

Item	SANS Ref	Description	Unit	Estimated Qty	Unit price (Vat Exclusive)	Vat	Total Cost (Vat Inclusive)
		SECTION 1: CIVIL WORKS					
2,1	1200C	SITE CLEARANCE					
2.1.1		Clear site and remove all vegetation and unsuitable material to spoil inclusive of small trees less than 4 metres height	m ²	1			
2.1.2		Tree Felling and removal of Medium Tree to approved facility	each	1			
2.1.3		Tree Felling and removal of Large Tree to approved facility	each	1			
2.2	1200DA	EARTHWORKS Create Platform					
2.2.1		a) Cut to fill	m ³	1			
2.2.2		b) Import to fill G5	m ³	1			
2.2.3		c) Import to fill G6	m ³	1			
2.2.4		c) Import to fill G7	m ³	1			
	8.3.1c)	Extra Over 2.2.1 for:					
2.2.5		a) Hard rock excavations	m ³	1			
2,3	1200DB	Earthworks (Pipe Trenches)					
2.3.1	8.3.2a)	Excavate in all materials for pipe trenches up to 400mm diameter, rate to include backfill and compaction	m	1			
	8.3.2b)	Extra Over 2.3.1 for:					
2.3.2		a) Hard rock excavations (Provisional)	m ³	1			
2.3.3		Excavate and dispose of unsuitable material from trench bottom	m ³	1			
2.3.4		Import backfill material from borrow area	m	1			
2.3.5	PSDB	Excavate open drains in all materials	m ³	1			

2,4	8.3.2 1200DK 8.2.5	GABIONS AND PITCHING Pitching Plain pitching:					
2.4.1		a) Medium pitching	m ²	1			
	PSDK 2.1	Soilcrete:					
2.4.2		Hyson Cell infill for embankment	m ²	1			
2.4.3	8.2.6.1	Anchor trench for hyson cell lining cast in-situ a) Anchor trench Detail 1	m	1			
2.4.4		b) Anchor trench Detail 2	m	1			
	8.2.4	Geotextile					
2.4.5		Supply, deliver and installation of Hyson Cells complete	m ²	1			
2,5	1200DM 8.3.15	EARTHWORKS (ROADS, SUBGRADE) Construct					
2.5.1		a) Construct berm (93% compaction) complete	m ³	1			
2.5.2	PSDM 8.3.17	Extra over for obtaining material from commercial sources	m ³	1			
2,6	1200LB 8.2.1	PIPE BEDDING Selected granular material for bedding cradle:					
2.6.1		a) Trench excavation	m ³	1			
2,7	1200LB 8.2.1	PIPE BEDDING Selected granular material for bedding cradle:					
2.7.1		a) Trench excavation	m ³	1			
		Provision of selected fill material					
2.7.2		a) Trench excavation	m ³	1			

2,8		STORM WATER DRAINAGE Storm water pipe Supply, deliver and construct the following storm water pipe for site drainage					
2.8.1		a) 450mm Dia Concrete pipe. Class 50D	m	1			
		Supply and install manholes and the like: construct the following manholes complete:					
2.8.2		a) Storm water field inlet standard depth 1m	no	1			
		Storm water outlet structure					
2.8.3		construct the outlet structure complete with concrete floor slab and reinforcing steel, brick walls and pipe duct	no	1			
2,9		CONCRETE (Small works) Formwork Plain vertical					
2.9.1		a) vertical sides foundations	sum	1			
		Supply material and install foundations including reinforcing, earth connections and anchor bolts					
2.9.2		a) Isolator foundations	each	1			
2.9.3		b) Circuit breaker foundations	each	1			
2.9.4		c) HV Compact Circuit breaker foundations	each	1			
2.9.5		d) CT foundations	each	1			
2.9.6		e) VT foundations	each	1			
2.9.7		f) Tubular Support foundations (Two legs)	pair	1			
2.9.8		g) Gantry column foundations	each	1			
2.9.9		h) Lighting Mast foundations	each	1			
2.9.10		i) Transformer Plinth foundations: 5 MVA - 10 MVA complete with steps, bund walls, sump, oil pit floor and slipway	each	1			
2.9.11		j) Transformer Plinth foundations: 11 MVA - 20 MVA complete with steps, bund walls, sump, oil pit floor and slipway	each	1			
2.9.12		k) Transformer Plinth foundations: 20 MVA - 30 MVA complete with steps, bund walls, sump, oil pit floor and slipway	each	1			

2.9.13		l) Transformer Plinth foundations: 31 MVA - 45 MVA complete with steps, bund walls, sump, oil pit floor and slipway	each	1			
2.9.14		m) Transformer Plinth foundations: 46 MVA - 80 MVA complete with steps, bund walls, sump, oil pit floor and slipway	each	1			
2.9.15		n) Transformer Plinth foundations: 250 MVA - 315 MVA complete with steps, bund walls, sump, oil pit floor and slipway	each	1			
2.9.16		o) Auxillary Transformer Plinth / NER / NEC / NECRT: 200 kVA - 315 kVA complete	each	1			
2.9.17		p) 132 kV Busbar Support Foundation	each	1			
2.9.18		q) 132 kV Bus-section Support Foundation	each	1			
2.9.19		r) 6.6 / 11 / 22 kV Busbar Support Foundation	each	1			
2.9.20		s) 33 / 44 kV Busbar Support Foundation	each	1			
2.9.21		t) 275 / 400 kV Busbar Support Foundation	each	1			
2.9.22		u) 275 / 400 kV Bus-section Support Foundation	each	1			
2.9.23		v) 132 kV Surge Arrestor	each	1			
2.9.24		w) 132 Post Insulator	each	1			
2.10		REINFORCEMENT					
2.10.1		High tension steel reinforcement (Provisional)	t.	1			
2.10.2		Mild steel reinforcement (provisional)	t.	1			
2.10.3		Ref. 395. Mesh (Provisional)	t.	1			
		Unformed floor finish Wood float finish					
2.10.4		a) Top of apron slab	m ²	1			
2.10.5		b) Top of concrete base plinths (provisional)	m ²	1			
		Steel finish					
2.10.6		a) Top of building floor slab	m ²	1			

		Grouting of pipes					
2.10.7		a) Grouting of pipes in manholes (Provisional)	no	1			
2.10.8		Design of complete guard house and toilet at the gate with detailed drawings	sum	1			
2,11		Guard House					
2.11.1		Supply and construct a complete guard house and toilet at the gate as shown on the drawing and in accordance with the specification	sum	1			
2.11.2		Supply and install all the required material for the toilet plumbing, including water, sewerage, septic tank, French drain and temporary water tank on	sum	1			
2.11.3		Supply and instal a hand was basin, including all plumbing, valves and faucet (cold water only) in the battery room and connect to the water tank	sum	1			
2,12	PB 7.2	Retaining Wall					
2.12.1		Supply, deliver and construct retaining wall	m²	1			
2,13		Windows	each				
2.13.1		Type HS 1212: Aluminium sliding window unit	each	1			
2.13.2		Type PT 66: Aluminium Top Hung window unit	each	1			
2,14	PB	Doors and Frames					
2.14.1		Type "D" transformer room door unit with louvered vent panels and dust filters. Safety latch device to be included	no	1			
2.14.2		Type "A" transformer room door unit with louvered vent panels and dust filters. Safety latch device to be included	no	1			
2.14.3		External Solid hard wood doors and frames	no	1			
2,15		VENTILATION					
2.15.1		a) Supply, delivery and installation of battery room extractor fan assembly	no	1			
2,16		CEILING					
2.16.1		4mm Fibre-Cement ceiling with Bischoff strip joints and cornice all round	m²	1			

2,17		PAINTING AND CORROSION PROTECTION Building interior					
2.17.1		a) Primer coat	sum	1			
2.17.2	1200HC	b) High quality acrylic PVA paint (2 Coats)	sum	1			
2.17.3		c) Corrosion protection to all metal parts and structural steel not galvanised	sum	1			
2.17.4		d) Apply self levellin Epoxy compound to control room floor after complete installation		1			
2,18		FENCING Concrete perimeter fence					
2.18.1		a) 2400mm concrete pallsade fence, similar to the existing, fitted with non-lethal electric fence on top complete with energiser and alarm	m	1			
2.18.2		b) 1800mm high 50 x 50 x 3.15 Galv Diamond mesh fence with 76Ø posts and 40 mm Ø intermediates as indicated on drawings.	each	1			
2.18.3		c) 6000 mm wide x 2400mm high removable galvanised steel pallsade fence panels complete with galvanised posts, bolts and nuts	no	1			
2.18.4		d) 6000 mm wide x 2400mm high galvanised steel pallsade lockable security double leaf gate complete with locking mechanism and gate posts	sum	1			
2.18.5		e) Galvanised anti-tunneling structure under the fence line, 600mm deep. (600mm galv 617 welded mesh grid or steel palisade)	m	1			
2.18.6		f) 2400mm perimetre wall, fitted with electric fence on top complete with energiser and alarm and anti-tunneling structure under the wall line, 600mm deep (or in accordance to latest City Power Spec)	m	1			
2.18.7		g) Install 2.4 x 6m galvanized manual sliding gates in the outer perimeter wall complete with foundations, tracks and V overhang	each	1			
2.18.8		h) Install 2.4 x 6m galvanized remote controlled motorised sliding gates in the outer perimeter wall complete with foundations, tracks and V overhang	each	1			
2.18.9		i) Supply and install 35mm flexible copper from the earthmat to: Pedestrian Gates, Sliding Gates, Removable panels	each	1			
2,19	1200LC 8.2.5	CABLE DUCTS In Yard up to building					
2.19.1		a) 300mm 300mm deep cable ducts for electrical cables (Prov)	m	1			
2.19.2		b) 600mm 300mm deep cable ducts for electrical cables (Prov)	m	1			
2.19.3		c) 50mm Concrete screed to 600mm cable trench	m³	1			
2.19.4		d) Riversand from commercial source	m³	1			
2.19.5		e) Provide entry ducts through the building walls, 600 x 300 x 600 below ground level	each	1			
2.19.6		f) Excavation for all above in pickable soil	m³	1			

2.20.	8.3.2	ROAD WORKS EARTH WORKS (SUB-Grade) Preparation					
2.20.1		Remove topsoil to a depth of 200mm and spoil spread and compact to 90% MOD AASHTO density within 200m from point of excavation	m ³	1			
2,21	8.3.3 8.3.3(a)1	Treatment of road bed					
2.21.1		Road-bed preparation and compaction of material to be 90% MOD AASHTO max density	m ³	1			
2,22	1200ME 8.3.2(a)	SUBBASE					
2.22.1		Construct 150mm thick subbase and shoulders from selected material excavated in all material from borrow pits. compaction of material to be 90% MOD AASHTO max density	m ³	1			
2.22.2	8.3.3	Construct 150mm thick subbase from material from commercial off-site sources. compaction of material to be 90% MOD AASHTO max density (Provisional)	m ³	1			
2,23	1200MF 8.3.3(a)	BASE Construct a base layer of 150mm gravel material from commercial off-site sources or borrow pitsand. Compact to 98% MOD AASHTO density					
2.23.1		a) Gravel material (C3)	m ³	1			
2.23.2	8.3.5	Process base material by the following processes b) Stabalization	m ³	1			
2.23.3	8.3.8	stabalizing agent - Ordinary Portland cement	t.	1			
2,24	1200MJ 8.2.1	SEGMENTED PAVING					
2.24.1		Provide 100mm x 100mm 15MPa / 19 concrete edge restraints	m	1			
2.24.2	8.2.3	Cut units to fit edge restraints and kerbs	m	1			
2.24.3	8.2.2	Construct precast concrete segmented paving complete as shown: a) 80mm Type SA double zig-zag, colour grey interlocking paving, herringbone pattern. Allowance must be made for cutting and breakage.	m ²	1			
2.24.4	8.2.4	Additional rolling of paving (Prov)	m ²	1			
2,25	1200MK	KERBING AND CHANNELING					
2.25.1	8.2.1	Non-mountable straight kerbing to SABS 967, fig 7	m	1			
2.25.2	8.2.1	Mountable curved kerbing to SABS967, fig 6b	m	1			
2,26	1200HA PSH 2.2	STRUCTURAL STEEL WORK (Sundry items) Lighting masts					
2.26.1		Complete 8m high G.M.S lighting masts complete with floodlight mounting fram to specification	no	1			

2,27		FIRE FIGHTING EQUIPMENT Dry chemical powder canister					
2.27.1		Supply the following wall mounted 9kg CO ₂ fire extinguisher canister complete with wall mount	each	1			
2,28		Signage Supply the following signage as per OHS 1994					
2.28.1		a) 9kg wall mounted extinguisher canister	no	1			
2,29		Identification Supply the following signage as per OHS 1994					
2.29.1		a) 9kg wall mounted extinguisher canister	no	1			
2.30.		First Aid					
2.30.1		Supply a complete first aid medical kit in the Control Room	sum	1			
2,31		MISCELLANEOUS Building Electrical Installation					
2.31.1		Supply and install all the electrical outlets and equipment for the complete internal installation with all wiring, conduit, light fittings, socket outlets, isolators, local DB and switches	sum	1			
2,32		Yard Stone Cover					
2.32.1		Supply, deliver and install 25-40mm granite crusher stone, 100mm thick.	m ²	1			
2,33		Vegetation control					
2.33.1		Treatment of entire site area with an approved herbicide	m ²	1			
2,34		Yard Lighting					
2.34.1		Supply and install floodlights on lighting masts 400w HPS or equivalent	each	1			
2.34.2		150W LED floodlights or equivalent	each	1			
2,35		Emergency Lighting inside Control Building					
2.35.1		Supply and install 15W LED Bulkhead fittings or equivalent	each	1			
2.35.2		Supply and install a UPS with an external batteries, in a self contained lockable enclosure to supply the emergency lighting	each	1			

2,36		Transformer Firewall					
2.36.1		Supply, deliver and construct Transformer Firewall double brick or accordance to latest City Power standard / SANS Standard	m ²	1			
TOTAL SECTION 1: Civil Works (To be carried Forward to Summary of Totals)							
	Item	Description	Unit	Estimated Qty	Unit price (Vat Exclusive)	Vat	Total Cost (Vat Inclusive)
SECTION 2: BUILDING SERVICES							
3,1		BUILDING SERVICES					
3.1.1		Design of complete switchroom building including foundations, roofing, walls, windows, doors, cable tunnels, cable racks, sleeves, ventilation, electrical, gutters, fibretech grating signage to accommodate switchgear	sum	1			
3.1.2		Design of complete control room building including foundations, roofing, walls, windows, doors, cable tunnels, cable racks, sleeves, ventilation, electrical, gutters, fibretech grating, signage to accommodate all the required control panels, battery charges, communication panels etc, for the switching room	sum	1			
3.1.3		Design of complete oil dam including foundations, walls, routes and signage to accommodate all oil capacity	sum	1			
3.1.4		Supply all the required material and construct a complete switchroom including foundations, roofing, walls, windows, doors, cable tunnels, cable racks, sleeves, ventilation, electrical, gutters, fibretech grating, paint, resin, signage as per specification and drawings, suitable in size to accommodate switcgear	sum	1			
3.1.5		Supply all the required material and construct a complete control room as per specification and drawings, suitable in size to accommodate all the required control panels, battery charges, communication panels etc, for the switching room	sum	1			
3.1.6		Supply all the required material and construct a complete oil dam as per specification and drawings, suitable in size to accommodate all the required oil	sum	1			
3.1.7		Supply all the required material and Install 110mm heavy duty pvc pipe for oil and water drainage	m	1			
3.1.8		Construct manhole	each	1			
3.1.9		Install 600mm wide Fibertech Grating to all control room cable trenches- Contractor must allow for all cutting to size after installation of equipment and wastage	m	1			
3.1.10		Install 1200mm wide Fibertech Grating to all control room cable trenches- Contractor must allow for all cutting to size after installation of equipment and wastage	m	1			
3.1.11		Install 1500mm wide Fibertech Grating to all MV and Control Cable ducts in the Switchgear Rooms- Contractor must allow for all cutting to size after installation of equipment and wastage	m	1			
3.1.12		Apply 2 coats of Acrylic PVA paint to the control room ceiling.	sum	1			
3.1.13		On all internal walls, apply 1 coat of undercoat and 2 coats of PVA paint before installation of switchgear and ancillary equipment	sum	1			

3.1.14	On all internal walls, clean walls and apply 1 coat of white PVA paint after installation of switchgear and ancillary equipment	sum	1			
3.1.15	Paint all floors with 1 coat of epoxy resin floor paint (Light Grey - RAL 7035) after installation of the switchgear and equipment.	sum	1			
3.1.16	Supply and install granolithic topping on the floor of the switchgear chambers and the control room.	sum	1			
3.1.17	Paint all doors and un-galvanized metal with 1 coat of primer and a final coat of City Power Blue enamel paint	Sum	1			
3.1.18	Once commissioning is complete all doors and ungalvanised metal shall be painted with a 2nd coat of enamel paint of City Power Blue. All damaged areas shall be cleaned and patched up with a primer before painting.	sum	1			
3.1.19	Supply and install all building electrical work complete	sum	1			
TOTAL SECTION 2: Building Services (To be carried Forward to Summary of Totals)						
Item	Description	Unit	Estimated Qty	Unit price (Vat Exclusive)	Vat	Total Cost (Vat Inclusive)
	SECTION 3: STEEL STRUCTURES AND ACCESSORIES					
4,1	Supply material and install Steel Structures including reinforcing, earth connections and anchor bolts (All steel structures are to be galvanised)					
4.1.1	132 kV Isolator Motorised	each	1			
4.1.2	132 kV Isolator with Manual ES	each	1			
4.1.3	132 kV Circuit breaker	each	1			
4.1.4	132 kV HV Compact Circuit breakers	each	1			
4.1.5	132 kV CT	each	1			
4.1.6	132 kV VT	each	1			
4.1.7	132 kV Surge Arrestor	each	1			
4.1.8	132 kV Post Insulator	each	1			
4.1.9	Surge arrester/flex clamp (K2)	each	1			

4.1.10	Transformer/flex clamp (K2)	each	1			
4.1.11	Post Insulator/tube clamp (HV) (TBSS-80)	each	1			
4.1.12	Post Insulator/tube clamp (MV) (TBSS-100)	each	1			
4.1.13	Post Insulator/tube clamp (MV) (TBFS-100)	each	1			
4.1.14	Current trfr/flex clamp (K2)	each	1			
4.1.15	Isolator/tube fixed clamp (TBP-80/125P/A)	each	1			
4.1.16	Isolator/tube expansion clamp (TBHXPI-80/P)	each	1			
4.1.17	Isolator/flex clamp (STP-26)	each	1			
4.1.18	Circuit Breaker/flex clamp (STP-26)	each	1			
4.1.19	Voltage Trfr/flex clamp (K2)	each	1			
4.1.20	Flex/flex tee clamp (Transformer HV Surge arrester) (K2)	each	1			
4.1.21	Flex/flex tee clamp (Transformer MV Surge arrester) (Y-2/4)	each	1			
4.1.22	Tube/flex clamp (TBST-80/26)	each	1			
4.1.23	Tube/flex clamp (TBCT-80/C1-26)	each	1			
4.1.24	Tube/flex clamp (TBCT -100/C2-38)	each	1			
4.1.25	Tube/cable clamp (TBPT-100)	each	1			
4.1.26	NEC/NER/Aux Trfr/flex clamp (K2)	each	1			
4.1.27	Cable cleats	each	1			
4.1.28	Centipede conductor	m	1			
4.1.29	Bull Conductor	m	1			

4.1.30	80 x 8mm Aluminium tube	m	1			
4.1.31	100 x 6mm Aluminium tube	m	1			
4.1.32	120 x 6mm Aluminium tube	m	1			
4.1.33	100 x 8mm Aluminium tube	m	1			
4.1.34	Busbar end caps	each	1			
4.1.35	Colour coded Phase disks (all equipment phasing to be visible from all directi	Lot	1			
4.1.36	Cable Support Structure including cable cleats	sum	1			
4.1.37	Galvanised holding down bolts for steel structures	sum	1			
4.1.38	Gantry Beams 1 metre length	each	1			
4.1.39	Gantry Columns 1 metre length	each	1			
4.1.40	Horizontal cable tray or basket system 600 wide x 1000 length complete with all joints, bends and hangers	each	1			
4.1.41	Vertical cable tray or basket system 600 wide x 1000 height complete with all joints, bends and hangers	each	1			
4.1.42	Lighting Masts complete with 4-way bracket (8m)	each	1			
4.1.43	Insulator Strings and Hardware	set	1			
TOTAL SECTION 3: STEEL STRUCTURES AND ACCESSORIES (To be carried Forward to Summary of Totals)						
Item	Description	Unit	Estimated Qty	Unit price (Vat Exclusive)	Vat	Total Cost (Vat Inclusive)
	SECTION 4: PRIMARY PLANT EQUIPMENT					
5,1	EARTHMAT:					
5.1.1	Install complete earthmat in platform (Cu 10mm Ø)	m	1			

5.1.2	50 x 3 mm Earth strap	m	1			
5.1.3	Earth Electrodes	each	1			
5.1.4	Earthmat welded and bolted connections	each	1			
5.1.5	Excavate in Pickable material	m³	1			
5.1.6	Import low resistivity material <50Ω from external sources, install and compact in 100mm layers to 300mm thick	m³	1			
5.1.7	Backfill and compact with excavated material to final terrace level	m³	1			
5.1.8	Supply and install flexible copper earth straps from main building earth bar to all equipment - Switchgear, Control panels, etc.	sum	1			
5.1.9	Supply and install 80 x 6 earth bar in the building cable ducts c/w insulators, bolts, nuts, etc.	m	1			
5.1.10	Supply and install 50 x 3 earth flat in the building cable ducts mounted on duct wall, bolts, nuts, etc.	m	1			
5.1.11	Fence Tails to steel fence post	m	1			
5.1.12	<u>Joints</u> : Main to Main	each	1			
5.1.13	Main to tail to foundations	each	1			
5.1.14	Tail to equipment	each	1			
5.1.15	Tail to gate	each	1			
5.1.16	<u>Testing</u> : Soil resistivity test	each	1			
5.1.17	Measure Earthmat Resistance	each	1			
5.1.18	Test Earthmat Continuity	each	1			
5.1.19	Certificate in Earthmat Resistance and Continuity	each	1			
5.2	CABLING: (Power, Control and LV)					
5.2.1	1000mm² 1 x Core XLPE Al 11kV Cable	m	1			

5.2.2	630mm ² 1 x Core XLPE Cu 11kV Cable	m	1			
5.2.3	300mm ² 3 x Core XLPE Al 11kV Cable	m	1			
5.2.4	185mm ² 3 x Core XLPE Al 11kV Cable	m	1			
5.2.5	185mm ² 3 x Core XLPE Cu 11kV Cable	m	1			
5.2.6	1000mm ² 1 x Core XLPE Al 22kV Cable	m	1			
5.2.7	630mm ² 1 x Core XLPE Cu 22kV Cable	m	1			
5.2.8	300mm ² 3 x Core XLPE Al 22kV Cable	m	1			
5.2.9	185mm ² 3 x Core XLPE Al 22kV Cable	m	1			
5.2.10	185mm ² 3 x Core XLPE Cu 22kV Cable	m	1			
5.2.11	4-Core 4mm ²	m	1			
5.2.12	4-Core 2.5mm ²	m	1			
5.2.13	4-Core 16mm ²	m	1			
5.2.14	4-Core 50mm ²	m	1			
5.2.15	4-Core 150mm ²	m	1			
5.2.16	7-Core 2.5mm ²	m	1			
5.2.17	12-Core 2.5mm ²	m	1			
5.2.18	19-Core 2.5mm ²	m	1			
5.2.19	10 Pair Telecontrol Cable	m	1			
5.2.20	20 Pair Telecontrol Cable	m	1			
5.2.21	Cable racking - 600mm wide	m	1			

5.2.22	40mm HDPE Tubing	m	1			
5.2.23	Include for all control, protection, interlocking, metering and identification cabling, terminals, glands and sundry	sum	1			
5.2.24	50mm ² 4 Core PVC SWA PVC Cu Cable from existing Substation AC Panel to new ACDB	m	1			
5.2.25	Cable Sleeves - 200 mm dia PVC	m	1			
5.2.26	Cable Sleeves - 160 mm dia PVC	m	1			
5.2.27	Cable Sleeves - 110 mm dia PVC	m	1			
5.2.28	450mm Cable Ladder for 1000mm ² cable	m	1			
5.2.29	600mm Wide Cable Tray for control cables	m	1			
5.2.30	1000mm ² Cable trefoil clamps	each	1			
5.2.31	Cable Ladder and tray supports	each	1			
5.2.32	Unistrut P1000 for wall brackets	m	1			
5.2.33	Nuts, bolts clamps and accessories, bends, joints and hangers	sum	1			
5.2.34	Cable trench excavations in pickable soil	m ³	1			
5.2.35	Cable excavations in hard rock	m ³	1			
5.2.36	Backfill and compact with sifted excavated material	m ³	1			
5.2.37	Backfill with imported approved material	m ³	1			
5.2.38	1000mm ² 1 x Core XLPE Al 11kV Cable Outdoor Termination	each	1			
5.2.39	630mm ² 1 x Core XLPE Cu 11kV Cable Outdoor Termination	each	1			
5.2.40	300mm ² 3 x Core XLPE Al 11kV Cable Outdoor Termination	each	1			
5.2.41	185mm ² 3 x Core XLPE Al 11kV Cable Outdoor Termination	each	1			

5.2.42	185mm ² 3 x Core XLPE Cu 11kV Cable Outdoor Termination	each	1			
5.2.43	1000mm ² 1 x Core XLPE Al 22kV Cable Outdoor Termination	each	1			
5.2.44	630mm ² 1 x Core XLPE Cu 22kV Cable Outdoor Termination	each	1			
5.2.45	300mm ² 3 x Core XLPE Al 22kV Cable Outdoor Termination	each	1			
5.2.46	185mm ² 3 x Core XLPE Al 22kV Cable Outdoor Termination	each	1			
5.2.47	185mm ² 3 x Core XLPE Cu 22kV Cable Outdoor Termination	each	1			
5.2.48	1000mm ² 1 x Core XLPE Al 11kV Cable Indoor Termination	each	1			
5.2.49	630mm ² 1 x Core XLPE Cu 11kV Cable Indoor Termination	each	1			
5.2.50	300mm ² 3 x Core XLPE Al 11kV Cable Indoor Termination	each	1			
5.2.51	185mm ² 3 x Core XLPE Al 11kV Cable Indoor Termination	each	1			
5.2.52	185mm ² 3 x Core XLPE Cu 11kV Cable Indoor Termination	each	1			
5.2.53	1000mm ² 1 x Core XLPE Al 22kV Cable Indoor Termination	each	1			
5.2.54	630mm ² 1 x Core XLPE Cu 22kV Cable Indoor Termination	each	1			
5.2.55	300mm ² 3 x Core XLPE Al 22kV Cable Indoor Termination	each	1			
5.2.56	185mm ² 3 x Core XLPE Al 22kV Cable Indoor Termination	each	1			
5.2.57	185mm ² 3 x Core XLPE Cu 22kV Cable Indoor Termination	each	1			
5.2.58	300mm ² 3 x Core XLPE Al 11kV Cable Joint	each	1			
5.2.59	185mm ² 3 x Core XLPE Al 11kV Cable Joint	each	1			
5.2.60	185mm ² 3 x Core XLPE Cu 11kV Cable Joint	each	1			
5.2.61	1000mm ² 1 x Core XLPE Al 22kV Cable Joint	each	1			

5.2.62	630mm² 1 x Core XLPE Cu 22kV Cable Joint	each	1			
5.2.63	300mm² 3 x Core XLPE Al 22kV Cable Joint	each	1			
5.2.64	185mm² 3 x Core XLPE Al 22kV Cable Joint	each	1			
5.2.65	185mm² 3 x Core XLPE Cu 22kV Cable Joint	each	1			
5.2.66	Transition Joint: 185mm² PILCSTA 3 x Core Cu - 300mm² XLPE 3 x Core Al	each	1			
5.2.67	MV Outdoor Busbar Heat Shrink Insulation	sum	1			
5.2.68	1000mm² Aluminium Single Core Al Cable Lugs	each	1			
5.2.69	Busbar Support Insulators 11kV (rated 66kV)	each	1			
5.2.70	Busbar Support Insulators 132kV	each	1			
5.2.71	Nuts, bolts 1-core cable clamps and accessories	sum	1			
5.2.72	Include for all control, protection, interlocking, metering and indication cabling, terminals, glands	sum	1			
5,3	HV OUTDOOR EQUIPMENT					
5.3.1	Surge Arrestors (88kV)	each	1			
5.3.2	Voltage Transformers (88kV)	each	1			
5.3.3	Current Transformers (Feeders) 88 kV	each	1			
5.3.4	Current Transformers (Bus Section & Coupler) 88 kV	each	1			
5.3.5	Circuit Breakers 88 kV	each	1			
5.3.6	Isolating Switches Motorised (No ES) 88 kV	each	1			
5.3.7	Isolating Switches Motorised with manual earthing switches 88 kV	each	1			
5.3.8	Post Insulators 88 kV	each	1			

5.3.9	Surge Arrestors (132kV)	each	1			
5.3.10	Voltage Transformers (132kV)	each	1			
5.3.11	Current Transformers (Feeders) 132 kV	each	1			
5.3.12	Current Transformers (Bus Section & Coupler) 132 kV	each	1			
5.3.13	Circuit Breakers 132 kV Compact	each	1			
5.3.14	Circuit Breakers 132 kV Hybrid	each	1			
5.3.15	Circuit Breakers 132 kV	each	1			
5.3.16	Isolating Switches Motorised (No ES) 132 kV	each	1			
5.3.17	Isolating Switches Motorised with manual earthing switches 132 kV	each	1			
5.3.18	Post Insulators 132 kV	each	1			
5.3.19	Surge Arrestors (275kV)	each	1			
5.3.20	Voltage Transformers (275kV)	each	0			
5.3.21	Current Transformers (Feeders) 275 kV	each	0			
5.3.22	Current Transformers (Bus Section & Coupler) 275 kV	each	0			
5.3.23	Circuit Breakers 275 kV	each	0			
5.3.24	Isolating Switches Motorised (No ES) 275 kV	each	0			
5.3.25	Isolating Switches Motorised with manual earthing switches 275 kV	each	0			
5.3.26	Post Insulators 275 kV	each	0			
5.3.27	Surge Arrestors (44kV)	each	0			
5.3.28	Voltage Transformers (44kV)	each	0			

5.3.29	Current Transformers (Feeders) 44 kV	each	0			
5.3.30	Current Transformers (Bus Section & Coupler) 44 kV	each	0			
5.3.31	Circuit Breakers 44 kV	each	0			
5.3.32	Isolating Switches Motorised (No ES) 44 kV	each	0			
5.3.33	Isolating Switches Motorised with manual earthing switches 44 kV	each	0			
5.3.34	Post Insulators 44 kV	each	0			
5.3.35	Surge Arrestors (33kV)	each	0			
5.3.36	Voltage Transformers (33kV)	each	0			
5.3.37	Current Transformers (Feeders) 33 kV	each	0			
5.3.38	Current Transformers (Bus Section & Coupler) 33 kV	each	0			
5.3.39	Circuit Breakers 33 kV	each	0			
5.3.40	Isolating Switches Motorised (No ES) 33 kV	each	0			
5.3.41	Isolating Switches Motorised with manual earthing switches 33 kV	each	0			
5.3.42	Post Insulators 33 kV	each	0			
5.3.43	Surge Arrestors (22kV)	each	0			
5.3.44	Voltage Transformers (22kV)	each	0			
5.3.45	Current Transformers (Feeders) 22 kV	each	0			
5.3.46	Current Transformers (Bus Section & Coupler) 22 kV	each	0			
5.3.47	Circuit Breakers 22 kV	each	0			
5.3.48	Isolating Switches Motorised (No ES) 22 kV	each	0			

5.3.49	Isolating Switches Motorised with manual earthing switches 22 kV	each	0			
5.3.50	Post Insulators 22 kV	each	0			
5.3.51	Surge Arrestors (11kV)	each	1			
5.3.52	Voltage Transformers (11kV)	each	1			
5.3.53	Current Transformers (Feeders) 11 kV	each	1			
5.3.54	Current Transformers (Bus Section & Coupler) 11 kV	each	1			
5.3.55	Circuit Breakers 11 kV	each	1			
5.3.56	Isolating Switches Motorised (No ES) 11 kV	each	1			
5.3.57	Isolating Switches Motorised with manual earthing switches 11 kV	each	1			
5.3.58	Post Insulators 11 kV	each	1			
5.3.59	Decommission, load, transport and off-load existing Power Transformer 88/11kV 45MVA at City Power Reuven stores	each	0			
5.3.60	Decommission, load, transport and off-load existing Power Transformer 33/11kV or 33/6.6kV 20MVA at City Power Reuven stores	each	0			
5.3.61	Decommission, load, transport and off-load existing Power Transformer 275/88kV 250MVA or 315MVA at City Power Reuven stores	each	0			
5.3.62	The removal of all the redundant switchgear and transport to Reuven stores.	sum	1			
5.3.63	The removal of all the redundant cabling and transport to Reuven stores.	sum	1			
5.3.64	The removal of all the redundant material and transport to Reuven stores.	sum	1			
5.3.65	Power Transformer 88/11kV 45MVA ONAF OLTC as per City Power Specification	each	0			
5.3.66	Power Transformer 88/11kV 40MVA ONAF OLTC as per City Power Specification	each	0			
5.3.67	Power Transformer 275/88/11kV 250MVA ONAF OLTC as per City Power Specification	each	0			
5.3.68	Power Transformer 275/88/22kV 315MVA ONAF OLTC as per City Power Specification	each	0			
5.3.69	Power Transformer 88/33kV 40MVA ONAF OLTC as per City Power Specification	each	0			
5.3.70	Power Transformer 33/6.6kV 20/22.5 MVA ONAF OLTC as per City Power Specification	each	0			
5.3.71	Power Transformer 33/11kV 20 / 22.5 MVA ONAF OLTC as per City Power Specification	each	0			

5.3.72	Power Transformer 132/11kV 45MVA ONAF OLTC as per City Power Specification	each	1			
5.3.73	Power Transformer 132/11kV 40 MVA ONAF OLTC as per City Power Specification	each	1			
5.3.74	Power Transformer 44/11kV 10 MVA ONAF OLTC as per City Power Specification	each	0			
5.3.75	Power Transformer 22/11kV 10 MVA ONAF OLTC as per City Power Specification	each	0			
5.3.76	Power Transformer 22/11kV 20 MVA ONAF OLTC as per City Power Specification	each	0			
5.3.77	Power Transformer 11/6.6kV 20 MVA ONAF OLTC as per City Power Specification	each	1			
5.3.78	Transformer on-line molecular sieve moisture extraction unit.	each	1			
5.3.79	Transformer on-line dissolved gas analyser.	each	1			
5.3.80	200kVA Auxilliary Transformer	each	1			
5.3.81	200KVA NER	each	1			
5.3.82	200KVA NEC	each	1			
5.3.83	200KVA NECRT	each	1			
5.3.84	Tap Changer: for 275/88/11kV 250/315MVA Transformer	each	0			
5.3.85	Tap Changer: for 88/33kV 80MVA Transformer	each	0			
5.3.86	Tap Changer: for 88/44/33/11kV 40-45MVA Transformer	each	0			
5.3.87	Tap Changer: for 33/22/11/6,6kV 20-40MVA Transformer	each	0			
5.3.88	Switchgear Refurbishment: 275kV HV Circuit Breaker (GIS/OIL/VCB)	each	0			
5.3.89	Switchgear Refurbishment: 132kV HV Circuit Breaker (GIS/OIL/VCB)	each	0			
5.3.90	Switchgear Refurbishment: 88kV HV Circuit Breaker (GIS/OIL/VCB)	each	0			
5.3.91	Switchgear Refurbishment: 44kV HV Circuit Breaker (GIS/OIL/VCB)	each	0			
5.3.92	Switchgear Refurbishment: 33kV HV Circuit Breaker (GIS/OIL/VCB)	each	0			
5.3.93	Switchgear Refurbishment: 22kV HV Circuit Breaker (GIS/OIL/VCB)	each	0			
5.3.94	Switchgear Refurbishment: 11/6,6kV HV Circuit Breaker (GIS/OIL/VCB)	each	0			
5.4	11kV SWITCHBOARD AND EQUIPMENT (Inclusive of 2500A Busbar and 1 Set of Operating Tools for every 5 Panels supplied: Minimum 1)					
5.4.1	11kV incomer panel (complete with 2500A circuit breaker, CT's and VT):	each	1			

5.4.2	11kV Bus section panel (complete with 2500A circuit breaker):	each	1			
5.4.3	11kV Transformer panel (complete with 2500A circuit breaker):	each	1			
5.4.4	11kV Interconnector panel (complete with 2500A circuit breaker):	each	1			
5.4.5	11kV Bus Riser panel (2500A)	each	1			
5.4.6	11kV Feeder panel (complete with 800A circuit breaker and CT"s)	each	1			
5.4.7	11kV Feeder panel (complete with 1250A circuit breaker and CT"s)	each	1			
5.4.8	Bus Bar Trunking Between Two Boards	each	1			
5.4.9	Delivery to site, offloading and installation of the above listed 11kV switchgear panels	each	1			
5.4.10	(SAT) Site acceptance tests, inspection and commissioning on site (CP Team)	each	1			
5.4.11	Arc Protection System	sum	1			
	11kV SWITCHBOARD AND EQUIPMENT (Inclusive of 1250A Busbar and 1 Set of Operating Tools for every 5 Panels supplied: Minimum 1)					
5.4.13	11kV incomer panel (complete with 1250A circuit breaker, CT's and VT):	each	1			
5.4.14	11kV Bus section panel (complete with 1250A circuit breaker):	each	1			
5.4.15	11kV Transformer panel (complete with 1250A circuit breaker):	each	1			
5.4.16	11kV Interconnector panel (complete with 1250A circuit breaker):	each	1			
5.4.17	11kV Bus Riser panel (1250A)	each	1			
5.4.18	11kV Feeder panel (complete with 800A circuit breaker and CT"s)	each	1			
5.4.19	Bus Bar Trunking Between Two Boards	each	1			
5.4.20	Delivery to site, offloading and installation of the above listed 11kV switchgear panels	each	1			
5.4.21	(SAT) Site acceptance tests, inspection and commissioning on site	each	1			
5.4.22	Arc Protection System	sum	1			
	22kV SWITCHBOARD AND EQUIPMENT (Inclusive of 2500A Busbar and 1 Set of Operating Tools for every 5 Panels supplied: Minimum 1)					
5.4.24	22kV incomer panel (complete with 2500A circuit breaker, CT's and VT):	each	0			
5.4.25	22kV Bus section panel (complete with 2500A circuit breaker):	each	0			

5.4.26	22kV Transformer panel (complete with 2500A circuit breaker):	each	0			
5.4.27	22kV Interconnector panel (complete with 2500A circuit breaker):	each	0			
5.4.28	22kV Bus Riser panel (2500A)	each	0			
5.4.29	22kV Feeder panel (complete with 800A circuit breaker and CT"s)	each	0			
5.4.30	22kV Feeder panel (complete with 1250A circuit breaker and CT"s)	each	0			
5.4.31	Bus Bar Trunking Between Two Boards	each	0			
5.4.32	Delivery to site, offloading and installation of the above listed 22kV switchgear panels	each	0			
5.4.33	(SAT) Site acceptance tests, inspection and commissioning on site	each	0			
5.4.34	Arc Protection System	sum	0			
	22kV SWITCHBOARD AND EQUIPMENT (Inclusive of 1250A Busbar and 1 Set of Operating Tools for every 5 Panels supplied: Minimum 1)					
5.4.36	22kV incomer panel (complete with 1250A circuit breaker, CT's and VT):	each	0			
5.4.37	22kV Bus section panel (complete with 1250A circuit breaker):	each	0			
5.4.38	22kV Transformer panel (complete with 1250A circuit breaker):	each	0			
5.4.39	22kV Interconnector panel (complete with 1250A circuit breaker):	each	0			
5.4.40	22kV Bus Riser panel (1250A)	each	0			
5.4.41	22kV Feeder panel (complete with 800A circuit breaker and CT"s)	each	0			
5.4.42	22kV Feeder panel (complete with 1250A circuit breaker and CT"s)	each	0			
5.4.43	Bus Bar Trunking Between Two Boards	each	0			
5.4.44	Delivery to site, offloading and installation of the above listed 22kV switchgear panels	each	0			
5.4.45	(SAT) Site acceptance tests, inspection and commissioning on site	each	0			
5.4.46	Arc Protection System	sum	0			

	REMOTE END: APPLICABLE TO ALL SWITCHBOARD OPTIONS:					
5.4.48	11kV Remote Station Current Transformers	each	1			
5.4.49	11kV Remote Station Differential Relays	each	1			
5.4.50	22kV Remote Station Current Transformers	each	1			
5.4.51	1 Set of Operating Tools for Indoor Switchgear: 11 kV	each	1			
5.4.52	2 Set of Operating Tools for Indoor Switchgear: 11 kV	each	1			
5.5	RIPPLE CONTROL SYSTEM: Audio Frequency Ripple Control signal injection, Transmitter, Measurement and control equipment. - Design, manufacture, supply, FAT, deliver, install, commission and SAT of ripple control system as per relevant specifications.					
5.5.1	Controller: Supply and install a combined 3 port Controller/ Transmitter panes as per specification 7175-STD Spec Ripple Rev.1	each	0			
5.5.2	Supply, delivery and installation of Ripple Control controller.	each	0			
5.5.3	FAT of Ripple Control controller.	each	0			
5.5.4	SAT of Ripple Control controller.	each	0			
5.5.5	Supply and install hard wired interface to the substation SCADA system	Lot	0			
5.5.6	Engineering, programming , configuring and testing of the complete controller in accordance with the specifications.	Lot	0			
5.5.7	Additional items to conform to specification	sum	0			
5.5.8	Transmitter: Supply and install audio frequency ripple signal transmitter as per specifications.	each	0			
5.5.9	Additional items to conform to specification	sum	0			
5.5.10	Coupling Cell equipment - Supply, delivery and commissioning of the following coupling cell equipment in accordance with the specification: Supply and Install manually operated three phase off-load isolator	3 phase sets	0			
5.5.11	3 phase Isolating transformer	3 phase sets	0			
5.5.12	Coupling Capacitors	3 phase sets	0			
5.5.13	Inductors	3 phase sets	0			
5.5.14	Ammeters	each	0			
5.5.15	Supply and install conductors, busbars etc. To provide a fully functional system	3 phase Sets	0			
5.5.16	Supply and install metering system	Sets	0			

5.5.17	Commissioning of ripple control system	each	0			
5.5.18	As built drawings	sum	0			
5.5.19	Additional items to conform to specification	sum	0			
5.5.20	<u>11kV Cables - The contractor shall supply and install 11kV cables from the Coupling cells to the 11kV Feeder on the switchboard. The contractor must make allowance in his offer for all sundry materials required to provide a fully functional system:</u> Supply and install 95mm2 x 3 Core XLPE cable from the coupling cells to the 11kV feeder	m	0			
5.5.21	Supply 3 core cable cleats c/w bolts, nuts etc.	sum	0			
5.5.22	Supply and install 95mm2 x 3 Core XLPE cable indoor terminations	each	0			
5.5.23	Pressure testing of cable	3 phase sets	0			
5.5.24	<u>LV and control cables:</u> Supply, install and terminate AC supply cables to provide a fully functional for ripple control system.	Sets	0			
5.5.25	Supply, install and terminate DC supply cables to provide a fully functional for ripple control system.	Sets	0			
5.5.26	Supply, install and terminate control cables to provide a fully functional for ripple control system.	Sets	0			
5.5.27	Supply, install and terminate SCADA cables to provide a fully functional for ripple control system	Lot	0			
5.5.28	Supply, install and terminate communication cables to provide a fully functional for ripple control system	Lot	0			
5.5.29	Supply and Install Safety Fence around the system inclusive of gates, locks, signage, etc	sum	0			
5,6	LABELS AND NOTICES					
5.6.1	Outdoor Identification Labels	sum	1			
5.6.2	Panel Designation Labels	sum	1			
5.6.3	Fence and Building Warning Labels	sum	1			
5.6.4	Phase colour discs	sum	1			
TOTAL SECTION 4: PRIMARY PLANT EQUIPMENT (To be carried Forward to Summary of Totals)						

Item	Description	Unit	Estimated Qty	Unit price (Vat Exclusive)	Vat	Total Cost (Vat Inclusive)
	SECTION 5: SECONDARY PLANT EQUIPMENT					
6,1	CONTROL AND PROTECTION PANELS AND KIOSKS: Protection schemes - Design, manufacture, supply, FAT, deliver, install, commission and SAT of all protection schemes as per relevant specifications. Off-board 11kV protection panel including local control and breaker status indications					
6.1.1	Yard Marshalling Kiosks	each	1			
6.1.2	88kV Bus zone protection Panel with fully equipped schemes	each	0			
6.1.3	88kV Incomer Line Control/Protection Panel with fully equipped schemes	each	0			
6.1.4	88/33kV Transformer Control Protection Panel with fully equipped schemes	each	0			
6.1.5	88/11kV Transformer Control Protection Panel with fully equipped schemes	each	0			
6.1.6	88kV Bus Section Control/Protection Panel with fully equipped Schemes	each	0			
6.1.7	Statistical and Check/Tariff Metering Panel with fully equipped schemes	sum	1			
6.1.8	Main AC DB With Change-over Panel with fully equipped schemes	sum	1			
6.1.9	275kV Bus zone protection Panel with fully equipped schemes	each	0			
6.1.10	275kV Incomer Line Control/Protection Panel with fully equipped schemes	each	0			
6.1.11	275/88kV Transformer Control Protection Panel with fully equipped schemes	each	0			
6.1.12	275kV Bus Section Control/Protection Panel with fully equipped Schemes	each	0			
6.1.13	33kV Bus zone protection Panel with fully equipped schemes	each	0			
6.1.14	33kV Incomer Line Control/Protection Panel with fully equipped schemes	each	0			
6.1.15	33/6.6kV Transformer Control Protection Panel with fully equipped schemes	each	0			
6.1.16	33kV Bus Section Control/Protection Panel with fully equipped Schemes	each	0			
6.1.17	11kV Bus zone protection Panel with fully equipped schemes	each	1			

6.1.18	11kV Incomer Line Control/Protection Panel with fully equipped schemes	each	1			
6.1.19	11/6.6kV Transformer Control Protection Panel with fully equipped schemes	each	1			
6.1.20	11kV Bus Section Control/Protection Panel with fully equipped Schemes	each	1			
6.1.21	132kV Bus zone protection Panel with fully equipped schemes	each	1			
6.1.22	132kV Incomer Line Control/Protection Panel with fully equipped schemes	each	1			
6.1.23	132/11kV Transformer Control Protection Panel with fully equipped schemes	each	1			
6.1.24	132kV Bus Section Control/Protection Panel with fully equipped Schemes	each	1			
6.1.25	44kV Bus zone protection Panel with fully equipped schemess	each	0			
6.1.26	44kV Incomer Line Control/Protection Panel with fully equipped schemes	each	0			
6.1.27	44/11kV Transformer Control Protection Panel with fully equipped schemes	each	0			
6.1.28	44kV Bus Section Control/Protection with fully equipped Schemes	each	0			
6.1.29	11kV Control/Protection Panel with fully equipped schemess (3 Feeders Per Panel with fully equipped schemes)	each	1			
6.1.30	Remote end differential relays for 11kV main feeders	each	1			
6.1.31	Remote end diff relays installation and wiring	each	1			
6.1.32	11kV Busbar protection (ARC Protection system)	sum	1			
6.1.33	Sub AC DB for the Ripple Control System	sum	1			
6.1.34	Junction Boxes for CTs	each	1			
6.1.35	Junction Boxes for VTs	each	1			
6.1.36	Protection Scheme to match remote end including Eskom / Utility / IPP / Customer (Quotation to be provided)	each	1			
6.1.37	Over-current & Earth Fault Equipped IED	each	1			
6.1.38	Differential Protection Equipped IED	each	1			

6.2	AUXILIARIES: Design, manufacture, supply, FAT, deliver, install, commission and SAT of all ACDC Systems					
6.2.1	110V Battery Chargers	each	1			
6.2.2	110V DC Distribution Board with manual changeover	each	1			
6.2.3	110V Battery Sets	each	1			
6.3	COMMISSIONING					
6.3.1	Testing of the complete earthmat and the earthing installation	sum	1			
6.3.2	Testing, commissioning and handing over of the 88kV outdoor busbar equipment and associated protection at the stations (including bus section and coupler)	sum	1			
6.3.3	Testing, commissioning and handing over of the 88kV indoor GIS busbar equipment and associated protection at the stations (including bus section and coupler)	sum	1			
6.3.4	Testing, commissioning and handing over of the 275kV outdoor busbar equipment and associated protection at the stations (including bus section and coupler)	sum	1			
6.3.5	Testing, commissioning and handing over of the 132kV outdoor busbar equipment and associated protection at the stations (including bus section and coupler)	sum	1			
6.3.6	Testing, commissioning and handing over of the 44kV outdoor busbar equipment and associated protection at the stations (including bus section and coupler)	sum	1			
6.3.7	Testing, commissioning and handing over of the 33kV outdoor busbar equipment and associated protection at the stations (including bus section and coupler)	sum	1			
6.3.8	Testing, commissioning and handing over of the 22kV indoor busbar equipment and associated protection at the stations (including bus section and coupler)	sum	1			
6.3.9	Testing, commissioning and handing over of the associated protection at remote stations	sum	1			
6.3.10	Testing, commissioning and handing over of the communication and SCADA system	sum	1			
6.3.11	Testing, commissioning and handing over of the battery chargers, batteries, LV network and auxiliary equipment	sum	1			
6.3.12	Testing and commissioning of the LV electrical installation including yard lighting and issuing of a COC for the installation	sum	1			
6.4	ENGINEERING, TESTING AND TRAINING					
6.4.1	Software configuration and engineering	sum	1			
6.4.2	Software applications and licensing	sum	1			
6.4.3	Training of City Power personnel as specified	sum	1			
6.4.4	FAT	sum	1			

6.4.5	SAT	sum	1			
6.5	SCADA: Supply, install and terminate all fibre optic LAN for the commissioning of a fully and complete functional SCADA					
6.5.1	RTU/Gateway Device including Cubicle	each	1			
6.5.2	Digital I/O module (64 Hardwired)	each	1			
6.5.3	Analogue I/O Module (32 Hardwired)	each	1			
6.5.4	Control Output I/O Module (16 Hardwired)	each	1			
6.5.5	Supply of 12 core 1.5mm ² control cable for each transformer online gas monitoring device (Per transformer)	each	1			
6.5.6	Cabling and commissioning of Trfr Online gas monitoring device	each	1			
6.5.7	Transducer or Devic to send Transformer temperature value to City Power control vis Substation gateway	each	1			
6.5.8	Gateway / RTU Software configuration and engineering	each	1			
6.5.9	Gateway / RTU Software application and licensing	each	1			
6.5.10	Gateway / RTU software, hardware and configuration tool training based on offered solution	each	1			
6.5.11	SCADA factory acceptance test (FAT)	each	1			
6.5.12	SCADA Site acceptance test (SAT)	each	1			
6.5.13	IEC 61850 Protocol training (Engineers and Technicians) locally in South Africa	each	1			
6.5.14	IEC 61850 Protocol training (Engineers and Technicians) Overseas	each	1			
6.5.15	Flight and accommodation Locally (in South Africa), gateway and IEC 61850 Protocol training	each	1			
6.5.16	Flight and accommodation Overseas, gateway and IEC 61850 Protocol training	each	1			
6.5.17	Transducer or device that can be used to send 110Vdc Total Battery voltage level to City Power control centre via Substation Gateway/RTU (Main and Backup battery voltage)	each	1			
6.5.18	UDS Motorola, Bell 202T (Blue) Modem or equivalent	each	1			
	CABLES					
6.5.19	10 Pair Telecontrol cable	m	1			

6.5.20	20 Pair Telecontrol cable	m	1			
6.5.21	Include for all terminals, glands and sundries		1			
6.5.22	Pilot Board	each	1			
6.5.23	Telecommunication Panel	each	1			
6.6	SUPPLY AND INSTALL ADSS FIBRE CABLE (NRS 061-2:2004) Material:					
6.6.1	48 Fibre 10/125 non metallic DUCT cable	m	1			
6.6.2	Supply of 48 Fibre Long Span ADSS cable 10/125	m	1			
6.6.3	Duplex, SM, rugurised, patchleads (ST-ST, 30m - length and connector types to be confirmed bfore placing final order)	each				
6.6.4	Duplex, SM, 2m, patchleads (ST-ST, connector types to be confirmed bfore placing final order)	each	1			
6.6.5	Patchleads, Duplex ST to ST 10m	each	1			
6.6.6	Splicing	each	1			
6.6.7	19" patchpanel 24 way (complete with ST ceramic midcouplers ST Pigtails)	each - Incl in stringing price	1			
6.6.8	19" patchpanel 48 way (complete with ST ceramic midcouplers ST Pigtails)	each - Incl in stringing price	1			
6.6.9	HDPE Tubing Grade 6 or better	m	1			
6.6.10	Aerial hardware	lot	1			
6.6.11	25mm Galvanised pipe	m	1			
6.6.12	Outdoor splice enclosure (2 way d/lead clamps incl)	each	1			
6.6.13	47U 19" Telecoms Cabinet	each	1			
6.6.14	<u>Labour:</u> Installation of patchpanels (48 way)	each	1			

6.6.15	Testing OTDR including traces (hard and soft copy) of the complete installation including PMLS	each	1			
6.6.16	Crossings (HV Lines, Main Roads, Telephone lines Dam walls, Pipelines)	each - Incl in stringing price	1			
6.6.17	Install 48 fibre 10/125 sm duct cable incl. HDPE Pipe and trench excavation and backfill from joint pole to patch panel cabinet	m	1			
6.6.18	Intallation of 48 core Long Span ADSS cable. The Long Span ADSS should be checked for continuity and proof must be provided i.e. test certificates	m	1			
6.6.19	Install Outdoor splice enclosure (4 way d/lead clamps incl)	m	1			
6.6.20	Telecommunications: OTDR testing including traces in hard and soft copy	each	1			
6.6.21	Supply of Terminal Equipment - Multiplexer 48-110Vdc SM Optical ST	each	1			
6.6.22	Fibre Optical cards	each	1			
6.6.23	Telephone Interface card	each	1			
6.6.24	Exchange Interface card	each	1			
6.6.25	4W E&M Interface card	each	1			
6.6.26	Supply and install fibre optic patch lead dual ST-ST SM (patch length is the distance from patch panel to relay)	each	1			
6.6.27	Documentation(hard and soft copy)	sum	1			
TOTAL SECTION 5: SECONDARY PLANT EQUIPMENT (To be carried Forward to Summary of Totals)						
Item	Description	Unit	Estimated Qty	Unit price (Vat Exclusive)	Vat	Total Cost (Vat Inclusive)
	SECTION 6: DECOMMISSIONING OF INFRASTRUCTURE					
7.1	Decommissioning: Existing Substation Removal - Demolish/remove existing buildings, walls, infrastructure etc. as detailed below: The existing equipment shall be de- commissioned and removed from site to the relevant City Power stores					
7.1.1	Demolish existing Control room, Switchgear room, Cable tunnels, Toilets, Workshop, etc.	sum	1			

7.1.2	Demolish existing brick wall around Substation	sum	1			
7.1.3	Existing Water and Sewage Pipes must be removed and new connections to be supplied for the new building.	sum	1			
7.1.4	Existing paved road inside substation must be demolished	sum	1			
7.1.5	Existing gates must be dismantled and disposed of.	sum	1			
7.1.6	Existing internal fencing and gates around the Transformer bays must be dismantled and disposed of.	sum	0			
7.1.7	Dismantle existing 11kV switchgear and transport to Reuven stores	sum	1			
7.1.8	Dismantle Existing Control panels, BTU, Batteries, RTU panel, Pilot Board, etc, and transport to Reuven stores	sum	1			
7.1.9	Dismantle existing gantries and demolish foundations. Gantries to be transported to Reuven stores	sum	1			
7.1.10	Disconnect and remove all LV AC supply cables, DC cables and control cables and transport to Reuven stores	sum	1			
7.1.11	Dismantle and remove existing of Auxillary Transformers, obtain permits to move to Reuven stores with auxiliaries and used transformer oil stored in 210 litre drums	sum	1			
7.1.12	Transport all equipment, switchgear, control panels, steel structures, etc. to Reuven stores	sum	1			
7.1.13	Demolish and dispose existing fire and bund walls.	sum	0			
7.1.14	Decommission, load, transport and off-load existing Power Transformer 88/11kV 45MVA at City Power Reuven stores with auxiliaries and used transformer oil stored in 210 litre drums	sum	0			
7.1.15	Decommission, load, transport and off-load existing Power Transformer 33/11kV or 33/6.6kV 20MVA at City Power Reuven stores with auxiliaries and used transformer oil stored in 210 litre drums	sum	0			
7.1.16	Decommission, load, transport and off-load existing Power Transformer 275/88kV 250MVA or 315MVA at City Power Reuven stores with auxiliaries and used transformer oil stored in 210 litre drums	sum	0			
TOTAL SECTION 6: DECOMMISSIONING OF INFRASTRUCTURE (To be carried Forward to Summary of Totals)						

Item	Description	Unit	Estimated Qty	Unit price (Vat Exclusive)	Vat	Total Cost (Vat Inclusive)
	SECTION 7: ISS					
9,1	ACCESS CONTROL SYSTEM					
9.1.1	System Interface Controller - 12 VDC @ 700mA, (5 year lithium battery or 3 months full run) 6 MB Standard cardholder flash memory, 50,000 of Event memory, maximum of 32 devices, On-board Ethernet, on-board two door control, eight Inputs, four outputs, cabinet tamper and power fault Input monitors, RoHS, CE, C0Tick and UL 294	each	1			
9.1.2	Door Reader Controller (supports OSDP Readers) - 12 VDC, 2 Reader Interface, W/M, 8 inputs, 6 (5A) form C relays	each	1			
9.1.3	Power Supply & Enclosure - 12VDC output, 220/230 VAC (1,6 amps) input continuous supply current with enclosure (24" x 18" x 4,5"), Lock and open frame transformer, tamper switch, power distribution module, UPS capable CE Approved, houses 6 controller boards	each	1			
9.1.4	13,8VDC 4A Switched Mode Power Supply with 4 fused outputs embedded (= LNL-400XA-PSU) with LNL-400XA-ENC enclosure (500 x 400 x 85mm) for LNL boards, including front and pryoff tamper - CE marked	each	1			
9.1.5	Switch Mode Power Supply_12Vdc,4Amp-High Spec, PM844-A, 12,8	each	1			
9.1.6	Battery 12Vdc, 7Amp	each	1			
9.1.7	Battery 12Vdc, 18Amp	each	1			
9.1.8	Emergency green break glass unit	each	1			
9.1.9	Surface mount contact, screw terminals	each	1			
9.1.10	Biometric Identification, 500 dpi optical fingerprint scanner, IP 53 Rated	each	1			
9.1.11	Signo20, Mullion, 13,56mHz & 125kHz, OSDP/Wiegand, Pigtail, Mobile Ready, BLE	each	1			
9.1.12	Signo 20/20K Reader, 1 Inch Spacer, Black	each	1			
9.1.13	Bio-Metric Identification Network/Communication: - Ethernet, RS485, USB - Wi-Fi option, Internal storage capacity: 512MB Flash, 512MB RAM - 500 user records, extendable to 3,000 or 10,000 with license (*3 templates each, including 1 duress) - 250,000 IDs in authorized user list	each	1			
9.1.14	Centurion smartguard access control keypad (standalone)	each	1			
9.1.15	Electromagnetic Lock, 600Kg Holding Force, Surface Mounted 12/24VDC Selectable with back box and accessories, including door monitor	each	1			
9.1.16	L Mount Bracket for 600Kg magnets for Electromagnetic Lock	each	1			

9.1.17	Electric Latch Release Outward/Inward Opening	each	1			
9.1.18	Electric Door Strike Continuous Standard Flush mount striker lock, Continuous action, 12VDC or 12VAC Operation	each	1			
9.1.19	Electric Door Strike - Surface Mount Standard Surface mount striker Lock, Includes surface mount plate and mounting spacers, Pre-impulse action, 12VDC or 12VAC Operation	each	1			
9.1.20	Outdoor No-Touch Exit Sensor 12VDC	each	1			
9.1.21	Request to Exit Button Surface Mounted, Surface Mount Door Release Button, Plastic surface mount release button with mounting base, NO/NC contact, Dimensions: (W) 88 x (H) 88 x (D) 20 mm	each	1			
9.1.22	Push Button Heavy Duty R/ST-17 N/O ,Normally open pulsed push button - green, Multiple mounting points and cable punchouts, Box dimensions: 81mm x 65mm x 64mm	each	1			
9.1.23	Regular door-closer for top jamb applications door weight up to 60Kg	each	1			
9.1.24	Automated vehicle barrier - 3,5m automatic vehicle barrier c/w 3,5m barrier arm	each	1			
9.1.25	Ticket issuing unit for Magnetic stripe or Barcode tickets, Stainless steel cabinet, Standard color - Housing (RAL 9006 White Aluminium) plus side/front panels (RAL 7021 Black Grey) Heating and cooling units with separate thermostats, Intercom call button and loudspeaker, Ticket box holder for 5'000 tickets and collection bin, Individual security lock, Push button operation controls	each	1			
9.1.26	Read/Write ticket unit for Magnetic stripe or Barcode tickets, tainless steel cabinet, Standard color - Housing (RAL 9006 White Aluminium) plus side/front panels (RAL 7021 Black Grey), Peripheral control unit, Heating and cooling units with separate thermostats, Intercom call button and loudspeaker, Collection bin for used ticket, Individual security lock	each	1			
9.1.27	Ground loop for free exit	each	1			
9.1.28	Car / Truck double gooseneck	each	1			
9.1.29	Gooseneck rain cover (150 x 150 x 100mm deep)	each	1			
9.1.30	Three arm, full height, bi-directional single turnstile	each	1			
9.1.31	Three arm, full height, bi-directional double turnstile	each	1			
9.1.32	Waist-height-flap-barrier-gate-turnstile (GLAS)	each	1			
9.1.33	SPEEDSTILE MOTION single lane (two single units) 650mm - 304SS	each	1			
9.1.34	SPEEDSTILE MOTION double lane (two single units and one double unit) 650mm - 304SS	each	1			
9.1.35	Gate Motor Centurion D5EVO Battery backup 12VDC - 2Amp charger, Potent push force of 17Kg, Rapid and smooth opening and closing up to 22m / min, Exceptionally easy system set up via LCD user interface, On-board NOVA 125 button multichannel receiver with selective delete, Multiple operating features including alarm modes	each	1			

9.1.36	Gate Motor Centurion D510 Battery backup 24VDC with 1,8Amp charger, Rapid operating speed up to 26m / min, High duty cycle capability at 45%, Multiple operating features, including alarm modes, Exceptionally easy system set up via LCD user interface, On-board NOVA 500 button multichannel receiver with selective delete	each	1			
9.1.37	CENTURION A10 Heavy Weight Very high starting and running thrust, High gate mass capacity up to 2000Kg, Fan cooled unit for exceptional duty cycle capability, Battery back-up capability using innovative DC converter, Internal limit switch system ensures pin-point stopping, Sensitive anti-crushing control, Reliable 3 phase induction motor runs on single phase power	each	1			
9.1.38	6m x 1,8m Sliding Gate (75 x 50mm squar tube) Clearview fence with 12mm round barcosted with 42mp concret 200x300mmx 6m	each	1			
9.1.39	Touch-to-Exit Sensor Input voltage: 12 VDC, Input voltage: 12 VDC, NO/NC contact, Fits standard 4 x 2 box	each	1			
9.1.40	Door Loop Extendable Cord Retractability ensures neatness where a long cord is required, Anti-tamper contact, 6 Core leads, 87mm x 24mm x 12mm Junction boxes	each	1			
9.1.41	Door Loop - Stainless 40cm 9,5mm Inner Diameter Flexible stainless door loop, 400mm Length and 9,5mm inner diameter, Ideal for large doors and swing gates	each	1			
9.1.42	System designs, drawings, documentation and commissioning	sum	1			
9.1.43	Sundries	sum	1			
9.1.44	Walkthrough Metal Detector - 18 Zone	each	1			
9.1.45	Single Energy X-Ray Inspection System	each	1			
9.1.46	System designs, drawings, documentation and commissioning	sum	1			
9.1.47	Sundries	sum	1			
9,2	Electric Fence					
9.2.1	Electric fence Energizer 8 Joule Dual Zone, Dual fence voltage and earth monitor, 8 Joules maximum output energy, Reset via key switch or optional keypad, Siren and strobe outputs, 2 Auxiliary alarm inputs (gate monitors), Battery backup	each	1			
9.2.2	Keypad Zone 2 Gate, Used with all dual zone energizers, Allows remote fence activation, Secure PIN number access, Remote monitoring of fence, battery and gate input alarm conditions	each	1			
9.2.3	High Strain Wire 2,24mm 40 Ohms/1000m, High tensile galvanised steel wire 2,24mm, For use on free-standing electric fences, 40 Ohms per 1000m, 50Kg Rolls, 1650m	each	1			
9.2.4	Braided Wire 1,2mm 304 Stainless Steel / 800m, 7 Strand twisted stainless steel wire, 1,2mm Diameter, 700 Ohm per 1000m, Approx, 130m / Kg	each	1			

9.2.5	HT Cable Aluminium Stranded Black / 100m, 7 Strand aluminium core, Low resistance - ideal for aluminium wire fences, Double insulated	each	1			
9.2.6	Braided Wire 1,2mm (7 Strand) 22Kg, 7 Strand twisted galvanised steel wire, 1,2mm Diameter, 175 Ohms per 1000m, Approx, 130m / Kg	each	1			
9.2.7	Ferrules 6mm 304 Stainless Steel / 50, 6mm, 50 per package, Stainless steel	each	1			
9.2.8	Stay Lug 6 x 35mm, Tinned copper 8mm lug, Used with stays for wall fixing, 6 x 35mm	each	1			
9.2.9	Line Clamps Large, Galvanised large nut and bolt for electric fence connections for larger fences using thicker high tensile steel wire, 8mm U Bolt	each	1			
9.2.10	Tensioner Combo Black Bobbin, Hot dip galvanised, Combination ratchet tensioner and insulator, Tensioner for free-standing and long fence sections	each	1			
9.2.11	Tensioner Hybrid Big Boy Heavy Duty Nylon, A hardy heavy duty tensioner for all weather types, Versatile tensioner - from 1,2 mm to 2,5 mm wire, It eliminates galvanic reaction between dissimilar metal thus eliminating rust and can be used with any type of wire	each	1			
9.2.12	Tensioner - Hybrid Comp Spring Gold Heavy Duty Black Heavy tension (gold) spring can tension up to 1,6 mm wires, Combination of two tensioning systems, an active system to expand and compress as required, and the mini titan can take up any wire slack	each	1			
9.2.13	S-Hook 5mm Galvanised Free Standing, Hot dipped galvanised 5mm steel, Used for free-standing electric fences, Connects strain insulator to corner post	each	1			
9.2.14	Flat Bar Insulator Bobbin Black, UV Stabilised for long life, Wire clip ensures fixed wire position and prevents tampering, Used on flat bar electric fence poles	each	1			
9.2.15	Insulator - Omega with Clip - Black, Used with freestanding and piggy back fence systems, Quickfit onto Omega poles with clip to secure, Double fin insulation to reduce tracking and arcing	each	1			
9.2.16	Nail-On Insulator Black, UV Stabilised for long life, Used for all flat surface mounting electric fences (steel, brick, wood), Can be fixed using nails, screws, rivets etc,	each	1			
9.2.17	Modulas Slide Insulator Black Insulator for all modulus poles, Adjustable wire spacing via break-offs	each	1			
9.2.18	Insulator - Jurassic - Black 6,2mm, Longer tracking distance for less arcing, Feed through option to thread the wire for maximum security, EF26-4 Screw - Jurassic Self Tapper Hook	each	1			
9.2.19	Electric Fence In-Line Earth Loop, Installed onto the fence wire between the earth wires galvanised or stainless steel	each	1			
9.2.20	Bracket Omega 1,8m Pre-Galvanised, Pre-galvanised grade of mild steel for inland use, Backing plates are available and used on corners or at the fence ends	each	1			
9.2.21	5 Line Flat Bar Angle Black, UV Stabilised bobbins, For intermediate and end poles, Flat angle bar 730mm x 20mm x 5mm, Powder coated black, Galvanised on request	each	1			
9.2.22	Lightning Dual Protection-Inhibitor and Diverter, UV stabilised plastic housing, Stainless steel plates, 3 arc gap setting positions: Position 1: 14,5 KV, Position 2 :16,0 KV, Position 3:18,5 KV	each	1			
9.2.23	Sliding Gate Contacts (In-Line) Double HV contact for sliding gates, Facilitates in circuit (in-line) gate connection, Dual plunger system keeps fence circuit closed while gate is open, Stainless steel	each	1			

9.2.24	Earth Spike 1,2m Copper Incl, Nuts 1200mm x 12mm x 12mm, Including lug and securing nuts, Copper coated steel for low resistance	each	1			
9.2.25	Electric fence Energizer 8 Joules Dual Zone, Dual fence voltage and earth monitor, 8 Joules maximum output energy, Reset via key switch or optional keypad, Siren and strobe outputs, 2 Auxiliary alarm inputs (gate monitors), Battery backup	each	1			
9.2.26	Keypad 2 Zone 2 Gate, Used with all dual zone energizers, Allows remote fence activation, Secure PIN number access, Remote monitoring of fence, battery and gate input alarm conditions	each	1			
9.2.27	High Strain Wire 2,24mm 40 Ohms/1000m, High tensile galvanised steel wire 2,24mm, For use on free-standing electric fences, 40 Ohms per 1000m, 50Kg Rolls, 1650m	each	1			
9.2.28	Braided Wire 1,2mm 304 Stainless Steel / 800m, 7 Strand twisted stainless steel wire, 1,2mm Diameter, 700 Ohm per 1000m, Approx, 130m / Kg	each	1			
9.2.29	HT Cable Aluminium Stranded Black / 100m, 7 Strand aluminium core, Low resistance - ideal for aluminium wire fences, Double insulated	each	1			
9.2.30	Braided Wire 1,2mm (7 Strand) 22Kg, 7 Strand twisted galvanised steel wire, 1,2mm Diameter, 175 Ohms per 1000m, Approx, 130m / Kg	each	1			
9.2.31	Ferrules 6mm 304 Stainless Steel / 50, 6mm, 50 per package, Stainless steel	each	1			
9.2.32	Stay Lug 6 x 35mm, Tinned copper 8mm lug, Used with stays for wall fixing, 6 x 35mm	each	1			
9.2.33	Line Clamps Large, Galvanised large nut and bolt for electric fence connections for larger fences using thicker high tensile steel wire, 8mm U Bolt	each	1			
9.2.34	Tensioner Combo Black Bobbin, Hot dip galvanised, Combination ratchet tensioner and insulator, Tensioner for free-standing and long fence sections	each	1			
9.2.35	Tensioner Hybrid Big Boy Heavy Duty Nylon, A hardy heavy duty tensioner for all weather types, Versatile tensioner - from 1,2 mm to 2,5 mm wire, It eliminates galvanic reaction between dissimilar metal thus eliminating rust and can be used with any type of wire	each	1			
9.2.36	Tensioner - Hybrid Comp Spring Gold Heavy Duty Black Heavy tension (gold) spring can tension up to 1,6 mm wires, Combination of two tensioning systems, an active system to expand and compress as required, and the mini titan can take up any wire slack	each	1			
9.2.37	S-Hook 5mm Galvanised Free Standing, Hot dipped galvanised 5mm steel, Used for free-standing electric fences, Connects strain insulator to corner post	each	1			
9.2.38	Flat Bar Insulator Bobbin Black, UV Stabilised for long life, Wire clip ensures fixed wire position and prevents tampering, Used on flat bar electric fence poles	each	1			
9.2.39	Insulator - Omega with Clip - Black, Used with freestanding and piggy back fence systems, Quickfit onto Omega poles with clip to secure, Double fin insulation to reduce tracking and arcing	each	1			
9.2.40	Nail-On Insulator Black, UV Stabilised for long life, Used for all flat surface mounting electric fences (steel, brick, wood), Can be fixed using nails, screws, rivets etc,	each	1			
9.2.41	Modulus Slide Insulator Black Insulator for all modulus poles, Adjustable wire spacing via break-offs	each	1			

9.2.42	Insulator - Jurassic - Black 6,2mm, Longer tracking distance for less arcing, Feed through option to thread the wire for maximum security, EF26-4 Screw - Jurassic Self Tapper Hook	each	1			
9.2.43	Electric Fence In-Line Earth Loop, Installed onto the fence wire between the earth wires galvanised or stainless steel	each	1			
9.2.44	Bracket Omega 1,8m Pre-Galvanised, Pre-galvanised grade of mild steel for inland use, Backing plates are available and used on corners or at the fence ends	each	1			
9.2.45	5 Line Flat Bar Angle Black, UV Stabilised bobbins, For intermediate and end poles, Flat angle bar 730mm x 20mm x 5mm, Powder coated black, Galvanised on request	each	1			
9.2.46	Lightning Dual Protection-Inhibitor and Diverter, UV stabilised plastic housing, Stainless steel plates, 3 arc gap setting positions: Position 1: 14,5 KV, Position 2 :16,0 KV, Position 3:18,5 KV	each	1			
9.2.47	Sliding Gate Contacts (In-Line) Double HV contact for sliding gates, Facilitates in circuit (in-line) gate connection, Dual plunger system keeps fence circuit closed while gate is open, Stainless steel	each	1			
9.2.48	Earth Spike 1,2m Copper Incl, Nuts 1200mm x 12mm x 12mm, Including lug and securing nuts, Copper coated steel for low resistance	each	1			
9.2.49	System designs, drawings, documentation and commissioning	sum	1			
9.2.50	Sundries	sum	1			
9,3	CCTV Cameras					
9.3.1	Perimeter Camera - Including Housing - See Specification	each	1			
9.3.2	Perimeter Lens - Standard: Varifocal, 2,8–8 mm, F1,3, IR corrected, Megapixel resolution, P-Iris	each	1			
9.3.3	Perimeter Lens - Telephoto: 12,5-50 mm Telephoto Lens, P-Iris, F1,4 for perimeter Camera	each	1			
9.3.4	Crossline / Tripwire Analytics	each	1			
9.3.5	2MP IP Bullet Camera, H,265, 8-32mm motorized lens, Super Low Light, WDR, true D/N, 100m IR, Audio, Alarm, BNC, micro SD/SHDC slot, Intelligence, PoE+ (802,3-at) /12VDC, Heater, IP67, IK10	each	1			
9.3.6	Pole mount adaptor for use with perimeter bullet cameras	each	1			
9.3.7	Vehicle License Camera See Specifications	each	1			
9.3.8	2MPx, IP VF Bullet Camera, w/cable harness, 2,8~12mm motorized, True D/N, WDR, 50m IR, Audio, I/Os, BNC Output, Micro SD/SDHC/SDXC Slot, PoE+ (802,3-at)/12VDC, IP67, IK10	each	1			
9.3.9	Pole mount adaptor for use with bullet cameras for pole mount	each	1			
9.3.10	3U Extended Chassis (DVC-EX) with 16 3TB data drives, LNVR software and latest Windows 64bit operating system - for Reuven	each	1			
9.3.11	NVR 32 Channels, H,264/MPEG 4, 160Mb/s bandwidth, eSATA, HDMI/VGA/BNC, 8TH (For Thermographic Cameras)	each	1			

9.3.12	Infrared Illuminator (up to 300 m)	each	1			
9.3.13	Network Recorder 2x 500 GB for OS and 9TB for Storage with 8 GB DDR4 RAM	each	1			
9.3.14	BLADE RACKMOUNT SERVER, 2U rack server engineered for midrange and virtualized workloads with two sockets for Intel Xeon E5-2600 v3 processors, Built with Intel's Grantly architecture and a Wellsburg C610 chipset that supports 12 DDR4 DIMM slots, 2 PCIe 2.0 slots, and 3 PCIe 3.0 slots, Server with 2x SSD 500GB for OS and 15TB for Storage with 16 GB DDR4 RAM,	each	1			
9.3.15	BLADE RACKMOUNT SERVER offers two-socket performance and features a balanced performance to storage ratio for data-intensive applications, The 2u design supports up to two Intel Xeon v2 processors, DDR3 memory modules, and 4 PCI slots for attaching additional NICs and HD controllers, Server with 2x SSD 500GB for OS and 15TB for Storage with 16 GB DDR4 RAM,	each	1			
9.3.16	1U server that supports: One Intel Xeon Scalable processor, Four DIMM slots , Cabled AC power supply unit, Up to four 3.5-inch SAS, SATA drives or SSDs, or four 3.5-inch cabled drives, or two 3.5-inch cabled drives, Server with 2x SSD 500GB for OS and 15TB for Storage with 16 GB DDR4 RAM,	each	1			
9.3.17	2U Server, dual socket rack system that supports up to, Two Intel Xeon Scalable Processors, 16 DIMM slots, Two AC and DC redundant power supply units (PSU) or single cabled PSU, 14 drives or solid-state drives	each	1			
9.3.18	18,5" KVM Switch wide Screen Short depth Full HD LCD console support DVI, HDMI, VGA, Integrated LCD KVM console with an 18,5" LED-backlit widescreen Full HD LCD monitor in a dual rail housing with top and bottom clearance for smooth operation in a 1U high system rack	each	1			
9.3.19	NVR 22, 16 IP ch, 16 ch PoE, H,265, ONVIF/PSIA, 160 Mbps bandwidth, HDMI/VGA/BNC, 2U, 12TB	each	1			
9.3.20	NVR 22, 32 IP channels, H,265, ONVIF/PSIA, 256 Mbps bandwidth, HDMI/VGA/BNC, 2U, 24 TB	each	1			
9.3.21	USB keypad	each	1			
9.3.22	Thermographic PTZ Camera (Power Supply included)	each	1			
9.3.23	Thermographic Fixed Camera (Power Supply included)	each	1			
9.3.24	Infrared Illuminator (up to 300 m)	each	1			
9.3.25	4MPx, IP VF Bullet Camera, w/cable harness, 2,8~12mm motorized, True D/N, WDR, 50m IR, Audio, I/Os, BNC Output, Micro SD/SDHC/SDXC Slot, PoE+ (802,3-at)/12VDC, IP67, IK10	each	1			
9.3.26	4MPx, H,265/H,264, IP Fixed Lens Bullet Camera, 4mm, True D/N, WDR, 30m IR, Micro SD/SDHC/SDXC Slot, PoE (802,3-af)/12VDC, IP67	each	1			
9.3.27	2MPx, H,265/H,264, IP Fixed Lens Bullet Camera, 4mm, True D/N, WDR, 30m IR, Micro SD/SDHC/SDXC Slot, PoE (802,3-af)/12VDC, IP67	each	1			
9.3.28	4MP IP Bullet Camera, H,265, 2,8-12mm motorized lens, Super Low Light, WDR, true D/N, 50m IR, Audio, Alarm, BNC, micro SD/SHDC slot, Intelligence, PoE+ (802,3-at) /12VDC, Heater, IP67, IK10	each	1			

9.3.29	4MP IP Bullet Camera, H,265,8-32mm motorized lens, Super Low Light, WDR, true D/N, 100m IR, Audio, Alarm, BNC, micro SD/SHDC slot, Intelligence, PoE+ (802,3-at) /12VDC, Heater, IP67, IK10	each	1			
9.3.30	8MP/4K IP Bullet Camera, H,265, 2,8-12 mm motorized lens, Super Low Light, WDR, true D/N, 50m IR, Audio, Alarm, BNC, micro SD/SHDC slot, Intelligence, PoE+ (802,3-at) /12VDC, Heater, IP67, IK10	each	1			
9.3.31	8MP/4K IP Bullet Camera, H,265, 8-32mm motorized lens, Super Low Light, WDR, true D/N, 100m IR, Audio, Alarm, BNC, micro SD/SHDC slot, Intelligence, PoE+ (802,3-at) /12VDC, Heater, IP67, IK10	each	1			
9.3.32	2MPx, IP VF Mini Dome Camera, w/cable harness, 2,8~12mm motorized, True D/N, WDR, 30m IR, Audio, I/Os, BNC Output, Micro SD/SDHC/SDXC Slot, PoE (802,3-af)/12VDC, IP67, IK10	each	1			
9.3.33	4MPx, IP VF Mini Dome Camera, w/cable harness, 2,8~12mm motorized, True D/N, WDR, 30m IR, Audio, I/Os, BNC Output, Micro SD/SDHC/SDXC Slot, PoE (802,3-af)/12VDC, IP67, IK10	each	1			
9.3.34	360° IP camera, 6 MPx, outdoor, 15m IR, 360° fisheye lens	each	1			
9.3.35	360° IP camera, 12 MPx, outdoor, 15m IR, 360° fisheye lens	each	1			
9.3.36	20MP/4x5MP image sensors Multi-Imager 360 Degree IP Camera,, 2,8-12mm motorized lenses, True D/N, WDR, 30m IR, Audio, Alarm, Micro SDXC Slot, IP67, IK10, Heater, Hi-PoE/12VDC	each	1			
9.3.37	2 MPX IP PTZ camera, Outdoor, Pendant/Wall Mount, Super Low Light, True D/N, WDR, IR Cut, H,265, H,264, ONVIF/PSIA, 25X Optical zoom, SDHC Card slot, PoE+/24VAC	each	1			
9.3.38	2 MPX IP PTZ camera, Outdoor, Pendant/Wall Mount, Super Low Light, True D/N, WDR, IR Cut, 200m IR, H,265, H,264, ONVIF/PSIA, 36X Optical zoom, SDHC Card slot, PoE+/24VAC	each	1			
9.3.39	PTZ dome wall mount bracket	each	1			
9.3.40	OUTDOOR READY PTZ HDTZ, 18X ZOOM, H,264, HIGHPOE, PTZ Dome Network Camera (Outdoor Ready PTZ HDTZ, 18x Zoom, H,264, HIGHPOE), For the highest video quality and performance, PTZ Dome Camera is the choice, Designed for the most demanding applications, the outdoor-ready PTZ dome provides HDTV coverage of large areas, great details when zooming in, and high-speed pan/tilt,	each	1			
9.3.41	PTZ Dome Network Camera 60Hz - Network surveillance camera - PTZ - outdoor - vandal / waterproof - color (Day&Night) - 1280 x 720 - 720p - audio - LAN 10/100 - MPEG-4, MJPEG, H,264 - DC 24 V / PoE Plus	each	1			
9.3.42	2,0 Megapixel 1920×1080 resolution 30 x optical zoom with 360 degree pan, IP-52 rated Arctic Temperature Control ,Active Gate Keeper, The camera can automatically move to a pre-set position upon motion detection in a pre-defined area, and track the detected object,	each	1			
9.3.43	Vedio server Metal casing, memory, 64 MB RAM, 8 MB Flash, Power, 7 – 20 V DC, max 8 W, Connectors, Analog composite video NTSC/PAL auto-sensing: conditions, 5 – 50 °C (41 – 122 °F) approvals, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, Weight, 540 g (1,2 lbs)	each	1			
9.3.44	Outdoor PTZ, H264/H265, HDTV 720 pixels,Auto tracking and orientation, day/night and H,264, 30x optical zoom and 220° tilt ,Outdoor-ready with Arctic Temperature Control, Active Gatekeeper and tour recording, High Power over Ethernet	each	1			

9.3.45	POE Injector - Arctic Temperature Control allows the camera to not only function at -40°C (-40°F) but also power up at that temperature following a power failure, Can operate in temperatures from -40°C to 50°C (-40°F to 122°F), It has IP66 and NEMA 4X protection against dust and water, and is IK10 vandal-resistant,	each	1			
9.3.46	The Box camera with CS-mount, varifocal, DC-iris lens provides excellent image quality without motion blur using progressive scan at 30 frames per second in 1 megapixel / HDTV resolution, The cost-effective, compactly designed camera offers multiple H,264 and Motion JPEG streams that can be individually optimized for bandwidth and storage efficiency,	each	1			
9.3.47	Dome camera - High quality images - up to 15 frames per second (fps), Built-in Web server, Standard C/CS lens mount, The Network Camera offers crisp, quality images and streaming video on your network,	each	1			
9.3.48	Tailor made Mounting bracket, easy to install and can easily be integrated with existing security systems, To reach an unobstructed field of view (360°) and a ground-to-sky view of 135°	each	1			
9.3.49	2TB Surveillance Hard Drive 2TB SATA 3.5", 4,096 Bytes per sector, Idle 3 Power settings, SATA 6Gb/s Interface, RV Sensors	each	1			
9.3.50	4TB Surveillance HDD, 4,096 Bytes per sector, Idle 3 Power settings, SATA 6Gb/s Interface, RV Sensors	each	1			
9.3.51	RS485/IP keypad, 4-axis joystick, 12VDC	each	1			
9.3.52	Camera channel License, SW support for each single Video Channel (includes LNVR, LDVR, HVR and Integrated SkyPoint, Integrated goVision, Integrated Prism Channels) annually	each	1			
9.3.53	Camera channel License	each	1			
9.3.54	NVR 32 Channels, H,264/MPEG 4, 160Mb/s bandwidth, eSATA, HDMI/VGA/BNC, 8TH (For Thermographic Cameras)	each	1			
9.3.55	Infrared Illuminator (up to 300 m)	each	1			
9.3.56	Supply Custom Brkts For Thermal CCTV	each	1			
9.3.57	Supply custom made perimeter camera brkts 3,5 metres or greater	each	1			
9.3.58	System designs, drawings, documentation and commissioning	sum	1			
9.3.59	Sundries	sum	1			
9,4	Fire Detection System					
9.4.1	Line Relay Module - Hight Voltage - DIN Rail Mounting	each	1			
9.4.2	Fault/Fire Interface to Lenel System	each	1			
9.4.3	Removal of existing Fire Detection System	each	1			

9.4.4	Analogue Addressable 4 Loop Fire Control Panel with Back up Batteries, 230V, EN54 approved	each	1			
9.4.5	Analogue Addressable 2 Loop Fire Control Panel with Back up Batteries, 230V, EN54 approved	each	1			
9.4.6	2 loop motherboard on chassis	each	1			
9.4.7	Analogue conventional 2 Loop Fire Control Panel with Back up Batteries, 230V, EN54 approved	each	1			
9.4.8	8 Zone, Conventional Fire Panel, EN54 approved	each	1			
9.4.9	Conventional Fire Panel FIRE CONTROL PANEL, EN54 approved	each	1			
9.4.10	2 Loop Panel	each	1			
9.4.11	Extinguishing Release Interface	each	1			
9.4.12	Fire and Extinguishing combination panel	each	1			
9.4.13	Addressable Fire Panel, Analogue Addressable Fire Panel, EN54 approved	each	1			
9.4.14	Conventioanl Fire Panel	each	1			
9.4.15	Series 65 Optical Smoke Detector (9-33 V DC)	each	1			
9.4.16	Analogue Optical Smoke Sensor	each	1			
9.4.17	Conventional Optical Smoke Detector (Polar White)	each	1			
9.4.18	Conventional Heat Detector (Fixed at 82°C)	each	1			
9.4.19	Flush mounting red analogue callpoint c/w /EN54 marking	each	1			
9.4.20	Addressable Interface unit low voltage A45E	each	1			
9.4.21	Addressable Mains Relay Module	each	1			
9.4.22	Addressable Omnidirectional Sounder with Visual Indicator, Red	each	1			
9.4.23	Omnidirectional Sounder Beacon (102 dBA) - Polar White	each	1			

9.4.24	POLAR WHITE base sounder	each	1			
9.4.25	Addressable Fire Sounder with Strobe	each	1			
9.4.26	Cooper Fulleon ROLP Solista Red Body Red LED Beacon (shallow base)	each	1			
9.4.27	Detector Base surface mounting - Addressable	each	1			
9.4.28	Detector Base isolated - Addressable	each	1			
9.4.29	Fire Detection Beams	each	1			
9.4.30	Fault/Fire Interface to Integrated Security Systems	each	1			
9.4.31	System designs, drawings, documentation	each	1			
9.4.32	Removal of existing Fire Detection System	each	1			
9.4.33	Loop Labels (Loops 1 - 2)	each	1			
9.4.34	Fire Document Holder, A4, Red, c/w Logbook & Pen	each	1			
9.4.35	System designs, drawings, documentation and commissioning	sum	1			
9.4.36	Sundries	sum	1			
9.4.37	Servicing of fire extinguisher	each	1			
9.4.38	Provision of new fire extinguisher	each	1			
9,5	Gas/Deluge Sprinkler Suppression System					
9.5.1	3 Zone Fire/extinguishing Control Panel TEC247	each	1			
9.5.2	Technoswitch Tech 202(for indoor normal linked to the TEC047)	each	1			
9.5.3	Technoswitch ORX 2 Zone panel	each	1			
9.5.4	Technoswitch TEC 047 (for indoors and outdoors	each	1			

9.5.5	Technoswitch TEC04701-W Waeatherproof Extinuishing ControlPanel	each	1			
9.5.6	Refill 1 Pyroshield Cylinder 48KG	each	1			
9.5.7	BRS-SERV 950-020 1G 55 Refill 80L 200BAR	each	1			
9.5.8	Refill 1 FM200 Cylinder 48KG	each	1			
9.5.9	BRS-227-103-001 HFC-227eaPer kg	each	1			
9.5.10	Refill FM200 Gas 30kg	each	1			
9.5.11	Pilot Cylinder 5kg (used with	each	1			
9.5.12	BRS-SERV-950-069 Nitrogen filling Pilot Cylinder	each	1			
9.5.13	Nozzles Series B0461 Discharge Nozzles	each	1			
9.5.14	BRS-404-001 Discharge Nozzle Assembly 15mmBSP	each	1			
9.5.15	Series 02972 Pressure Gauge,	each	1			
9.5.16	brs-serv-950-016 Gauge/Adapter K85-55 Brass	each	1			
9.5.17	Technoswitch TEC057B Extinguishing Release Test & Interface	each	1			
9.5.18	Room Integrity Test	each	1			
9.5.19	System designs, drawings, documentation and commissioning	sum	1			
9.5.20	Additional cost for items not allowed for (specify):	each	1			
9.5.21	i)	each				
9.5.22	ii)	each				
9.5.23	iii)	each				
9.5.24	iv)	each				

9.5.25	v)	each				
9.5.26	Sundries	sum	1			
	PUMP ROOM					
9.5.27	DE-RUST,PAINT ALL PIPING&VALVES IN ICV	each	1			
9.5.28	SERVICE ALARM GONG	each	1			
9.5.29	REPLACE & PADLOCK	each	1			
9.5.30	REPLACE GLYCIRINE PRESSURE GUAGES	each	1			
9.5.31	REPLACE COMPLETE FLOW TEST ARRANGEMENT ONLY	each	1			
9.5.32	REPLACE COMPLETE FLOW TEST ARRANGEMENT WITH PIPING	each	1			
9.5.33	REPLACE JOCKEY PUMP (FLOW OF 1L/S @ 5 BAR PRESSURE)	each	1			
9.5.34	REPLACE ALARM GONG	each	1			
9.5.35	REPLACE BOOSTER	each	1			
9.5.36	INSTALL TWIN BOOSTER- EXTEND TO OUTSIDE OF ICV(INCLUDES 1M	each	1			
9.5.37	PIPE & 2 X ELBOW)	each	1			
9.5.38	REPLACE EXISTING BUTTERFLY VALVE	each	1			
9.5.39	INSTALL NEW BUTTERFLY VALVE FLANGED/GROOVED WITH PIPING	each	1			
9.5.40	SHORT BOLTING	each	1			
9.5.41	ICV INSTRUCTION CHART	each	1			
9.5.42	PRESSURE LIMITATION SIGN	each	1			
9.5.43	SPRINKLER STOP VALVE SIGN	each	1			

9.5.44	BOOSTER SIGNAGE	each	1			
9.5.45	System designs, drawings, documentation and commissioning	sum	1			
9.5.46	Additional cost for items not allowed for (specify):	each	1			
9.5.47	Diesel Generator Fire Pump 178-5,5HP	each	1			
9.5.48	Diesel Generator Fire Pump 186-8,6HP	each	1			
9.5.49	Diesel Generator Fire Pump 192-10HP	each	1			
9.5.50	Diesel Generator Fire Pump 380-27HP	each	1			
9.5.51	Diesel Generator Fire Pump 385-32HP	each	1			
9.5.52	Diesel Generator Fire Pump 480-38HP	each	1			
9.5.53	Diesel Generator Fire Pump 490N-58HP	each	1			
9.5.54	Diesel Generator Fire Pump 490Z-75HP	each	1			
9.5.55	Diesel Generator Fire Pump 4102Z-99HP	each	1			
9.5.56	Diesel Generator Fire Pump 6902Q-130HP	each	1			
9.5.57	Diesel Generator Fire Pump 490-61HP	each	1			
9.5.58	Diesel Generator Fire Pump 6102ZS-170HP	each	1			
9.5.59	Diesel Generator Fire Pump 4108Z-113HP	each	1			
9.5.60	Diesel Generator Fire Pump 6102Z-130HP	each	1			
9.5.61	Diesel Generator Fire Pump 610Z-170HP	each	1			
9.5.62	Electrical Motor Fire Pump YE3-132S2-27,5kw	each	1			
9.5.63	Electrical Motor Fire Pump YE3-160M1-2-11kw	each	1			

9.5.64	Electrical Motor Fire Pump YE3-160M2-2-15kw	each	1			
9.5.65	Electrical Motor Fire Pump YE3-180M-2-22KW	each	1			
9.5.66	Electrical Motor Fire Pump YE3-200L2-2-30KW	each	1			
9.5.67	Electrical Motor Fire Pump YE3-250-2-55kw	each	1			
9.5.68	Electrical Motor Fire Pump YE3-315S-2-110kw	each	1			
9.5.69	Electrical Motor Fire Pump YE3-280S-2-75kw	each	1			
9.5.70	Electrical Motor Fire Pump YE3-315M-2-132kw	each	1			
9.5.71	Electrical Motor Fire Pump YE3-280M-2-75KW	each	1			
9.5.72	Electrical Motor Fire Pump YE3-315L1-2-160kw	each	1			
9.5.73	Pump Coupling Motor PSM 32-250/75	each	1			
9.5.74	Pump Coupling Motor PSM 40-250/150	each	1			
9.5.75	Pump Coupling Motor PSM 50-250/220	each	1			
9.5.76	Pump Coupling Motor PSM 65-250/220	each	1			
9.5.77	Pump Coupling Motor PSM 80-250/550	each	1			
9.5.78	Pump Coupling Motor PSM 100-250/750	each	1			
9.5.79	Pump Coupling Motor PSM 100-315/900	each	1			
9.5.80	Pump Coupling Motor PSM 125-315/1320	each	1			
9.5.81	Pump Coupling Motor PSM 125-315/160	each	1			
9.5.82	Jockey pump 50HZ PV 4x9/2HP	each	1			
9.5.83	Jockey pump 50HZ PV 6x11/3HP	each	1			

9.5.84	Jockey pump 50HZ PV 8x12/4HP	each	1			
9.5.85	Jockey pump 50HZ PV 12x12/5,5HP	each	1			
9.5.86	Jockey pump 50HZ PV 12x17/5,5HP	each	1			
9.5.87	Jockey pump 50HZ PV 30x7/10HP	each	1			
9.5.88	Jockey pump 50HZ PV 30x11/15HP	each	1			
9.5.89	Jockey pump 60HZ PV 4x6/2HP	each	1			
9.5.90	Jockey pump 60HZ PV 4x8/3HP	each	1			
9.5.91	Jockey pump 60HZ PV 6x7/3HP	each	1			
9.5.92	Jockey pump 60HZ PV 8x8/4HP	each	1			
9.5.93	Jockey pump 60HZ PV 12x9/7,5HP	each	1			
9.5.94	Jockey pump 60HZ PV 12x11/10HP	each	1			
9.5.95	Jockey pump 60HZ PV 30x5/10HP	each	1			
9.5.96	Jockey pump 60HZ PV 30x6/12HP	each	1			
9.5.97	Jockey pump 60HZ PV 30x8/15HP	each	1			
9.5.98	Diesel combined annunciator control panel	each	1			
9.5.99	Electric Control Star Delta Control Panel	each	1			
9.5.100	1,1 KW Jockey Control Panel	each	1			
9.5.101	Supply, Fabricate & Installation of all pump house and tank piping including all valves and ancillary equipment	each	1			
9.5.102	Supply and Installation of the cylindrical galvanised fire water tanks with a total effective capacity of 40 m³	each	1			
9.5.103	Sundries	sum	1			

	SPRINKLERS					
9.5.104	VOID SPRINKLER	each	1			
9.5.105	CEILING SPRINKLER 1ST FIX	P/M	1			
9.5.106	CEILING SPRINKLER 2ND FIX	P/M	1			
9.5.107	IN-RACK SPRINKLERS INCLUDING GUARD AND WATERSHIELD	each	1			
9.5.108	DRY DROPPERS COLD/FREEZER ROOMS COMPLETE(HOLE AND FORM	each	1			
9.5.109	EFSR SPRINKLERS	each	1			
9.5.110	NEW HEAT PLATES COMPLETE WITH BRACKETS	each	1			
9.5.111	NEW PIPE BELTS	each	1			
9.5.112	INSTALL SPRINKLER BOX WITH SPARES,SPRINKLERS,SPANNERS&PLUGS	each	1			
9.5.113	ADJUST SPRINKLERS AND SUPPORTS	each	1			
9.5.114	REPLACE DAMAGED OR PAINTED SPRINKLER HEADS-STANDARD	each	1			
9.5.115	AND QUICK RESPONSE ONLY	O/R	1			
9.5.116	REPAIR/REPLACE DAMAGED HEAT PLATES AND BRACKETS	each	1			
9.5.117	SPRINKLER HEAD ONLY	each	1			
9.5.118	REPOSITION SPRINKLER HEAD-RANGE PIPES INCLUDED	each	1			
9.5.119	PLUG SPRINKLER HEAD ONLY	each	1			
9.5.120	STRIP & PLUG OF A DROPPER	each	1			
9.5.121	STRIP OUT MAINS 65MM	P/M	1			
9.5.122	STRIP OUT MAINS 80MM	P/M	1			

9.5.123	STRIP OUT MAINS 100MM	P/M	1			
9.5.124	STIP OUT MAINS 150MM	P/M	1			
9.5.125	STRIP OUT MAINS 200MM	P/M	1			
9.5.126	STRIP OUT MAIN 300MM	P/M	1			
9.5.127	INSTALL NEW HOSEREEL INCLUDING (1L PIPE 6M)	each	1			
9.5.128	REPOSITIONING OF HOSEREEL	each	1			
9.5.129	PAINT PIPEWORK 25-50MM	P/M	1			
9.5.130	PAINT PIPEWORK 65-150MM	P/M	1			
9.5.131	PAINT PIPEWORK 200-300MM	P/M	1			
9.5.132	INSTALL NEW ICV COMPLETE	each	1			
9.5.133	INSTALL MANIFOLD/VALVE ASSEMBLY	each	1			
9.5.134	INSTALL NEW HYDRANT HEAD	each	1			
9.5.135	INSTALL HYDRABANT HEAD INCLUDING PIPING (1L PIPE 6M)	each	1			
9.5.136	System designs, drawings, documentation and commissioning	sum	1			
9.5.137	Additional cost for items not allowed for (specify):	each	1			
9.5.138	i)	each				
9.5.139	ii)	each				
9.5.140	iii)	each				
9.5.141	iv)	each				
9.5.142	v)	each				

9.5.143	Sundries	sum	1			
	CONNECTING PIPEWORK					
9.5.144	25MM-50MM	each	1			
9.5.145	65MM	each	1			
9.5.146	80MM	each	1			
9.5.147	100MM	each	1			
9.5.148	150MM	each	1			
9.5.149	200MM	each	1			
9.5.150	DENZO WRAPPING	each	1			
9.5.151	System designs, drawings, documentation and commissioning	sum	1			
9.5.152	Additional cost for items not allowed for (specify):	each	1			
9.5.153	i)	each				
9.5.154	ii)	each				
9.5.155	iii)	each				
9.5.156	iv)	each				
9.5.157	v)	each				
9.5.158	Sundries	sum	1			
	WELDING					
9.5.159	ELBOW = 2 X WELDS	each	1			

9.5.160	BRANCH = 1X WELD	each	1			
9.5.161	OFFSET COMPLETE INCLUDING CUTTING	each	1			
9.5.162	FLANGE 65MM -100MM	each	1			
9.5.163	FLANGE 150MM -300MM	each	1			
9.5.164	System designs, drawings, documentation and commissioning	sum	1			
9.5.165	Additional cost for items not allowed for (specify):	each	1			
9.5.166	i)	each				
9.5.167	ii)	each				
9.5.168	iii)	each				
9.5.169	iv)	each				
9.5.170	v)	each				
9.5.171	Sundries	sum	1			
	BREAK-INS					
9.5.172	BREAK-IN 25MM-80MM	each	1			
9.5.173	BREAK-IN 100MM-150MM	each	1			
9.5.174	BREAK-IN 200MM-300MM	each	1			
9.5.175	System designs, drawings, documentation and commissioning	sum	1			
9.5.176	Additional cost for items not allowed for (specify):	each	1			
9.5.177	i)	p/m				
9.5.178	ii)	each				

9.5.179	iii)	each				
9.5.180	iv)	each				
9.5.181	v)	each				
9.5.182	Sundries	sum	1			
9.6	UPS, Power Supply and Battery					
9.6.1	5Amps Power Supply with battery backup for maglocks, Output voltage: 13,6VDC 5 Amp, Input voltage: 190-265VAC - 50-60Hz, Lockable enclosure, grey epoxy coated finish, Output short-circuit protection, With SA plug top and 300mm lead, Metal housing dimensions : 295mm (H) x 198mm (W) x 90mm (D)	each	1			
9.6.2	Enclosed Power Supply 12VDC 10 Amp, 12VDC 10 Amp switch mode power supply, Input Voltage 175 to 265VAC @ 50Hz, 1 x 10 Amp Output @ 12VDC, Metal cage, Dimensions : 199mm(L) x 98mm(W) x 38mm(H)	each	1			
9.6.3	Power Supply 13,6VDC 3 Amp Power Store, Output voltage: 13,6VDC 3 Amp, Input voltage: 190-265VAC - 50-60Hz, Lockable enclosure, grey epoxy coated finish, Output short-circuit protection, With SA plug top and 300mm lead, Metal housing dimensions : 203mm (H) x 163mm (W) x 74mm (D)	each	1			
9.6.4	Power Supply 16VAC 50VA 3 Amp Protected, Standalone transformer in housing with moulded plug and AC connector block, 12/16VAC - 50VA, Output protected, Input Voltage 220VAC - 50Hz, Terminal block for 12 / 16VAC connection, Dimensions: 125mm (L) x 72mm (W) x 63mm (H)	each	1			
9.6.5	Power Supply 24 VDC-3Amp	each	1			
9.6.6	Power Supply & Enclosure - 12VDC output, 220/230 VAC (1,6 amps) input continuous supply current with enclosure (24" x 18" x 4,5"), Lock and open frame transformer, tamper switch, power distribution module	each	1			
9.6.7	Boxed PSU, 100 - 220 V AC to 24 V DC, 2A Regulated	each	1			
9.6.8	Sealed Lead Acid Battery 12Vdc 25Ah	each	1			
9.6.9	Sealed Lead Acid Battery 12 V 7 AH	each	1			
9.6.10	Sealed Lead Acid (SLA) Battery 12V 17AH 12V – 17 Amp hours sealed lead acid battery, Dimensions: 180mm (L) 76mm (W) 167mm (H)	each	1			
9.6.11	Sealed Lead Acid (SLA) Battery 12V 2,2AH, 12V – 2,2 Amp hours sealed lead acid battery, Dimensions: 178mm (L) 34mm (W) 66mm (H)	each	1			
9.6.12	Sealed Lead Acid (SLA) Battery 12V 25AH, 12V – 25 Amp hours sealed lead acid battery, Dimensions: 167,5mm (L) 167mm (W) 125mm (H), Battery terminal bolts and nuts incl,	each	1			

9.6.13	Sealed Lead Acid (SLA) Battery 12V 40AH, 12V – 40 Amp hours sealed lead acid battery, Dimensions: 196mm (L) 164mm (W) 179mm (H), Battery terminal bolts and nuts incl.	each	1			
9.6.14	Battery Lithium 3V CR2025 20mm, 3V lithium CR2025 coin battery Also available: BA34-1 CR1220, BA34-2 CR2032, BA34-3 CR2430, BA34-5 CR2450	each	1			
9.6.15	UPS Rack mounted 5kVA - 8-hour battery capacity complete with circuit breakers	each	1			
9.6.16	UPS additional 3U rack mounter battery packs	each	1			
9.6.17	Switch Mode PSU 2A Power supply	each	1			
9.6.18	Plug Top Rubber 15A, Rubber coated 3-pin black plug top 15 Amp	each	1			
9.6.19	Circuit Breakers 15Amps	each	1			
9.6.20	Circuit Breakers 20Amps	each	1			
9.6.21	Circuit Breaker 3phase 90Amps	each	1			
9.6.22	UPS additional 3U rack mounter battery packs	each	1			
9.6.23	UPS 3phase Floor standing distribushin board DB	each	1			
9.6.24	Class II Surge Arrestor for City Power Feed	each	1			
9.6.25	50KVA UPS 3Phase whith Batteries, 380/400/415 V three-phase + N, Maximum overload for EN50171 21600, Sinewave form, with 10years batteries expected lifespan for data concentrated centres	each	1			
9.6.26	60KVA UPS 3Phase whith Batteries, 380/400/415 V three-phase + N, Maximum overload for EN50171 21600, Sinewave form, with 10years batteries expected lifespan for data concentrated centres	each	1			
9.6.27	120KVA UPS 3Phase whith Batteries, 380/400/415 V three-phase + N, Maximum overload for EN50171 21600, Sinewave form, with 10years batteries expected lifespan for data concentrated centres	each	1			
9.6.28	20KVA UPS 3Phase whith Batteries, 380/400/415 V three-phase + N, Maximum overload for EN50171 21600, Sinewave form, with 10years batteries expected lifespan for data concentrated centres	each	1			
9.6.29	Additional cost for items not allowed for (specify):	each	1			
9.6.30	i)	each				
9.6.31	ii)	each				
9.6.32	iii)	each				
9.6.33	iv)	each				

9.6.34	v)	each				
9.6.35	Sundries	sum	1			
9.7	Cables & Trunking					
9.7.1	Scanning Services	m	1			
9.7.2	Mylar 2 Pair 0,22mm, Twisted pairs, (24AWG) stranded tinned copper cores, Aluminium polyester shield with drain wire, PVC Insulation	m	1			
9.7.3	Mylar 4-Pair 0,22mm, Twisted pairs, 0,22mm (24AWG) stranded tinned copper cores, Aluminium polyester shield with drain wire, PVC Insulation	m	1			
9.7.4	Mylar 3-Pair 0,22mm-Twisted pairs, 0,22mm (24AWG) stranded tinned copper cores, Aluminium polyester shield with drain wire, PVC Insulation for Reader	m	1			
9.7.5	Mylar 1-Pair 0,5mm - Twisted pairs, 0,5mm (24AWG) stranded tinned copper cores, Aluminium polyester shield with drain wire, PVC Insulation for Door monitor	m	1			
9.7.6	Mylar 1-Pair 1,0mm - Twisted pairs, 1,0mm (24AWG) stranded tinned copper cores, Aluminium polyester shield with drain wire, PVC Insulation for Maglock	m	1			
9.7.7	PH30 Fire Resistance 2-core-1mm Stranded copper wire conductors to BS6360, Special silicon rubber mix insulation, Halogen free sheath, EN50200 - PH30	m	1			
9.7.8	PH60 Fire Resistance 2-core-1mm Stranded copper wire conductors to BS6360, Special silicon rubber mix insulation, Halogen free sheath, EN50200 - PH60	m	1			
9.7.9	RG59 Power Black Mil / 300m, Coaxial cable RG59 MIL spec, black, 75 Ohms, 2 x 0,5mm power cables, 300m roll	m	1			
9.7.10	Twin and Earth 2,5mm Flat / 100m Twin flat and earth mains cable 2,5mm x 2, PVC Insulated - 300 / 500V, SABS, SANS 1507	m	1			
9.7.11	Cabtyre 1,5mm 3 Core Black / 300m Cabtyre PVC insulated mains extension cable 1,5mm x 3, SABS Approved - SANS 1574	m	1			
9.7.12	Comms 12 Core White / 300m, 0,2mm (24AWG) Solid copper cores, PVC insulated	m	1			
9.7.13	Comms 6 Core White / 300m 0,2mm (24AWG) Solid copper cores, PVC insulated	m	1			
9.7.14	Comms 4 Core White / 300m, 0,2mm (24AWG) Solid copper cores, PVC insulated	m	1			
9.7.15	Ripcord 1mm White / 300m 1,0mm (16AWG) Stranded cores	m	1			
9.7.16	Bosal conduit, 20mm x 3m lenth	m	1			
9.7.17	Bosal conduit, 25mm x 3m lenth	m	1			
9.7.18	Bosal conduit, 30mm x 3m lenth	m	1			

9.7.19	20MM Galvanised end box Bosal Conduit Box	m	1			
9.7.20	20MM Galvanised 1way Bosal Conduit Box	m	1			
9.7.21	20MM Galvanised 2way through Bosal Conduit Box	m	1			
9.7.22	20MM Galvanised 3way Bosal Conduit Box	m	1			
9.7.23	20MM Galvanised 4way Bosal Conduit Box	m	1			
9.7.24	25MM Galvanised end box Bosal Conduit Box	m	1			
9.7.25	25MM Galvanised 1way Bosal Conduit Box	m	1			
9.7.26	25MM Galvanised 2way through Bosal Conduit Box	m	1			
9.7.27	25MM Galvanised 3way Bosal Conduit Box	m	1			
9.7.28	25MM Galvanised 4way Bosal Conduit Box	m	1			
9.7.29	PVC Trunking 3m lenth 16 x 16mm	m	1			
9.7.30	PVC Trunking 3m lenth 16 x 25mm	m	1			
9.7.31	PVC Trunking 3m lenth 50 x 50mm	m	1			
9.7.32	PVC Trunking 3m lenth 100 x 40mm	m	1			
9.7.33	PVC Trunking 3m lenth 75 x 75mm	m	1			
9.7.34	PVC Trunking 3m lenth 75 x 75mm Dual compatment	m	1			
9.7.35	Galvanised Trunking 3m length 50 x 50mm	m	1			
9.7.36	Galvanised Trunking 3m length 75 x 75mm	m	1			
9.7.37	Galvanised Trunking 3m length 100 x 40mm	m	1			
9.7.38	32mm sleeves with draw wire	m	1			
9.7.39	50mm sleeves with draw wire	m	1			

9.7.40	110mm sleeves with draw wire	m	1			
9.7.41	6m concrete camera poles as per the specification	m	1			
9.7.42	Earthing of poles, 3 Point Star	m	1			
9.7.43	3 core 4mm PVP-SWA-PVC electrical cable	m	1			
9.7.44	Wiring accessories for guard house (lights,plugs,solar spotlights)	sum	1			
9.7.45	Sundries	sum	1			
9,8	Intrusion Alarm System					
9.8.1	Input Control Module (Series two) - 12/24 VDC, 16 zone input monitor module, (32) 1K resistors (with 2 programmable output relays), RoHS, CE, C-Tick and UL294 certified LNL 1100	each	1			
9.8.2	Command Display terminal Keypad - 32-character back-lit LCD display with a 16 position keypad, supports both direct RS-485 communication with the ISC and Wiegand Input, 12VDC+15% @175mA (keypad only), C-Tick Certified	each	1			
9.8.3	Surface Mounted Roller Shutter Magnetic Contact - NO/NC waterproof die-cast zinc constructed for surface mounting on garage floor, flexible 300mm stainless steel armour plate gives complete protection to cable, 25mm Take and 55mm break	each	1			
9.8.4	PIR Infrared motion sensor, 360 degrees, ceiling mounted	each	1			
9.8.5	Surface Magnetic door contacts wide gap NC/NO (door & gate monitor) Gap width 35mm take and 55mm break	each	1			
9.8.6	Magnetic Contact Flush Mount Sentrol DC107 NC/NO, 9mm Operating gap, Max supply voltage 50V, Flush mount installation, Max 0,5A current	each	1			
9.8.7	Remote Receiver for remote panic button 1 Channel 150m Code Hopping Receiver RX1-150 Performance: 150m line-of-sight, 32 x Transmitter memory, 1 or 3 Second relay closure setup, Latching relay closure setup, 12V - 24V AC/DC Voltage input, On-board buzzer & learn switch	each	1			
9.8.8	Transmitter 4 Channel 1,5km Code Hopping S4, Code-hopping technology, Input voltage: 12 - 24VDC or 9 - 22VAC, Frequency of operation: 403MHz, 4 Channel, 2km Range - line of sight	each	1			
9.8.9	Remote Panic Button Transmitter 1 Button Code Hopping Key Ring TX1 Single Channel Code hopping encryption, 403MHz Frequency	each	1			
9.8.10	1 Button Transmitter Self-learning technology, A unique, randomly changing code is transmitted with each operation making it impossible to duplicate, Frequency 433MHz, 12VDC GP23 Battery	each	1			
9.8.11	5km Range - Mechanical Fire Siren	each	1			
9.8.12	Intrusion control panel with Keypad	each	1			

9.8.13	Intrusion control Panel with Keypad, 8/16 Zones, 8 Partitions, fully programmable outputs expandable, ability to log up to 1000 events	each	1			
9.8.14	GSM Communicator	each	1			
9.8.15	Pepper Gas Actuator	each	1			
9.8.16	Pepper Gas Canister (natural pepper spray mixture) 250g	each	1			
9.8.17	Electronic 6 Tone Siren 20W, Six tones selectable by jumper settings, Combination 20W horn speaker with built-in siren driver, Economical, 12VDC Operation, Typical current drain 1,2A at 12VDC, 108dB at 1m, Weather resistant ABS plastic design	each	1			
9.8.18	Dual Piezo (Mini Bomb), Small, high intensity sounder, low current drain - typical current drain 100mA at 12VDC, Easily mounted with double sided tape or screws, Piezo electric - hence high efficiency, 6 - 12VDC Operation, polarity protected, 105 dB at 1m	each	1			
9.8.19	Buzzer Round, 6 - 14VDC, 100mm Lead attached, 20mA Current drain, Black	each	1			
9.8.20	Electronic Siren 30W, Combination 30W horn speaker with built-in siren driver, Yelp sound or wail sound selectable, Adjustable mounting bracket, 6 - 12VDC Operation, Typical current drain 1,2A at 12VDC, Weather resistant ABS plastic design	each	1			
9.8.21	Armed Status LED Indicator Red/Blue/Green, 4 Red 5mm LED's within waterproof housing, Adjustable mounting bracket, Built in resistors for 12VDC operation	each	1			
9.8.22	Flasher Light Amber/Red, 10W Incandescent flashing light, Flashing rate 1/sec, Weatherproof, 10-14VDC Operation	each	1			
9.8.23	Pepper spray alarm system	each	1			
9.8.24	Outdoor beam WireLess Dual Pet 180 Degree Dual zone Pyro sensors capable of 90° angles each adjustable, 2 Dual Pyro sensor detection with AND or OR mode, max detection range of 12m selectable, optimal mounting height – 1m, N,O, / N,C, selectable, operating voltage: 3 to 9 VDC alkaline or lithium battery, sensitivity, pulse count, delay time, small to medium sized pets	each	1			
9.8.25	Strip Beam 6 Beam 70 Metre, Photoelectric Strip Beam requiring both beams interrupted simultaneously to generate an alarm, configuration: 6 Beams 70 metre range, profile: aluminium - 123cm length, flexible installation – does not require a common power supply between the receiver and transmitter, no sync wire for distances greater than 5 metres, operating voltage: 13,8 VDC, built in buzzer and LED for quick alignment, 180° Alignment axis, NC Alarm relay output, IP55 Rated	each	1			
9.8.26	Securi-Prod 30 -100 Metre Dual IR Beam, Dual Infrared digital pulse beams requiring both beams interrupted simultaneously to generate an alarm, detection distance 30 -100 metres outdoor, operating voltage: 13,8 VDC, built in LCD Volt meter for quick alignment, LED Indicators for quick installation and walk-test, NC or NO alarm relay output, IP66 Rated	each	1			
9.8.27	PIR, detection range: 24m (12m each side), 4 detection zones, selectable NO or NC relay contact, IP56 Rated	each	1			

9.8.28	Single Gate Beam 40m, 12/24 VDC or VAC input, Green LED in transmitter illuminates when power supply is on and the RX when beam is aligned, 40m Maximum distance, Height typically 750mm above ground, IP54 Protection	each	1			
9.8.29	Electric fence 2 Joules Energizer, 2 Joules fence output energy, LED Display for fence status detail, Tab on/off and reset, Siren and strobe outputs, 1 Gate monitor input	each	1			
9.8.30	Keypad LCD For DRUID, Used with all Druid LCD energizers, Full alarm event and source history display, Silent and bypass alarm settings, Low and high power fence modes, Battery voltage display	each	1			
9.8.31	System designs, drawings, documentation and commissioning	sum	1			
9.8.32	Sundries	sum	1			
9,9	Networking and Data Cables					
9.9.1	CAT 6 Data Point Complete (includes CAT6 cable, RJ45 outlet, installation, testing & certification)	each	1			
9.9.2	CAT 6 Patch lead 93m)	each	1			
9.9.3	CAT 6 Fly leads (1m)	each	1			
9.9.4	CAT 6 24 port Patch Panel	each	1			
9.9.5	Splice Fibre Cable into Fibre Patch Panel (including LC/PC Pigtails and OTDR)	each	1			
9.9.6	Splice Fibre Cable in field termination boxes (including, LC/PC Pigtails)	each	1			
9.9.7	Supply and Install 24 ports LC/PC Patch Panel	each	1			
9.9.8	24 port POE Network Switch Layer 3, 2 SFPs slots and 2 LAN Uplinks	each	1			
9.9.9	48 port POE Switch, 4 x 1GBE Fibre Module, Layer 3 switch Managed	each	1			
9.9.10	48 port POE Switch, 4 x 10GBE Fibre Module, Layer 3 switch 10Gig 20km SM Managed	each	1			
9.9.11	4 Port PoE+ Ruggedised Network Switch for Kiosk	each	1			
9.9.12	19" Data Cabinet 42U x 600 x 1000mm deep complete with 4way, 10way power, bottom gland plate and perforated doors	each	1			
9.9.13	CAT 6 Patch lead 1,5m None Ruggedized Single -mode	each	1			
9.9.14	CAT 6 Patch lead 2m None Ruggedized Single -mode	each	1			

9.9.15	CAT 6 Patch lead 5m None Ruggedized Single -mode	each	1			
9.9.16	CAT 6 Patch lead 1,5m None Ruggedized Multi -mode	each	1			
9.9.17	CAT 6 Patch lead 2m None Ruggedized Multi -mode	each	1			
9.9.18	CAT 6 Patch lead 5m None Ruggedized Multi -mode	each	1			
9.9.19	CAT 6 Patch lead 1,5m Ruggedized Single -mode	each	1			
9.9.20	CAT 6 Patch lead 2m Ruggedized Single -mode	each	1			
9.9.21	CAT 6 Patch lead 5m Ruggedized Single -mode	each	1			
9.9.22	CAT 6 Patch lead 10m Ruggedized Single -mode	each	1			
9.9.23	CAT 6 Patch lead 30m Ruggedized Single -mode	each	1			
9.9.24	HDMI Cable 5m Male to Male Gold Plated Connectors Gold Plated connectors for improved performance	each	1			
9.9.25	CAT 6 24 port Patch Panel	each	1			
9.9.26	Splice Fibre Cable in field termination boxes (including, LC/PC Pigtails)	each	1			
9.9.27	24 ports LC/PC Patch Panel	each	1			
9.9.28	SM Gibic module/SFP Single Mode Fibre 20 km or greater	each	1			
9.9.29	SM media converters ST -LAN 10/100/1000	each	1			
9.9.30	SM Gibic module/SFP Single Mode Fibre 10Gig/50km or greater	each	1			
9.9.31	SM Gibic module/SFP Single Mode Fibre 10Gig80km or greater	each	1			
9.9.32	SM Gibic module/SFP Single Mode Fibre 10Gig100km or greater	each	1			
9.9.33	Fibre Fly leads - 1m - camera (Duplex LC/SC - Match optical equipment	each	1			
9.9.34	3 core 4mm PVP-SWA-PVC electrical cable	m	1			
9.9.35	4 Core Single Mode Fibre OS1 (UG)	m	1			
9.9.36	12 Core Single Mode Fibre OS1 (UG)	m	1			

9.9.37	24 Core Single Mode Fibre OS1 (UG)	m	1			
9.9.38	SM Gibic module/SFP Single Mode Fibre < 10 km	m	1			
9.9.39	Cable Management Panel	each	1			
9.9.40	Compact Fibre Splice Box	each	1			
9.9.41	PoE Injector 15,4Watt 1000Mbps CAT5, 10/100/1000 Mbps, 15,4 Watt, 1 x RJ45 Input, 100m Distance	each	1			
9.9.42	8-Port 10/100 Network Switch 4 Port PoE, 10/100 Mbps, 1 Port 10/100 uplink, 4 x PoE, 55 Watt PoE	each	1			
9.9.43	PC Intel i7 3,4GHz CPU, 2 x 2GB Kingston DDR3 1333MHz RAM modules, 2TB SATA SV Hard drive, 4 channel HD capture card with HDMI splitter cables-(VisionSC-HD4+/H) output, DVD-R/W, Keyboard and mouse, P4 Case with 500W PSU and additional cooling fan, Windows 10 Professional operating system, RJ45/10M/100M/1000M Adaptive Ethernet interface	each	1			
9.9.44	Monitor 23" TFT LED Backlit Colour, Full HD resolution 1900 x 1080, Dynamic contrast 5,000,000:1, 5ms Response time, VESA Mounting, Dimensions: 546 (W) x 407 (H) x 179 (D) mm with stand	each	1			
9.9.45	4 Port PoE+ Ruggedized Network Switch With SFP Port for Kiosk	each	1			
9.9.46	Stacking Kit	each	1			
9.9.47	Fibre to Copper Converter (Single -mode - 1 GB/s)	each	1			
9.9.48	1000BASE-LX SFP (1310 nm, for distances up 10km Single -mode)	each	1			
9.9.49	1000BASE-LX SFP (1310 nm, for distances up 40km Single -mode)	each	1			
9.9.50	1000BASE-LX SFP (1310 nm, for distances up 70km Single -mode)	each	1			
9.9.51	19" Data Cabinet 42U x 600 x 1000mm deep complete with 4way, 10way power, bottom gland plate and perforated doors	each	1			
9.9.52	19" Data Cabinet 12U x 600 x 450mm deep complete with, 10way power, bottom gland plate and perforated doors	each	1			
9.9.53	24 Port Rack mountable Ethernet Surge Protection	each	1			
9.9.54	Single Channel Ethernet/Network Surge Protector PoE and PoE+, 10/100 Mbps, PoE 803,2, RJ45	each	1			
9.9.55	RJ45 CAT6 CONNECTORS	each	1			
9.9.56	CAT6 RJ45 Grey Boot Sleeves	each	1			
9.9.57	Class II Surge Arrestor	each	1			

9.9.58	Fibre Agregation Switch	each	1			
9.10.	PUBLIC ADDRESS (PA)/INTERCOM System					
9.10.1	PA System Voice Alarm System Master	each	1			
9.10.2	PA system Local/Global Net Secured Card	each	1			
9.10.3	PA system Paging Console	each	1			
9.10.4	4 Channel x 120W Class-D Amplifier	each	1			
9.10.5	5" Fireproof Ceiling Speaker	each	1			
9.10.6	5" Fireproof Wall mount Speaker	each	1			
9.10.7	Horn Speaker with Capacitor - 20W 100V	each	1			
9.10.8	Rack termination, installation and programming	each	1			
9.10.9	CAT6 STP cable for remote microphone consoles and fireman microphones,	m	1			
9.10.10	Speaker Cable, class PH30 - 1,5mm 2 core	m	1			
9.10.11	Audio SIP Stations - surface-mount kit for vandal resistant stations and expansion modules, format full height, stainless steel, Also includes C-WSSH50VSS WS surface-mount kit for vandal resistant stations and expansion modules, format full height, stainless steel	each	1			
9.10.12	Video SIP Stations - Vandal resistant wallmount station with one call button and integrated camera (Available options EB1E1A (USB I/O module, EB3E2A-AUD (expansion module), Also includes C-WSSH50VSS WS surface-mount kit for vandal resistant stations and expansion modules, format full height, stainless steel,	each	1			
9.10.13	POE Loudspeakers - Hybrid IoP/SIP Horn Loudspeaker, 10W, colour grey	each	1			
9.10.14	Control Desk Base Stations - EE 980 Control Desk Terminal with ISP touch display, polycarbonate, black	each	1			
9.10.15	Base Sation - Desk Base Sation kit for EE980	each	1			
9.10.16	Base Sation - Handset for EE980	each	1			
9.10.17	Server for Control Room - emSIP 100 Grandstream SIP Connection Server	each	1			
9.10.18	Server for Control Room - emSIP 200 Grandstream SIP Connection Server	each	1			

9.10.19	Server for Control Room - emSIP 500 Grandstream SIP Connection Server	each	1			
9.10.20	System designs,integration, drawings, documentation and commissioning	sum	1			
9.10.21	Additional cost for items not allowed for (specify):	each	1			
9.10.22	i)	each				
9.10.23	ii)	each				
9.10.24	iii)	each				
9.10.25	iv)	each				
9.10.26	v)	each				
9.10.27	Sundries	sum	1			
9,11	Services					
9.11.0	Network Study	each	1			
9.11.1	Project Management	sum	1			
9.11.2	Installation & Commissioning	sum	1			
9.11.3	Drawings/Designs	sum	1			
9.11.4	Software Engineering (programming and configuration)	sum	1			
9.11.5	Design review	sum	1			
9.11.6	Trenching in soil (450mm x 600mm deep)	m	1			
9.11.7	Trenching in soil (200mm x 300mm deep)	m	1			
9.11.8	Tar / Concrete cutting (200mm x 300mm deep)	m	1			
9.11.9	Clearing of bush at perimeter fence/wall including herbicide	m	1			
9.11.10	Tree felling and removal	m	1			

9.11.11	Remove existing CO2 gas system including cylinders	each	1			
9.11.12	Install 400 x 400 Manhole CFS	each	1			
9.11.13	Travelling	km	1			
9.11.14	Company specific requirements or overhead costs,	sum	1			
9.11.15	Other fixed-charged (Specify): Medicals, Temp storage, Access Training	sum	1			
9.11.16	Determining and locating of existing services,	sum	1			
9.11.17	Erecting of temporary obstructions and barricades,	sum	1			
9.11.18	Site evacuation and cleaning,	sum	1			
9.11.19	Site security, safe guarding material in site camp and during construction	sum	1			
9,12	Visitor Management					
9.12.1	Wireless ID scanner with Wi-Fi technology - Depot	each	0			
9.12.2	Desktop workstation to run software (HP PC) - Depot	each	0			
9.12.3	Wi-Fi router with range extender with outdoor enclosure for router with power socket - Depot	each	0			
9.12.4	5 Port 10/100 /1000 Gigabit Switch - Depot	each	0			
9.12.5	Commissioning and training (Per Site) - Depot	each	0			
9.12.6	Sundries (Per Site) - Depot	sum	0			
9.12.7	Fastscan license - Headend	each	0			
9.12.8	DataExchange – Global Data Import/Export Utility - Headend	each	0			
9.12.9	Software interface VisitorBuddy to Lenel - Headend	each	0			
9.12.10	Front Desk for OnGuard ADV system - Headend	each	0			
9.12.11	Host Registration module for ES, ADV, PRO and ENT systems - Headend	each	0			

9.12.12	Commissioning - Headend	each	0			
9.12.13	System designs, drawings, documentation and commissioning	sum	0			
9.12.14	Sundries	sum	0			
9,13	Programming of headend at Reuven					
9.13.1	Scan, add and configure all devices from Depot into Lenel Headend	sum	1			
9.13.2	Import graphic screens from CAD files into Lenel Headend	sum	1			
9.13.3	Add all devices onto graphic screens	sum	1			
9.13.4	Add all cameras into NVR's	sum	1			
9.13.5	Setup logic and rules for actions and alarms	sum	1			
9.13.6	Classify alarm types	sum	1			
9.13.7	Configure reports as per standard City Power reports	sum	1			
9.13.8	Testing repairing and recommissioning of any existing ISS services within site	sum	1			
9.13.9	Commission Depot with Installation contractor	sum	1			
9,14	Civil Work					
9.14.1	24 BTU Aircondition	each	1			
9.14.2	Road widening section inside main gate Square meter	m ²	1			
9.14.3	Road widening section outside main gate Square meter	m ²	1			
9.14.4	Remove section of precast wall for wall and make good Square meter	m ²	1			
9.14.5	Centre Island expansion to fit new booms and cameras 1m x 5m	each	1			
9.14.6	New entrance turnstile civil works 3m x 3m x 300mm plinth and two 1,5m x 110mm with concrete inside	m ²	1			
9.14.7	Extra over for new main gate to improve strength	each	1			

9.14.8	Extend rail, install posts and concrete base	each	1			
9.14.9	Crane truck hire to deliver and install new industrial gate	each	1			
9.14.10	Extra over for new stores gate to improve strength	each	1			
9.14.11	Remove existing gates	m ²	1			
9.14.12	Alluminium Double Door incl Frame	each	1			
9.14.13	Modify external gates to open from inside only	each	1			
9.14.14	Varnishing wooden doors	each	1			
9.14.15	Repairing damaged doors	each	1			
9.14.16	Install Paving Square meter	m ²	1			
9.14.17	Install Palisade Fence 2,5m x 1,8m	m	1			
9.14.18	Concrete/Bricks perimeter wall building (including material)	m ²	1			
9.14.19	Clear view fence	m ²	1			
9.14.20	Install Gate 6m sliding	each	1			
9.14.21	Install new drywall per Square meter	m ²	1			
9.14.22	New drywall doorframe with door Square meter	m ²	1			
9.14.23	Move door in drywall Square meter	m ²	1			
9.14.24	New Gatehouse/Guard room (see building specifications)	sum	1			
9.14.25	Rain cover over external turnstiles (150 x 150 x 100mm deep)	sum	1			
9.14.26	Gooseneck rain cover (150 x 150 x 100mm deep)	each	1			
9.14.27	Additional cost for items not allowed for (specify):	each	1			
9.14.28	i) Supply and install new tar	m ²	1			
9.14.29	ii) Supply and cast concrete (self mix)	m ²	1			

9.14.30	iii) Rock, rubble and spoil removal & disposal	M3	1			
9.14.31	iv) Create temporary walkway over trench	each	1			
9.14.32	v) Sign boards JRA	each	1			
9.14.33	vi) Obtain way leave	each	1			
9.14.34	Sundries	each	1			
9,15	Monitoring Equipment/Workstation and Recorder Servers					
9.15.1	23 inh LG Monitor LED/LCD	sum	1			
9.15.2	24 inh DELL Monitor LED/LCD	sum	1			
9.15.3	32 inch Samsung Monito LED	sum	1			
9.15.4	42 inch Monitor LED/LCD for Vedio Wall Comital/Industrial	sum	1			
9.15.5	PC - CPU, Intel Core i5 (3rd Gen) 3470 / 3,2 GHz, Max Turbo Speed, 3,6 GHz, Number of Cores, Quad-Core, Chipset Type, Intel Q77 Express, Processor Main Features, Intel Turbo Boost Technology 2, Processor Socket, LGA1155 Socket, Storag 500g, RAM 8G	sum	1			
9.15.6	PC - CPU, Intel Xeon E5-1650V2 / 3,5 GHz, Max Turbo Speed, 3,9 GHz, Number of Cores, 6-core, Chipset Type, Intel C602, Processor Main Features, Hyper-Threading Technology, Inte, Turbo Boost Technology 2, Processor Socket, LGA2011 Socket, Storage 1TB, RAM 8G	sum	1			
9.15.7	DDR424DES/4 - SERVICELIFE 4GB DDR4 2400 MT/s DESKTOP	sum	1			
9.15.8	4 port Displayport graphics card, (Windows 10) w/HDMI adapters-(ImageDP4+/HDMI)	sum	1			
9.15.9	4 channel HD capture card with HDMI, splitter cables-(VisionSC-HD4+/H)	sum	1			
9.15.10	Video Wall PC/Server, Corei7+600W RPSU16GB RAM, +2x750GB HDD+ Windows 7-(VSN970-RPSU/16GB)	sum	1			
9.15.11	50" Video wall display with 3,5mm, bezel 500nits FHD Comital/Industrial	sum	1			
9.15.12	Blank Panel 4u	sum	1			
9.15.13	Ventilated Blank Panel 4u	sum	1			
9.15.14	Brush Panel 1u	sum	1			
9.15.15	Shopfitting and accessories	m ²	1			

9.15.16	System designs, drawings, documentation and commissioning	each	1			
9.15.17	Additional cost for items not allowed for (specify):	each	1			
9.15.18	i) DV Channel SUSP Plan 0/7/2023-30/6/2026 (3y quote for 1206 channels)	each	1			
9.15.19	ii) PRO TR 4 SUSP PLAN YEAR 1	each	1			
9.15.20	iii) PRO TR 4 SUSP PLAN YEAR 2	each	1			
9.15.21	iv) PRO TR 4 SUSP PLAN YEAR 3	each	1			
9.15.22	Sundries	each	1			
9,16	Fence and Security lights					
9.16.1	LED Flood lights 100w	each	1			
9.16.2	LED Flood lights 150w	each	1			
9.16.3	LED Flood lights 200w	each	1			
9.16.4	Contactors 230 AC/40amps	each	1			
9.16.5	Relays 12DC 11pin	each	1			
9.16.6	LED Pilot lights 230V AC green/red	each	1			
9.16.7	Circuit breaker 5Amp single phase	each	1			
9.16.8	Circuit breaker 15Amp single phase	each	1			
9,17	Special Equipment (Integrated Interligent Security Parol - Drones)					
9.17.1	Qualified Drone Pilots	each	0			
9.17.2	Licenses and Certificatios	lot	0			
9.17.3	Applications for Aviation Regulations	lot	0			
9.17.4	Compliance Certificate from Aviation Agency	lot	0			
9.17.5	Surveillance Drone	each	0			

9.17.6	Maintenance Drone	each	0			
9.17.7	Drone Software	lot	0			
9.17.8	Drone Monitoring/Surveillance System	each	0			
9.17.9	Drone Battery	each	0			
9.17.10	Drone Charging Stations	lot	0			
9.17.11	Drone Parts	lot	0			
9.17.12	Drone Maintenance	lot	0			
9.17.13	Sundries	lot	0			
9.17.14	Contingency	lot	1			

NAME OF BIDDER:

DATE:

SIGNATURE