fix marker posts along water main route, road crossings, change of direction, air valves, washouts and valve chambers. All in accordance with drawings and specifications as detailed in standard drawings.	nr	14		
K86*	Provide all materials and construct masonry outfall structures on mass concrete plinths at washout drain pipe outlets.	nr	1		
	<b>CLASS L: PIPEWORK - SUPPORTS AND PROTECTION. ANCILLARIES TO LAYING AND EXCAVATION</b> <b>Extras to excavation and backfilling for excavation in Rock. Rate to include carting away and disposal. (Provisional)</b> <b>Note:-</b> Blasting is NOT permitted for Item L1				
	<b>Extras to excavation and backfilling as per Clause 301 of The Specifications for pipeline and chambers</b>				
L1**.1	Excavation in trench for rock class "A"	m <sup>3</sup>	7,200		
L1**.2	Excavation in trench for rock class "B"	m <sup>3</sup>	1,480		
L1**.3	Excavation in trench for rock class "C"	m <sup>3</sup>	560		
	<b>Special pipe laying methods</b>				
	<b>Trenchless road crossings</b>				
L2**.1	Trenchless road crossing: Provide all equipment and materials to bore below road surface using an approved trenchless technique. The rate includes all works, requisite shoring, strutting, installation of a DN200mm HDPE pipe and a DN300mm epoxy coated FBE steel pipe sleeve casing, grouting and reinstatement e.t.c. All works to be executed in close liaison with relevant road authority and rate includes facilitation of the same. <b>The Bidder to submit method statement with bid for execution of these works.</b>	m	60		
L2**.2	Ditto but DN315 pipe inside a DN400 sleeve	m	60		
L2**.3	Ditto but DN350 pipe inside a DN450 sleeve	m	30		
	<b>Beds</b>				
L33*	Provide, place and compact imported granular material in pipe bedding as directed by the Engineer.	m	5,380		
	<b>Haunches</b>				
L44*	Provide and place haunching mass concrete class 15/20 as specified in the drawings and as directed by the Engineer.	m	15		
	<b>Surrounds</b>				
L52*	Provide, place and compact selected excavated granular fill material in bed and surround to pipes as specified in the drawings and as directed by the Engineer.	m	5,380		
L53*	Ditto but imported selected fill.	m	2,306		
Page total carried forward to next page					

BILL No. 12 - ADDITIONAL AND REPLACEMENT PIPELINES					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum Carried forward from previous page					
	<b>Pipe wrapping (provisional)</b>				
L6**	Wrap pipeline with "Denso Tape" or approved equivalent. Bidder to include wrapping/jointing on murram road crossings and aerial crossings in two layers as directed by the Engineer.	m	170		
L7**.1	Class 15/20 mass concrete, volume n.e 1m <sup>3</sup>	nr	37		
L7**.2	Ditto but 1 - 2m <sup>3</sup>	nr	32		
L7**.3	Ditto but 2 - 4 m <sup>3</sup>	nr	5		
L7**.4	Ditto but exceeding 4 m <sup>3</sup>	nr	4		
	<b>Decommissioning of Redundant Asbestos Cement Mains</b>				
X64	Allow for locating, in liason with the WSP, excavating/ exposing and puncturing/ breaking of the Existing Asbestos Cement (AC) Mains that are to be decommissioned. The AC Pipe and any debris after breaking of the pipe are to be left in the ground. Minimum Area to be exposed is 2m x 2m and depth n.e 2m to the top of the pipe	nr	17		
PAGE TOTAL CARRIED TO WEST MAINLAND COLLECTION PAGE					



WEST MAINLAND COLLECTION PAGE		
Bills		Amount (KES.)
1	Bill No. 7.1 - Line WM03	
2	Bill No. 7.2 - Line WM05	
3	Bill No. 7.3 - Line WM07	
4	Bill No. 7.4 - Line WM08	
5	Bill No. 7.5 - Line WM11	
6	Bill No. 7.6 - Line WM12	
7	Bill No. 7.7 - Line WM13	
8	Bill No. 7.8 - Line WM14	
9	Bill No. 7.9 - Line WM17	
10	Bill No. 7.10 - Line WM18	
11	Bill No. 7.11 - Line WM19	
12	Bill No. 7.12 - Line WM20	
13	Bill No. 7.13 - Line WM21	
14	Bill No. 8.1 - Line WN01	
15	Bill No. 8.2 - Line WN02	
16	Bill No. 8.3 - Line WN03	
17	Bill No. 8.4 - Line WN05	
18	Bill No. 8.5 - Line WN08	
19	Bill No. 8.6 - Line WN09	
20	Bill No. 8.7 - Line WN10	
21	Bill No. 8.8 - Line WN11	
22	Bill No. 8.9 - Line WP01	
23	Bill No. 8.10 - Line WP02	
24	Bill No. 8.11 - Line WP03	
25	Bill No. 8.12 - Line WP04	
26	Bill No. 8.13 - Line WP05	
27	Bill No. 8.14 - Line WP08	
28	Bill No. 8.15 - Line WP09	
29	Bill No. 8.16 - Line WP10	
30	Bill No. 8.17 - Line WP14	
31	Bill No. 8.18 - Line WP15	
Total West Mainland Primary and Secondary Mains Carried Forward to Grand Summary Page		
32	Bill No. 9.1 - Tertiary Mains	
33	Bill No. 9.2 - Existing Tertiary Mains to be Replaced	
Total West Mainland Tertiary Mains Carried Forward to Grand Summary Page		
34	Bill No. 10.1 - Supply of Pipes, Fittings and Accessories for New Consumer Connections	
35	Bill No. 10.2 - Reinstatement of Existing Consumer Connections after Laying of New Mains	
Total West Mainland Consumer Connections Carried Forward to Grand Summary Page		
36	Bill No. 11 - Bulk Meters	
Total West Mainland Bulk Water Meters Carried Forward to Grand Summary Page		
37	Bill No. 12 - Additional Pipelines	
Total West Mainland Additional Pipelines Carried Forward to Grand Summary Page		

BILL No. 13 - SCHEDULE OF DAYWORKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
	<b>NOTE: THE WHOLE OF THIS BILL IS PROVISIONAL</b>				
	<b>CLASS A: GENERAL ITEMS</b>				
	<b>Labour</b> The rates inserted herein should include for all costs such as insurance, travelling time, overtime, accommodation, use and maintenance of small tools of trade, supervision, overheads and profit. Only time engaged upon work will be paid for:				
A411.1	Unskilled Labourer	Hrs	100		
A411.2	Timberman	Hrs	50		
A411.3	Stone Mason	Hrs	50		
A411.4	Carpenter	Hrs	50		
A411.5	Concretor	Hrs	50		
A411.6	Blaster (Certified)	Hrs	10		
A411.7	Pipelayer	Hrs	50		
A411.8	Painter	Hrs	10		
A411.9	Surveyor	Hrs	50		
A411.10	Foreman	Hrs	100		
A411.11	Watchman (including use of firewood, lights, day, night, Sunday and Public Holiday watching)	Hrs	50		
	<b>Materials</b> All materials are to comply with the specifications. The rates inserted herein are to include for delivery to site, storage, handling, overheads and profits				
A413.1	Ordinary Portland Cement	Tonne	1		
A413.2	High tensile steel (any size from 8mm to 15mm dia.)	ton	15		
A413.3	Fine aggregate for concrete	m <sup>3</sup>	20		
A413.4	Coarse aggregate for concrete	m <sup>3</sup>	20		
A413.5	Use of shuttering timber	m <sup>2</sup>	10		
A413.6	Use of Timbering for Trenches	m <sup>2</sup>	1		
A413.7	Murram	m <sup>3</sup>	20		
A413.8	Concrete blocks 200mm wide	m <sup>2</sup>	20		
A413.9	Natural Quarry Masonry Blocks 200mm wide	m <sup>2</sup>	20		
A413.10	HDPE pipes i). 15mm - 32mm ii). 40mm - 63mm iii). 75mm - 110mm	m m m	50 40 30		
A413.11	Steel Pipes i). 15mm - 32mm ii). 38mm - 64mm iii). 75mm - 100mm	m m m	50 40 30		
A413.12	Concrete i). Concrete Class 15/20 ii). Concrete Class 20/20 iii). Concrete Class 25/20	m <sup>3</sup> m <sup>3</sup> m <sup>3</sup>	10 10 10		
Page total carried forward to next page					

BILL No. 13 - SCHEDULE OF DAYWORKS					
Item No.	Description	Unit	Quantity	Rate (KES.)	Amount (KES.)
Sum carried forward from previous page					
	<b>Plant</b> The rates inserted herein should include for all operational and maintenance costs, fuel, oil, grease, operators, turnboys, supervision, overhead and profits. Only the time actually employed on works will be paid for and the rates should include for idle, travelling and overtime				
A415.1	Compressor (3.0 m <sup>3</sup> /minute)	Hrs	50		
A415.2	Pneumatic pick	Hrs	50		
A415.3	Plate Compactor / Walker	Hrs	50		
A415.4	Backhoe Loader / Excavator (<1m <sup>3</sup> bucket)	Hrs	25		
A415.5	Excavator (>1m <sup>3</sup> bucket)	Hrs	10		
A415.6	Wheel Loader >2.5m <sup>3</sup> bucket	Hrs	5		
A415.7	Concrete Vibrator (Petrol or Diesel)	Hrs	50		
A415.8	Concrete Mixer 14/10 (including batch weighing gear and drag feed shovel)	Hrs	25		
A415.9	Dumper 0.38 m <sup>3</sup>	Hrs	25		
A415.10	1 Tonne pick-up truck	Hrs	50		
A415.11	5 Tonne Lorry (Tipper)	Hrs	25		
A415.12	7 Tonne Lorry (Tipper)	Hrs	25		
A415.13	10lts truck water bowser	Hrs	25		
A415.14	Portable water pump 50mm diameter (inclusive of hoses, couplings, etc.)	Hrs	25		
A415.15	Oxy-Acetylene cutting and welding set, including oxygen and acetylene	Hrs	20		
A415.16	Electric welding set including electrodes	Hrs	10		
A415.17	1 Tonne small vibratory mini compactor / Road roller -	Hrs	10		
A415.18	Grader	Hrs	4		
A415.19	D4 Tractor	Hrs	4		
A415.20	10T Single drum roller. (6passes for 150mm compaction. 5km/hr)	Hrs	4		
PAGE TOTAL CARRIED TO GRAND SUMMARY PAGE					

GRAND SUMMARY PAGE		
Bills		Amount (KES.)
1	BILL No. 1 - PRELIMINARIES & GENERAL	
2	DAYWORKS	
	<b>SOUTH MAINLAND 2A</b>	
3	Primary and Secondary Mains	
4	Tertiary and Service Mains	
5	Consumer Connections	
6	Bulk Water Meters	
	<b>ABLUTION BLOCKS</b>	
7	Ablution Blocks in South Mainland	
	<b>WEST MAINLAND 4A and 4B</b>	
8	Primary and Secondary Mains	
9	Tertiary and Service Mains	
10	Consumer Connections	
11	Bulk Water Meters	
12	Additional Pipelines	
<b>Bills Total Exclusive of VAT</b>		<b>(A)</b>
Add 10% of (A) for Contingencies		<b>(B)</b>
<b>Bill Total Inclusive of Contingencies</b>		<b>(C)</b>
Value Added Tax (VAT) - 16% of (C)		<b>(D)</b>
<b>GRAND TOTAL CARRIED TO LETTER OF BID [(C) + (D)]</b>		