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Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
B	<p>ELECTRICAL WORKS</p> <p>BILL OF QUANTITIES: BILL NO 2 OF 19</p> <p>CERTIFICATE OF COMPLIANCE</p> <p>Allow for the tesing, commissioning and issuing of the Electrical Compliance Certificate in terms of SANS10142: Wiring Code, latest revision and to be completed by the recognised person in terms of the Wiring Code and Department of Labour.</p>					
B	1	Single phase Distribution Board: CoC	No	5		
B	2	Three phase Distribution Board: CoC	No	5		
B	3	Infra-Red Testing	per day	3		
B	4	Testing and fault finding on low voltage(600/1000V) grade cables using specilist equitment. (Using a cable fault locator)	per cable	3		
B	5	Electrical Warning/Danger Signage (Distribution Board)	No	10		
B	6	Power Load logging, analysis and report on a 230/400V system up to 3000A (Low voltage substation and distribution board)	per day	3		
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<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Qty</u>	<u>Supply & Deliver Rate</u>	<u>Install Rate</u>	<u>Amount</u>
C	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 3 OF 19 CIRCUIT BREAKERS, SWITCHGEAR, DISTRIBUTION BOARD & ASSOCIATED EQUIPMENT CIRCUIT BREAKERS MINIATURE CIRCUIT BREAKERS(MCB) Supply, deliver and install miniature circuit breakers in accordance with SANS 156. Approved by SABS. The circuit breakers are to be fitted into existing or new distribution boards. 3KA, CURVE 3(STANDARD) HYDRAULIC MAGNETIC TYPE SINGLE PHASE, 240V, 50Hz CBI or equal approved					
	1 5A, Single Pole	No	1			
	2 10A to 20A, Single Pole	No	1			
	3 25A to 40A, Single Pole	No	1			
	4 45A to 60A, Single Pole	No	1			
	5 5A to 20A, Double Pole	No	1			
	6 25A to 50A, Double Pole	No	1			
	7 60A, Double Pole	No	1			
	Merlin Gerin or equal approved					
	8 5A, Single Pole	No	1			
	9 10A to 20A, Single Pole	No	1			
	10 25A to 40A, Single Pole	No	1			
	11 45A to 60A, Single Pole	No	1			
	12 5A to 20A, Double Pole	No	1			
	13 25A to 50A, Double Pole	No	1			
	14 60A, Double Pole	No	1			
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	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		3KA, CURVE 3(STANDARD) HYDRAULIC MAGNETIC TYPE					
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	15	5A, Triple Pole	No	1			
C	16	10A to 20A, Triple Pole	No	1			
C	17	25A to 40A, Triple Pole	No	1			
C	18	45A to 60A, Triple Pole	No	1			
		Merlin Gerin or equal approved					
C	19	5A, Triple Pole	No	1			
C	20	10A to 20A, Triple Pole	No	1			
C	21	25A to 40A, Triple Pole	No	1			
C	22	45A to 60A, Triple Pole	No	1			
		6KA, CURVE 2(STANDARD) HYDRAULIC MAGNETIC TYPE					
		SINGLE PHASE, 240V, 50Hz					
		CBI or equal approved					
C	23	5A, Single Pole	No	1			
C	24	10A to 20A, Single Pole	No	1			
C	25	25A to 40A, Single Pole	No	1			
C	26	45A to 60A, Single Pole	No	1			
C	27	5A to 20A, Double Pole	No	1			
C	28	25A to 50A, Double Pole	No	1			
C	29	60A, Double Pole	No	1			
		Merlin Gerin or equal approved					
C	30	5A, Single Pole	No	1			
C	31	10A to 20A, Single Pole	No	1			
C	32	25A to 40A, Single Pole	No	1			
C	33	45A to 60A, Single Pole	No	1			
C	34	5A to 20A, Double Pole	No	1			
C	35	25A to 50A, Double Pole	No	1			
C	36	60A, Double Pole	No	1			
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Item		Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		6KA, CURVE 2(STANDARD) HYDRAULIC MAGNETIC TYPE					
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	37	5A, Triple Pole	No	1			
C	38	10A to 20A, Triple Pole	No	1			
C	39	25A to 40A, Triple Pole	No	1			
C	40	45A to 60A, Triple Pole	No	1			
		Merlin Gerin or equal approved					
C	41	5A, Triple Pole	No	1			
C	42	10A to 20A, Triple Pole	No	1			
C	43	25A to 40A, Triple Pole	No	1			
C	44	45A to 60A, Triple Pole	No	1			
		6KA, CURVE 1 (MOTOR) THERMAL MAGNETIC TYPE					
		SINGLE PHASE, 240V, 50Hz					
		CBI or equal approved					
C	45	6A to 20A, Single Pole	No	1			Rate only
C	46	25A to 32A, Single Pole	No	1			Rate only
C	47	35A to 63A, Single Pole	No	1			Rate only
C	48	6A to 20A, Double Pole	No	1			Rate only
C	49	25A to 40A, Double Pole	No	1			Rate only
C	50	50 to 63A, Double Pole	No	1			Rate only
		Merlin Gerin or equal approved					
C	51	6A to 20A, Single Pole	No	1			Rate only
C	52	25A to 32A, Single Pole	No	1			Rate only
C	53	35A to 63A, Single Pole	No	1			Rate only
C	54	6A to 20A, Double Pole	No	1			Rate only
C	55	25A to 40A, Double Pole	No	1			Rate only
C	56	50 to 63A, Double Pole	No	1			Rate only
		6KA, CURVE 1 (MOTOR) THERMAL MAGNETIC TYPE					
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	57	6A, Triple Pole	No	1			Rate only
C	58	10A to 20A, Triple Pole	No	1			Rate only
C	59	25A to 63A, Triple Pole	No	1			Rate only
C	60	6A to 20A, Triple Pole + Neutral	No	1			Rate only
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	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
C	61	25A to 40A, Triple Pole + Neutral	No	1			Rate only
C	62	50A to 63A, Triple Pole + Neutral	No	1			Rate only
		Merlin Gerin or equal approved					
C	63	6A, Triple Pole	No	1			Rate only
C	64	10A to 20A, Triple Pole	No	1			Rate only
C	65	25A to 63A, Triple Pole	No	1			Rate only
C	66	6A to 20A, Triple Pole + Neutral	No	1			Rate only
C	67	25A to 40A, Triple Pole + Neutral	No	1			Rate only
C	68	50A to 63A, Triple Pole + Neutral	No	1			Rate only
		SWITCH DISCONNECTORS					
		Supply, deliver and install switch disconnectors in accordance with SANS 156.					
		The switch disconnectors are to be fitted into existing or new distribution boards.					
		3KA, DUAL MOUNT: HYDRAULIC MAGNETIC TYPE					
		SINGLE PHASE, 240V, 50Hz					
		CBI or equal approved					
C	69	63A, Single Pole	No	1			Rate only
		Merlin Gerin or equal approved					
C	70	63A, Single Pole	No	1			Rate only
		6KA, DUAL MOUNT: HYDRAULIC MAGNETIC TYPE					
		SINGLE PHASE, 240V, 50Hz					
		CBI or equal approved					
C	71	63A, Single Pole	No	1			Rate only
C	72	100A, Single Pole	No	1			Rate only
		Merlin Gerin or equal approved					
C	73	63A, Single Pole	No	1			Rate only
C	74	100A, Single Pole	No	1			Rate only
		3KA, DUAL MOUNT: HYDRAULIC MAGNETIC TYPE					
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	75	63A, Four Pole	No	1			Rate only
		Merlin Gerin or equal approved					
C	76	63A, Four Pole	No	1			Rate only
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	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		6KA, DUAL MOUNT: HYDRAULIC MAGNETIC TYPE					
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	77	63A, Four Pole	No	1			Rate only
C	78	100A, Four Pole	No	1			Rate only
		Merlin Gerin or equal approved					
C	79	63A, Four Pole	No	1			Rate only
C	80	100A, Four Pole	No	1			Rate only
		SWITCH DISCONNECTORS					
		Supply, deliver and install switch disconnectors in accordance with IEC 60947-3.					
		The switch disconnectors are to be surface mounted and shall be complete with all extension boxes, enclosures, fittings, fixtures and accessories required for the works.					
		Padlockable in OFF position. IP55 rating					
		The switch disconnectors shall be as per Waco: Era: E Series or equal approved					
C	81	20A Double Pole Isolator	No	1			
C	82	25A Double Pole Isolator	No	1			
C	83	32A Double Pole Isolator	No	1			
C	84	45A Double Pole Isolator	No	1			
C	85	63A Double Pole Isolator	No	1			
C	86	100A Double Pole Isolator	No	1			Rate only
C	87	20A Three Pole + N, Isolator	No	1			
C	88	25A Three Pole + N, Isolator	No	1			
C	89	32A Three Pole + N, Isolator	No	1			
C	90	45A Three Pole + N, Isolator	No	1			
C	91	63A Three Pole + N, Isolator	No	1			
C	92	100A Three Pole + N, Isolator	No	1			Rate only
C	93	20A Four Pole Isolator	No	1			
C	94	25A Four Pole Isolator	No	1			
C	95	32A Four Pole Isolator	No	1			
C	96	45A Four Pole Isolator	No	1			
C	97	63A Four Pole Isolator	No	1			
C	98	100A Four Pole Isolator	No	1			Rate only
		Automatic Changeover Switches					
		4 pole motorised change over switches to have failsafe mechanical interlock, Padlockable in the OFF position, Fully independent position auxiliary contacts one for each position (I / O / II) and Wide-band AC control voltage $\pm 20\%$. All sundries to be included. Socomec or equally approved. (Installation to comply with all warranties and guarantees costs)					
C	99	1000A	ea	1			Rate only
C	100	1600A	ea	1			Rate only
C	101	2500A	ea	1			Rate only
C	102	3200A	ea	1			Rate only
		Carried to Collection Page 14EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		MOLDED CASE CIRCUIT BREAKERS Supply, deliver and install molded case circuit breakers in accordance with SANS 156. Approved by SABS. The circuit breakers are to be fitted into existing or new distribution panels. To Include all mounting fixtures and bus bar tails to fit into existing or new LV panel. Molded case circuit breakers to be CBI or equally approved					
C	103	75A - 125A, 3 pole, 37kA at 400V		1			Rate only
C	104	150A, 3 pole, 37kA at 400V		1			Rate only
C	105	175A - 225A, 3 pole, 37kA at 400V		1			Rate only
C	106	250A, 3 pole, 37kA at 400V		1			Rate only
C	107	250A, 3 pole, 50kA at 400V		1			Rate only
C	108	300A - 400A, 3 pole, 50kA at 400V		1			Rate only
C	109	500A and 630A, 3 pole, 65kA at 400V		1			Rate only
C	110	700A and 800A, 3 pole, 65kA at 400V		1			Rate only
C	111	1000A, 3 pole, 65kA at 400V		1			Rate only
C	112	1200A, 3 pole, 65kA at 400V		1			Rate only
		AIR CIRCUIT BREAKERS Supply, deliver and install air circuit breakers in accordance with SANS 156. Approved by SABS. The circuit breakers are to be fitted into existing or new distribution panels - Draw Out. To Include all mounting fixtures, cradles and bus bar tails to fit into existing or new LV panel. Air circuit breakers to be CBI or equally approved.					
C	113	1250A - 2500A, 3 pole horizontal terminals, 85kA at 400V		1			Rate only
C	114	1600A - 3200A, 3 pole horizontal terminals, 85kA at 400V		1			Rate only
C	115	2000A - 4000A, 3 pole horizontal terminals, 85kA at 400V		1			Rate only
		Carried to Collection Page 14EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		CONTACTORS					
		Supply, deliver and install contactors in existing or new panels and switchboards. The contactors shall comply to IEC158-1					
		The contactors shall be complete with all necessary accessories required for the works.					
		The switch disconnectors shall be as per Lovato Electric or equal approved					
		SINGLE PHASE, 240V, 50Hz					
C	116	20A to 60A	No	1			
C	117	Auxillary contacts compatible with above contactors	No	1			
		THREE PHASE, 240V, 50Hz					
C	118	20A to 60A	No	1			
C	119	Auxillary contacts compatible with above contactors	No	1			
		110V DC, three pole					
C	120	4kW	No	1			Rate only
C	121	7.5kW	No	1			Rate only
		EARTH LEAKAGE UNIT					
		Supply, deliver and install earth leakage units in existing or new panels and switchboards. The ELU shall comply to SANS 767 and bear the SANS mark. The unit shall be complete with all fixing accessories required for the works.					
		The ELU shall have a sensitivity of 30mA and shall be complete with overload protection.					
		3KA, DUAL MOUNT: HYDRAULIC MAGNETIC TYPE					
		SINGLE PHASE, 240V, 50Hz					
		CBI or equal approved					
C	122	30A Earth Leakage Unit with overload	No	1			
C	123	40A Earth Leakage Unit with overload	No	1			
C	124	60A Earth Leakage Unit with overload	No	1			
		Merlin Gerin or equal approved					
C	125	30A Earth Leakage Unit with overload	No	1			
C	126	40A Earth Leakage Unit with overload	No	1			
C	127	60A Earth Leakage Unit with overload	No	1			
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	128	30A Earth Leakage Unit with overload	No	1			
C	129	40A Earth Leakage Unit with overload	No	1			
C	130	60A Earth Leakage Unit with overload	No	1			
		Carried to Collection Page 14EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		Merlin Gerin or equal approved					
C	131	30A Earth Leakage Unit with overload	No	1			
C	132	40A Earth Leakage Unit with overload	No	1			
	133	60A Earth Leakage Unit with overload	No	1			
		6KA, DUAL MOUNT: HYDRAULIC MAGNETIC TYPE					
		SINGLE PHASE, 240V, 50Hz					
		CBI or equal approved					
C	134	30A Earth Leakage Unit with overload	No	1			Rate only
C	135	40A Earth Leakage Unit with overload	No	1			Rate only
	136	60A Earth Leakage Unit with overload	No	1			Rate only
		Merlin Gerin or equal approved					
C	137	30A Earth Leakage Unit with overload	No	1			Rate only
C	138	40A Earth Leakage Unit with overload	No	1			Rate only
C	139	60A Earth Leakage Unit with overload	No	1			Rate only
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	140	30A Earth Leakage Unit with overload	No	1			Rate only
C	141	40A Earth Leakage Unit with overload	No	1			Rate only
C	142	60A Earth Leakage Unit with overload	No	1			Rate only
		Merlin Gerin or equal approved					
C	143	30A Earth Leakage Unit with overload	No	1			Rate only
C	144	40A Earth Leakage Unit with overload	No	1			Rate only
C	145	60A Earth Leakage Unit with overload	No	1			Rate only
		6KA, DUAL MOUNT: THERMAL MAGNETIC TYPE					
		SINGLE PHASE, 240V, 50Hz					
		CBI or equal approved					
C	146	30A Earth Leakage Unit with overload	No	1			Rate only
C	147	40A Earth Leakage Unit with overload	No	1			Rate only
C	148	60A Earth Leakage Unit with overload	No	1			Rate only
		Merlin Gerin or equal approved					
C	149	30A Earth Leakage Unit with overload	No	1			Rate only
C	150	40A Earth Leakage Unit with overload	No	1			Rate only
C	151	60A Earth Leakage Unit with overload	No	1			Rate only
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	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		THREE PHASE, 400V, 50Hz					
		CBI or equal approved					
C	152	30A Earth Leakage Unit with overload	No	1			Rate only
C	153	40A Earth Leakage Unit with overload	No	1			Rate only
C	154	60A Earth Leakage Unit with overload	No	1			Rate only
		Merlin Gerin or equal approved					
C	155	30A Earth Leakage Unit with overload	No	1			Rate only
C	156	40A Earth Leakage Unit with overload	No	1			Rate only
C	157	60A Earth Leakage Unit with overload	No	1			Rate only
		RAIL MOUNT METERS					
		Supply, deliver and install rail mount meters(Class 1) in existing or new panels and switchboards. The meter shall comply to IEC 61036. The unit shall be complete with all fixing accessories required for the works.					
		The meters shall be as CBI or equal approved.					
		SINGLE PHASE, 240V, 50Hz					
C	158	Ecolec Rail Mount Meter: EC320CM	No	1			Rate only
C	159	Ecolec Rail Mount Meter: EC320CD	No	1			Rate only
		THREE PHASE, 400V, 50Hz					
C	160	Ecolec Rail Mount Meter: EC330CM	No	1			Rate only
C	161	Ecolec Rail Mount Meter: EC330CD	No	1			Rate only
		LV FUSES					
		Supply, deliver and install HRC fuses in existing or new panels and switchboards. The fuses shall comply to SANS 172 & 173. The unit shall be complete with all terminals, lugs, holders and accessories required for the works.					
		The fuses shall be as Siemens, Bussman or equal approved.					
C	162	10A to 20A	No	1			Rate only
C	163	25A to 40A	No	1			Rate only
C	164	50A to 63A	No	1			Rate only
C	165	100A to 250A	No	1			Rate only
		Carried to Collection Page 14EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	DISTRIBUTION BOARDS Supply, deliver and install LV sheetmetal distribution boards. The distribution boards shall comply to SANS 1765. The boards shall be , Colour: White, sheet steel 15/10 thick. The distribution boards shall be of the industrial/commerical architrave boards type. The distribution boards shall be complete with front full sheet metal hinged door, functional chassis, interior kits for circuit breakers and modular products, full sized top and bottom gland plates, blank covers, lockable door, adjustable DIN rail depth facility/Samite, rear adjustment screws, earth/neutral terminals, necessary fittings, fixtures and accessories for the works. SURFACE MOUNTED : SINGLE PHASE, 240V					
C 166	12 Way DB	No	1			
C 167	18 Way DB	No	1			
C 168	24 Way DB	No	1			
	SURFACE MOUNTED : THREE PHASE, 400V 					
C 169	12 Way DB	No	1			
C 170	18 Way DB	No	1			
C 171	24 Way DB	No	1			
	FLUSH MOUNTED : SINGLE PHASE, 240V 					
C 172	12 Way DB	No	1			
C 173	18 Way DB	No	1			
C 174	24 Way DB	No	1			
	FLUSH MOUNTED : THREE PHASE, 400V 					
C 175	12 Way DB	No	1			
C 176	18 Way DB	No	1			
C 177	24 Way DB	No	1			
	DISTRIBUTION BOARDS Supply, deliver and install LV sheetmetal distribution boards. The distribution boards shall comply to SANS 1765. The boards shall be IP65. The distribution boards shall be of the industrial/commerical architrave boards type. The distribution boards shall be complete with front full hinged door, functional chassis, interior kits for circuit breakers and modular products, full sized top and bottom gland plates, blank covers, lockable door, adjustable DIN rail depth facility/Samite, rear adjustment screws, earth/neutral terminals, necessary fittings, fixtures and accessories for the works. SURFACE MOUNTED : SINGLE PHASE, 240V					
C 178	12 Way DB	No	1			Rate only
C 179	18 Way DB	No	1			Rate only
C 180	24 Way DB	No	1			Rate only
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	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		SURFACE MOUNTED : THREE PHASE, 400V					
C	181	12 Way DB	No	1			Rate only
C	182	18 Way DB	No	1			Rate only
C	183	24 Way DB	No	1			Rate only
		AUXILIARY EQUIPMENT					
C	184	Distribution Board Blank covers	No	1			
C	185	DIN Rail	m	1			
		ELECTRICAL READY BOARDS					
		Supply, deliver and install LV electrical ready boards.					
		The ready boards shall consist of the following switchgear and fittings: 1 x QA 17C 63A, 2 x QA-1 13mm 20A, 1 x Switched Bulkhead, 3 x 16A Switched Sockets, 1 x 6A Euro Socket					
		The board shall be compatible with prepayment meters, knockouts for additional circuit breakers and/or auxiliary products as well as 15 access points for conduit or twin and earth wire.					
		Switches (light and socket outlets) shall have a glow-in-dark fluorescent insert.					
		The unit shall comply with national specifications.					
		The unit shall be as per CBI or equal approved.					
C	186	Readyboard NRBCON003 with CFL version including 18W lamp	No	1			
		ELECTRONIC TIMER SWITCHES					
		Supply, deliver and install electronic timer switches into existing or new distribution boards.					
		The programmable time switch to be suitable for use to automatically control pool pumps, lights, geysers, etc.					
		The unit shall have a LCD touch screen allow simple settings of time and programs, multiple on/off programs, 15min segments, graphical display on home screen of 24hr display, dual mount, backup reserve power for 12hr display and 24hr timekeeping and a bypass capability.					
		The unit shall be as per CBI or equal approved.					
C	187	QAT-TRDM	No	1			
		PHOTO ELECTRONIC CONTROLS					
		Supply, deliver and install photo electronic sensors on sites to control lighting and/or power circuits.					
		The unit shall have a rating of 250V , 50Hz, 1800VA, IP65, thermal switching, plug in Nema twist lock type, nema base					
C	188	Royce Thompson: V1SSWDAYLITE/P3HDI	No	1			
C	189	National: NS416: Code: V1SSWD/LITENS416	No	1			
C	190	National: NS116: Code: V1SSWD/LITENS116	No	1			
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Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 3 OF 19 <u>COLLECTION</u> CIRCUIT BREAKERS, SWITCHGEAR, DISTRIBUTION BOARD & ASSOCIATED EQUIPMENT Page 3 EE Page 4 EE Page 5 EE Page 6 EE Page 7 EE Page 8 EE Page 9 EE Page 10 EE Page 11 EE Page 12 EE Page 13 EE					
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Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
D	<p>ELECTRICAL WORKS</p> <p>BILL OF QUANTITIES: BILL NO 4 OF 19</p> <p>CABLE TRENCHING</p> <p>EXCAVATIONS: TRENCHING & BACKFILLING</p> <p>All prices below shall include the excavation of trenches and holes, separating of stones, ground and rock, leveling of trench bed, refill compacting and reparation of all surfaces to their original finish.</p> <p>Trenching shall be calculated using the formula below: (1m³ = a trench of 600mm deep * 420mm wide * 4m length) (1m³ = 4m linear of trenching)</p>					
D	1 Excavate and backfilling in soft ground(pickable material)	m³	10			
D	2 Excavate and backfilling in soft rock	m³	10			
D	3 Excavate and backfilling in hard rock	m³	10			
D	4 Excavating for cable road crossing and placing 4 x 110m sleeves across road way.	m³	10			
D	5 Backfilling road crossing and reinstating road surface and compaction as before.	m³	10			
D	6 Provide sand or stone-free ground complete with handling cost	m³	10			
D	7 Compaction of all electrical and telecoms sleeve trenches under hardended surfaces to 95% MOD AASHTO	m³	10			
D	8 Remove all waste material complete with handling cost	m³	10			
D	<p>CABLE MARKERS</p> <p>9 Electrical reinforced concrete cable route marker with inscription as per engineers detail. Dimension: Height: 265mm, Depth: 750mm, Weight: 19.5kg</p>	No	10			
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	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
D	10	Electrical concrete cable route marker with inscription as per engineers detail. Dimension: Height: 250mm, Width: 250mm, Depth: 250mm	No	10			
D	11	Electrical concrete cable route marker with inscription as per engineers detail. Dimension: Height: 305mm, Width: 305mm, Depth: 152mm, including 101x76mm lead insert for inscription	No	10			
		CABLE DANGER TAPE					
D	12	Electrical buried danger tape in compliance with OSHA 1910.144 for marking physical hazards. The tape shall be lightweight and of high visibility safety yellow polyethylene (plastic) with bold black letters(2 inch height). The tape shall be 76mm wide and 0.102mm thick. The cable warning/danger tape shall be placed 150mm above the cables in excavations.	m	50			
		MANHOLES					
D	13	Electrical manhole 1200x1200x790mm deep with 230mm brick surround, 150mm concrete base and complete with 6mm flush chequer plate and 150mm concrete base. As per Ethewini Electricity: Manhole specifications for cable circuits where there are hardened surfaces. Drawing: SS_Manholes	Item	5			
D	14	Electrical manhole 1200x1200x790mm deep with 230mm brick surround, 150mm concrete base and complete with heavy duty polymer plate and 150mm concrete base. As per Ethewini Electricity: Manhole specifications for cable circuits where there are hardened surfaces. Drawing: SS_Manholes	Item	5			
		Carried to Collection Page 17EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 4 OF 19 COLLECTION CABLE TRENCHING Page 15 EE Page 16 EE					
	CABLE TRENCHING					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
E		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 5 OF 19 CABLE RETICULATION LOW VOLTAGE CABLING Supply, deliver and install low voltage(600/1000V), PVC insulated, PVC bedded SWA, PVC sheathed, ECC stranded copper conductor cables. Checking of cable and overhead conductor lengths. The Contractor shall check such lengths on site before ordering the cable as he will not be paid for excess cable after the completion of the service. Any allowance for off-cuts shall be made in the unit rates. The final measurements shall be based on the net route length of cables and overhead lines concerned, installed in accordance with the requirements. However, the onus is on the Contractor to prove compliance with the specification. The cabling shall be installed either in excavations, cable trays, trunking, wireways, ground, sleeves, ducts, etc(measured elsewhere) and shall include all necessary fittings, fixtures and accessories required for the works. The cables shall be as per Abedare Cables or equal approved.					
E	1	TWO CORE 1.5mm ²	m	1			
E	2	2.5mm ²	m	1			
E	3	4mm ²	m	1			
E	4	6mm ²	m	1			
E	5	10mm ²	m	1			
E	6	16mm ²	m	1			
E	7	25mm ²	m	1			
E	8	THREE CORE 1.5mm ²	m	1			
E	9	2.5mm ²	m	1			
E	10	4mm ²	m	1			
		Carried to Collection Page 23 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
E	11	6mm ²	m	1			
E	12	10mm ²	m	1			
E	13	16mm ²	m	1			
E	14	25mm ²	m	1			
		AIRDAC: THREE CORE					
E	15	10mm ²	m	1			
E	16	16mm ²	m	1			
		FOUR CORE					
E	17	1.5mm ²	m	1			
E	18	2.5mm ²	m	1			
E	19	4mm ²	m	1			
E	20	6mm ²	m	1			
E	21	10mm ²	m	1			
E	22	16mm ²	m	1			
E	23	25mm ²	m	1			
E	24	35mm ²	m	1			
E	25	50mm ²	m	1			
E	26	70mm ²	m	1			
E	27	95mm ²	m	1			
E	28	120mm ²	m	1			
E	29	150mm ²	m	1			
E	30	185mm ²	m	1			
		LOW VOLTAGE CABLE TERMINATIONS					
		Supply, deliver and install low voltage(600/1000V), PVC insulated, PVC bedded SWA, PVC sheathed, ECC stranded copper conductor cable terminations.					
		The terminations shall be for the referred cables specified and shall include for all shrouds, glands, lugs, connections, fittings, fixtures and accessories for the terminations in terms of the relevant SANS guidelines.					
		TWO CORE					
E	31	1.5mm ²	No	1			
E	32	2.5mm ²	No	1			
E	33	4mm ²	No	1			
E	34	6mm ²	No	1			
E	35	10mm ²	No	1			
		Carried to Collection Page 23 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
E	36	16mm ²	No	1			
E	37	25mm ²	No	1			
		THREE CORE					
E	38	1.5mm ²	No	1			
E	39	2.5mm ²	No	1			
E	40	4mm ²	No	1			
E	41	6mm ²	No	1			
E	42	10mm ²	No	1			
E	43	16mm ²	No	1			
E	44	25mm ²	No	1			
		AIRDAC: THREE CORE					
E	45	10mm ²	No	1			
E	46	16mm ²	No	1			
		FOUR CORE					
E	47	1.5mm ²	No	1			
E	48	2.5mm ²	No	1			
E	49	4mm ²	No	1			
E	50	6mm ²	No	1			
E	51	10mm ²	No	1			
E	52	16mm ²	No	1			
E	53	25mm ²	No	1			
E	54	35mm ²	No	1			
E	55	50mm ²	No	1			
E	56	70mm ²	No	1			
E	57	95mm ²	No	1			
E	58	120mm ²	No	1			
E	59	150mm ²	No	1			
E	60	185mm ²	No	1			
		Aerial Bundle Conductor (ABC) Cable					
		Supply, deliver and install low voltage (600/1000V), XLPE insulated, self supporting copper conductor cable.					
		The terminations shall be for the referred cables specified and shall include for all shrouds, glands, lugs, connections, fittings, fixtures and accessories for the terminations in terms of SANS 1418 part 1 and part 2					
		The cables shall be as per Abedare Cables or equal approved.					
E	61	25mm ²	m	1			
E	62	35mm ²	m	1			
E	63	50mm ²	m	1			
E	64	70mm ²	m	1			
E	65	95mm ²	m	1			
		Carried to Collection Page 23 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	<p>LOW VOLTAGE CABLE JOINT KITS</p> <p>Supply, deliver and install epoxy resin joint kits for low voltage (600/1000V) copper insulated, PVC bedded SWA, PVC sheathed, ECC stranded copper conductor cables.</p> <p>The cable joint kits shall be complete with all necessary fittings, fixtures and accessories required for the works.</p> <p>The cable kit shall be IEC/SANS approved.</p> <p>The cable kit shall be as per 3M Scotchcast or equal approved SIZES</p>					
66	4mm ² to 10mm ²	No	1			
67	10mm ² to 16mm ²	No	1			
68	16mm ² to 35mm ²	No	1			
69	35mm ² to 50mm ²	No	1			
70	50mm ² to 95mm ²	No	1			
71	120mm ² to 150mm ²	No	1			
72	150mm ² to 240mm ²	No	1			
	<p>JUNCTION BOXES: NORMAL APPLICATIONS</p> <p>Supply, deliver and install junction boxes:normal applications for low voltage(600/1000V), PVC/SWA/PVC copper cables.</p> <p>The junction boxes shall be complete with all necessary, fittings, fixtures, compression glands, connectors, clamps, blanking plugs, accessories, etc to complete the works.</p> <p>The junction boxes shall be as Pratley or equal approved.</p>					
73	Enviro Junction box - Rectangular standard hinged cover	No	1			
74	Bottom entry Junction box - standard - for armoured or unarmoured cable. Size 1 - Polycarbonate lid	No	1			
75	Bottom entry Junction box - standard - for armoured or unarmoured cable. Size 2 - Polycarbonate lid	No	1			
76	Encono Junction box - No 1	No	1			
77	Eeze fit - Instrumentation - Junction Box - 0 - standard for unarmoured cable. Polycarbonate lid	No	1			
78	Klik-Lok Junction Box (Standard) - for unarmoured or armoured cable. Polycarbonate lid	No	1			
79	Zed Junction box - No 0	No	1			
	Carried to Collection Page 23 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	<p>HIGH DENSITY POLYETHYLENE CABLE SLEEVES</p> <p>Supply, deliver and install underground HDPE cable sleeves for low voltage(600/1000V), PVC/SWA/PVC copper cables.</p> <p>The sleeve shall carry the SANS certification mark in respect of South African National Standard SANS 61386-24 : 2005 (type N 450).</p> <p>The sleeves shall be complete with all necessary couplers, seals, plugs, rings, bell mouths, spacer modules, brushes, etc required to complete the works.</p> <p>The sleeve shall be as per Kabelflex or equal approved.</p>					
E 80	50mm diameter	m	1			
E 81	110mm diameter	m	1			
Carried to Collection Page 23 EE						

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 5 OF 19 COLLECTION CABLE RETICULATION Page 18 EE Page 19 EE Page 20 EE Page 21 EE Page 22 EE					
		TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
F	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 6 OF 19 WIREWAYS & ACCESSORIES PVC CONDUIT The supply and installation of PVC conduit, prices to include for couplings, saddles, adaptors, spacers, lids, conduit boxes and all bending, gluing and other necessary material. The conduit shall be installed in concrete, walls, ground, brickwork, roof spaces, against trusses, etc and shall include for all against trusses, etc and shall include for all necessary fittings, fixtures and accessories to complete the installation. The conduit shall comply to SANS 950. Chased into brickwork					
	1 20mm diameter	m	1			
	2 25mm diameter	m	1			
	3 32mm diameter	m	1			
	4 50mm diameter	m	1			
	Chased into concrete					
	5 20mm diameter	m	1			
	6 25mm diameter	m	1			
	7 32mm diameter	m	1			
	8 50mm diameter	m	1			
	Cast into concrete					
	9 20mm diameter	m	1			
	10 25mm diameter	m	1			
	11 32mm diameter	m	1			
	12 50mm diameter	m	1			
	13 100mm diameter sleeve	m	1			
	Fixed on surface					
	14 20mm diameter	m	1			
	15 25mm diameter	m	1			
	16 32mm diameter	m	1			
	17 50mm diameter	m	1			
	Carried to Collection Page 29 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		GALVANISED STEEL CONDUIT: BOSAL The supply and installation of galvanised steel conduit, prices to include for couplings, saddles, adaptors, spacers, lids, conduit boxes and all bending, gluing and other necessary material. The conduit shall be installed in concrete, walls, ground, brickwork, roof spaces, against trusses, etc and shall include for all against trusses, etc and shall include for all necessary fittings, fixtures and accessories to complete the installation. The conduit shall comply to SANS 1065 Parts 1 & 2.					
		Fixed on surface					
F	18	20mm diameter	m	1			
F	19	25mm diameter	m	1			
F	20	32mm diameter	m	1			
F	21	50mm diameter	m	1			
		CONDUIT ACCESSORIES The supply and installation of conduit accessories for PVC and galvanised steel conduit(Bosal). The conduit accessories shall be fitted as per installation details for the conduit. The accessories shall be complete with all screws, adaptors, etc required to complete the installation. The conduit accessories shall comply to SANS 950.					
		EXTENSION BOXES All extension boxes shall be of the galvanised steel type and shall be of 1mm thickness. The boxes shall be suitable for standard switches(lights and plugs) application. The boxes shall be in accordance with SANS 1085 and the plates with SANS 1084					
F	22	100 x 100 x 50mm	No	1			
F	23	100 x 50 x 50mm	No	1			
F	24	100 x 100 x 75mm(back to back)	No	1			
F	25	100 x 50 x 75mm(back to back)	No	1			
		PVC: CONDUIT BOXES					
F	26	One Way	No	1			
F	27	Two Way	No	1			
F	28	Three Way	No	1			
F	29	Four Way	No	1			
		Carried to Collection Page 29 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		FLEXIBLE CONDUIT The supply and installation of flexible conduit accessories for PVC and galvanised steel conduit(Bosal). The flexible conduit shall be complete with all necessary connectors, fittings, fixtures and accessories required for the complete works. The flexible conduit shall comply to SANS 950, SANS 1065 PVC: FLEXIBLE CONDUIT (SPRAGUE)					
F	30	20mm diameter	m	1			
F	31	25mm diameter	m	1			
F	32	32mm diameter	m	1			
F	33	50mm diameter	m	1			
F	34	75mm diameter	m	1			
		GALVANISED STEEL: FLEXIBLE CONDUIT (SPRAGUE)					
F	35	20mm diameter	m	1			
F	36	25mm diameter	m	1			
F	37	32mm diameter	m	1			
F	38	50mm diameter	m	1			
F	39	75mm diameter	m	1			
		GENERAL The conduit accessories listed below shall be utilised for existing installations. It shall be complete with all necessary screws, fittings, fixtures and accessories to complete the works. PVC SADDLES					
F	40	20mm diameter	No	1			
F	41	25mm diameter	No	1			
F	42	32mm diameter	No	1			
F	43	50mm diameter	No	1			
		PVC HOSPITAL SADDLES					
F	44	20mm diameter	No	1			
F	45	25mm diameter	No	1			
F	46	32mm diameter	No	1			
F	47	50mm diameter	No	1			
		BOSAL SADDLES					
F	48	20mm diameter	No	1			
F	49	25mm diameter	No	1			
F	50	32mm diameter	No	1			
F	51	40mm diameter	No	1			
		Carried to Collection Page 29 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		BOSAL HOSPITAL SADDLES					
F	52	20mm diameter	No	1			
F	53	25mm diameter	No	1			
F	54	32mm diameter	No	1			
F	55	50mm diameter	No	1			
		PVC COUPLINGS					
F	56	20mm diameter	No	1			
F	57	25mm diameter	No	1			
F	58	32mm diameter	No	1			
F	59	50mm diameter	No	1			
		BOSAL COUPLINGS					
F	60	20mm diameter	No	1			
F	61	25mm diameter	No	1			
F	62	32mm diameter	No	1			
F	63	50mm diameter	No	1			
		TRUNKING & WIRING DUCT					
		PVC TRUNKING					
		Supply and install PVC compact mini trunking complete with cover plates, tees, angles(internal, external and flat), bends, end caps and all necessary fittings fixtures and accessories required to complete the works.					
		The trunking shall be installed surface on brickwork, slab, concrete, walls, ceilings, etc as required.					
		The trunking shall be as Cabstrut or equal approved.					
F	64	YT/1: 16mm x 16mm	m	1			
F	65	YT/2: 25mm x 16mm	m	1			
F	66	YT/2.5: 25mm x 25mm	m	1			
F	67	YT/3: 40mm x 16mm	m	1			
F	68	YT/4: 40mm x 25mm	m	1			
F	69	YT/5: 40mm x 40mm	m	1			
F	70	NBT/4: 100mm x 40mm	m	1			
		Carried to Collection Page 29 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	GALVANISED STEEL TRUNKING Supply and install galvanised steel trunking complete with PVC cover plates, tees, angles(internal, external and flat), bends, end caps, bolts, screws, anchors, threaded rods, hangards, anchors, suspension system and all necessary fittings, fixtures and accessories required to complete the works. The trunking shall be installed surface on brickwork, slab, concrete, walls, ceilings, etc as required. The trunking shall be as Cabstrut or equal approved.					
F 71	P2000: 41mm x 41mm x 1mm	m	1			
F 72	P8000: 76mm x 76mm x 0.8mm	m	1			
F 73	P9800: 127mm x 76mm x 0.8mm	m	1			
	CABLE TRAYS Supply and install galvanised steel cable trays complete with tees, bends, elbows, splices, bolts, screws, anchors, threaded rods, hangars, anchors, suspension system and all necessary fittings, fixtures and accessories required to complete the works. The trays shall be installed 300mm from surface on brickwork, slab, concrete, walls, ceilings, etc as required. The trays shall be as Cabstrut or equal approved.					
	LIGHT DUTY					
F 74	103mm x 19mm x 1mm	m	1			
F 75	205mm x 19mm x 1.2mm	m	1			
F 76	305mm x 19mm x 1.2mm	m	1			
	MEDIUM DUTY					
F 77	152mm x 38mm x 1.6mm	m	1			
F 78	229mm x 38mm x 1.6mm	m	1			
F 79	305mm x 38mm x 1.6mm	m	1			
	HEAVY DUTY					
F 80	152mm x 76mm x 1.6mm	m	1			
F 81	229mm x 76mm x 1.6mm	m	1			
F 82	305mm x 76mm x 1.6mm	m	1			
	Carried to Collection Page 29 EE					

Item	Description					Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 6 OF 19 COLLECTION PAGE WIREWAYS & ACCESSORIES Page 24 EE Page 25 EE Page 26 EE Page 27 EE Page 28 EE					
	WIREWAYS & ACCESSORIES					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
G	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 7 OF 19 WIRING & CONDUCTORS All cable and conductor wiring rates shall include for off cuts, slack, wastage, etc. The cost shall include all consumables. The measurements shall be taken from point to point. LOW VOLTAGE CONDUCTORS HOUSEWIRE Supply, deliver, install and terminate low voltage(600/1000V), PVC insulated, stranded copper conductors drawn into wireways, trunking, conduits, etc. Wiring channels measured elsewhere. The conductor shall be a low friction single core general purpose cable. The cable shall be manufactured to SANS 1507-2. The cables shall be as per Slipdac housewire, Abedare Cables or equal approved.					
	1 1.5mm ²	m	2			
	2 2.5mm ²	m	2			
	3 4mm ²	m	2			
	4 6mm ²	m	2			
	5 10mm ²	m	2			
	6 16mm ²	m	2			
	SURFIX Supply, deliver, install and terminate low voltage(300/500V), PVC insulated, stranded copper conductors laid up with a bare tinned copper earth wire in contact with a longitudinal aluminium/polyethylene laminate, UV stable PVC sheathed to SANS 1411-2, specification SANS 1507-2 The cables shall be as per Surfix, Abedare Cables or equal approved only.					
	TWO CORE 7 1.5mm ²	m	2			
	8 2.5mm ²	m	2			
	9 4mm ²	m	2			
	10 6mm ²	m	2			
	Carried to Collection Page 33 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
G	11	10mm ²	m	2			
G	12	16mm ²	m	2			
		THREE CORE					
G	13	1.5mm ²	m	2			
G	14	2.5mm ²	m	2			
G	15	4mm ²	m	2			
G	16	6mm ²	m	2			
		FOUR CORE					
G	17	1.5mm ²	m	2			
G	18	2.5mm ²	m	2			
G	19	4mm ²	m	2			
G	20	6mm ²	m	2			
		FLAT TWIN & EARTH					
		Supply, deliver, install and terminate low voltage(300/500V), PVC insulated, stranded copper conductors laid up with a bare copper continuity conductor between them, PVC sheated to SANS 1411-2. Specification SANS 1574					
		The cables shall be as per Flat Twin and Earth, Abedare Cables or equal approved.					
		TWO CORE					
G	21	1.5mm ²	m	2			
G	22	2.5mm ²	m	2			
G	23	4mm ²	m	2			
G	24	6mm ²	m	2			
G	25	10mm ²	m	2			
G	26	16mm ²	m	2			
		THREE CORE					
G	27	1.5mm ²	m	2			
G	28	2.5mm ²	m	2			
G	29	4mm ²	m	2			
		FOUR CORE					
G	30	1.5mm ²	m	2			
G	31	2.5mm ²	m	2			
G	32	4mm ²	m	2			
		Carried to Collection Page 33 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	<p>CABTYRE - NORMAL DUTY</p> <p>Supply, deliver, install and terminate low voltage(300/500V), normal duty, PVC insulated, high conductivity bunched plain flexible copper conductors to SANS 1411. Cores to be twisted together and sheathed with a flexible grade PVC.</p> <p>The cables shall be as per Cabtyre- normal duty, Abedare Cables or equal approved.</p>					
	THREE CORE					
G 33	1.5mm ²	m	2			
G 34	2.5mm ²	m	2			
G 35	4mm ²	m	2			
	FOUR CORE					
G 36	1.5mm ²	m	2			
G 37	2.5mm ²	m	2			
G 38	4mm ²	m	2			
	PVC INSULATED MVGP GRADE CONDUCTORS					
	Supply, deliver, install and terminate PVC insulated MVGP grade conductor.					
	The conductor shall be as per Abedare or equal approved.					
G 39	1.5mm ²	m	2			
G 40	2.5mm ²	m	2			
G 41	4mm ²	m	2			
G 42	6mm ²	m	2			
G 43	10mm ²	m	2			
G 44	16mm ²	m	2			
	Carried to Collection Page 33 EE					

Item	Description					Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 7 OF 19 COLLECTION WIRING & CONDUCTORS Page 30 EE Page 31 EE Page 32 EE					
	WIRING & CONDUCTORS					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
H		<p>ELECTRICAL WORKS</p> <p>BILL OF QUANTITIES: BILL NO 8 OF 19</p> <p>LUMINAIRES</p> <p>The supply, delivery and installation of luminaires, complete with electronic control gear and ballasts, lamps, fittings, fixtures and accessories.</p> <p>The luminaires shall be delivered to site in a protective cover.</p> <p>The lamps shall be delivered to site separately in a protective cover with the exception of the IP65 fittings which will be delivered pre lamped by the supplier/manufacturer.</p> <p>All lamps to be Colour rendering index Ra ≥80, 3000K, Osram</p> <p>The luminaires shall bear the SANS safety mark.</p> <p>The luminaires shall be fitted and wired in terms of the SANS 10142: Wiring Code Latest Revision</p> <p>The luminaires shall be suitable for operation at 250V, 50Hz.</p> <p>The luminaires shall be mounted surface, suspended, recessed, semi recessed where applicable to walls, ceilings, roofs, poles, etc.</p> <p>The luminaires shall be as per the specified brand or other approved only.</p> <p>All LED Luminaires shall not be less than LM97 B50 type with a minimum of 50 000 hours life and 5 year warrenty.</p> <p>The LED luminaires shall be SABS approved and shall have an internal surge protection unit.</p> <p>An outdoor luminaire shall be UV stabalised.</p> <p>BULKHEADS:</p> <p>INDUSTRIAL & SEMI INDUSTRIAL APPLICATIONS</p> <p>IP65</p> <p>The luminaires shall be as per Lascon or equal approved</p>					
H	1	B40-57W - LED bulkhead	No	1			
H	2	B40-80W - MVE- Mercury Vapour bulkhead	No	1			
H	3	B40-70W - HPSE- High Pressure Sodium bulkhead	No	1			
H	4	B40-100W - HPSE- High Pressure Sodium bulkhead	No	1			
H	5	B40-150W - HPSE- High Pressure Sodium bulkhead	No	1			
H	6	B40-70W - MH- Metal Halide bulkhead	No	1			
H	7	B40-100W - MH- Metal Halide bulkhead	No	1			
H	8	B40-150W - MH- Metal Halide bulkhead	No	1			
H	9	B40-242W - ELB - 2x42W Fluorescent bulkhead	No	1			
		Carried to Collection Page 48 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		BULKHEADS: DECORATIVE: ROUND & DOME INDUSTRIAL & SEMI INDUSTRIAL APPLICATIONS IP65 , 230 mm diameter, Colour: Black The luminaires shall be as per Lascon or equal approved					
H	10	Round: B10 -10W - LED	No	1			
H	11	Round: B10 - ES - 18W Energy saver lamp	No	1			
H	12	Dome: B10 - 10W - LED	No	1			
H	13	Dome: B10 - ES - 18W Energy saver lamp	No	1			
H	14	B10 - Decorative skirt	No	1			
		DECORATIVE: SQUARE INDUSTRIAL & SEMI INDUSTRIAL APPLICATIONS IP65 , 205 mm width, Colour: Black The luminaires shall be as per Lascon or equal approved					
H	15	Round: B20 -10W - LED	No	1			
H	16	Round: B20 - ES - 18W Energy saver lamp	No	1			
H	17	B20 - Decorative skirt	No	1			
		BULKHEADS: GENERAL: DECORATIVE IP65 The luminaires shall be as per Lascon or equal approved					
H	18	CFL Rimini: 218-ELB-DOME- 355mm dia White or Black	No	1			
H	19	LED Rimini: 17.5-LED-DOME- 355mm dia White or Black	No	1			
H	20	CFL Milano: 218-ELB-DOME- 270mm dia White or Black	No	1			
H	21	LED Milano: 17.5-LED-DOME- 355mm dia White or Black	No	1			
H	22	CFL Roma: 218-ELB-DOME- 266mm dia White or Black	No	1			
H	23	LED Roma: 17.5-LED-DOME- 266mm dia White or Black	No	1			
		Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	BULKHEADS: COMMERCIAL: ROUND: ALUMINIUM BASE, UV STABILISED POLYCARBONATE DIFFUSER, IP65 INDOOR & OUTDOOR APPLICATION 295mm DIAMETER The luminaires shall be as per Swanlite or equal approved					
H	24	ILM/MAS/SOL/2PL9 - Black or White	No	1		
H	25	ILM/MAS/SOL/1PL18 - Black or White	No	1		
H	26	ILM/MAS/SOL/LED/ - Black or White	No	1		
	COMMERCIAL: ROUND: ALUMINIUM BASE, UV STABILISED OPAL OR PRISMATIC, FLAT OR DOMED DIFFUSER: CLIENT TO SELECT INDOOR & OUTDOOR APPLICATION 360mm DIAMETER The luminaires shall be as per Swanlite or equal approved					
H	27	MAS/LLB/2D16/AL - Black or White Trim	No	1		
H	28	MAS/LLB/2D28/AL - Black or White Trim	No	1		
H	29	MAS/LLB/2PL18/AL - Black or White Trim	No	1		
H	30	MAS/LLB/LED/AL - Black or White Trim	No	1		
	COMMERCIAL: ROUND: ALUMINIUM BASE, UV STABILISED OPAL DIFFUSER INDOOR & OUTDOOR APPLICATION 280mm DIAMETER The luminaires shall be as per Beka or equal approved					
H	31	Series 30: 31007/15W LED - Black or White Trim	No	1		
H	32	Series 30: 31116/2D16W - Black or White Trim	No	1		
H	33	Series 30: 31118/1PL18W CFL - Black or White Trim	No	1		
H	34	Series 30: 31209/2PL9W CFL - Black or White Trim	No	1		
H	35	Series 30: 31218/2PL18W CFL - Black or White Trim	No	1		
	BULKHEAD ACCESSORIES					
H	36	Adaptor Ring for surface wiring per bulkhead	Item	1		
	PORCELAIN BOWL FITTING					
	The luminaires shall be as per Radiant or equal approved and fitted with Osram or equal approved lamp					
H	37	6" Opal, porcelain bowl, screw neck, complete with gallery and porcelain lampholder and 15W ES, stick lamp.	No	1		
	Carried to Collection Page 48 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
H	38	8" Opal, porcelain bowl, screw neck, complete with gallery and porcelain lampholder and 15W ES, stick lamp. OPEN CHANNEL LUMINAIRES: CHANNELS & BATTENS DOMESTIC & COMMERCIAL APPLICATIONS BODY: COLD MILD ROLLED STEEL WITH EPOXY POWDER COATED FINISH, IP20 SURFACE/SUSPENDED MOUNTED CHANNELS The luminaires shall be as per Lascon or equal approved T5 4 FOOT (1180mm length):	No	1			
H	39	Channel/228/ELB: 2x28W	No	1			
H	40	Channel/254/ELB: 2x54W ACCESSORIES WIRE GUARD	No	1			
H	41	4ft Galvanised steel wire as per for above fittings INDUSTRIAL WING	Item	1			
H	42	4ft mild steel, B-Focal wing attachment as per for above fittings SEAMLESS BATTEN The luminaires shall be as per Lascon or equal approved T5 4 FOOT (1180mm length):	Item	1			
H	43	Seamless Batten/154/ELB: 1x54W BATTEN T5 2 FOOT (680mm length):	No	1			
H	44	Batten/124/ELB: 1x24W 4 FOOT (1180mm length):	No	1			
H	45	Batten/128/ELB: 1x28W	No	1			
H	46	Batten/154/ELB: 1x54W 5 FOOT (1480mm length):	No	1			
H	47	Batten/149/ELB: 1x35W					
H	48	Batten/149/ELB: 1x49W	No	1			
H	49	Batten/180/ELB: 1x80W	No	1			
		Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
H 50	INDUSTRIAL WING 2ft mild steel, B-Focal wing attachment as per for above fittings	Item	1			
H 51	4ft mild steel, B-Focal wing attachment as per for above fittings	Item	1			
H 52	5ft mild steel, B-Focal wing attachment as per for above fittings	Item	1			
	LED 4 FOOT (1120mm length):					
H 53	Batten/22W/LED	No	1			
H 54	Batten/28W/LED	No	1			
H 55	Batten/32W/LED	No	1			
H 56	Batten/39W/LED	No	1			
H 57	Batten/46W/LED	No	1			
	LIGHTING SYSTEMS RAIL COMMERCIAL APPLICATION: WAREHOUSES, FACTORIES, AISLE LIGHTING The luminaires shall be as per Lascon or equal approved T5 4 FOOT (1225mm length):					
H 58	Rail - 154 - ELB	No	1			
	5 FOOT (1525mm length):					
H 59	Rail - 180 - ELB	No	1			
	LED 4 FOOT (1225mm length):					
H 60	Rail - 32W - LED	No	1			
H 61	Rail - 46W - LED	No	1			
	Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	VAPOUR & TAMPERPROOF LUMINAIRES: COMMERCIAL & INDUSTRIAL APPLICATIONS BODY: GREY INJECTION MOULDED UV STABILISED SELF EXTINGUISHING POLYCARBONATE. DIFFUSER: ONE PIECE INJECTION MOULDED UV SELF EXTINGUISHING POLYCARBONATE. LINEAR LIGHT CONTROL PRISMS ON THE INSIDE SURFACE/SUSPENDED MOUNTED, IP65 The luminaires shall be as per Lascon or equal approved 4 FOOT (1225mm length): T5: 16mm: ROTA-LOCK LAMP HOLDERS					
H 62	C10: 228-ELB: 2x28W	No	1			
H 63	C10: 228-ELB: 2x54W	No	1			
	LED					
H 64	C10: 27W-LED	No	1			
H 65	C10: 37W-LED	No	1			
	5 FOOT (1570mm length): T5: 16mm: ROTA-LOCK LAMP HOLDERS					
H 64	C10: 235-ELB: 2x35W	No	1			
H 65	C10: 249-ELB: 2x49W	No	1			
	DECORATIVE COMMERCIAL LUMINAIRES COMMERCIAL APPLICATIONS BODY: COLD MILD ROLLED STEEL WITH EPOXY POWDER COATED FINISH, IP20 LOUVRE: ONE PIECE, 1520G3 ANTI-IRIDESCENT MATT ALUMINIUM SURFACE/SUSPENDED MOUNTED LOW LEVEL BRIGHTNESS The luminaires shall be as per Lascon or equal approved 4 FOOT (1229mm length): T5: 16mm: ROTA-LOCK LAMP HOLDERS					
H 66	M95N-228-ELB: 2x28W LLB	No	1			
H 67	M95N-254-ELB: 2x54W LLB	No	1			
	Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	4 FOOT (1260mm length):					
	T5: 16mm: ROTA-LOCK LAMP HOLDERS					
H 68	SL95-228-ELB: 2x28W	No	1			
H 69	SL95-254-ELB: 2x54W	No	1			
	LED					
H 70	SL95-27W-LED	No	1			
H 71	SL95-37W-LED	No	1			
	4 FOOT (1260mm length):					
	T5: 16mm					
H 72	SL95-S-228-ELB: 2x28W	No	1			
H 73	SL95-S-254-ELB: 2x54W	No	1			
	LED					
H 74	SL95-S-32W-LED	No	1			
H 75	SL95-S-46W-LED	No	1			
	OPAL COVER					
	4 FOOT (1250mm length):					
	T5: 16mm					
H 76	M6V-228-ELB: 2x28W	No	1			
H 77	M6V-254-ELB: 2x54W	No	1			
	LED					
H 78	M6V-27-LED	No	1			
H 79	M6V-37-LED	No	1			
	DECORATIVE COMMERCIAL LUMINAIRES					
	COMMERCIAL APPLICATIONS					
	BODY: COLD MILD ROLLED STEEL WITH EPOXY					
	POWDER COATED FINISH, IP20					
	LOUVRE: ONE PIECE,					
	1520G3 ANTI-IRIDESCENT MATT ALUMINIUM					
	COMPLETE WITH 5A PLUGTOP & 3m CABTYRE					
	RECESSED MOUNTED, LOW LEVEL BRIGHTNESS					
	The luminaires shall be as per Lascon or equal approved					
	2 FOOT (597mm length):					
	T5					
H 80	FM95: 224-ELB: 2x24W LLB	No	1			
H 81	FM95: 324-ELB: 3x24W LLB	No	1			
	Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	LED					
H 82	FM95: 27W LED	No	1			
H 83	FM95: 37W LED	No	1			
	4 FOOT (1197mm length):					
	T5					
H 84	FM95: 228-ELB: 2x28W	No	1			
H 85	FM95: 254-ELB: 2x54W	No	1			
	DECORATIVE COMMERCIAL LUMINAIRES					
	COMMERCIAL APPLICATIONS					
	BODY: COLD MILD ROLLED STEEL WITH EPOXY					
	POWDER COATED FINISH, IP20					
	COMPLETE WITH 5A PLUGTOP & 3m CABTYRE					
	RECESSED MOUNTED					
	ACRYLIC DIFFUSER					
	The luminaires shall be as per Lascon or equal approved					
	2 FOOT (595mm length):					
	T5					
H 86	FM90AR27: 324-ELB: 3x24W LLB	No	1			
	4 FOOT (1195mm length):					
	T5					
H 87	FM95: 328-ELB: 3x28W LLB	No	1			
	DECORATIVE COMMERCIAL LUMINAIRES					
	COMMERCIAL APPLICATIONS					
	LED PANELS					
	A high end honeycomb LED panel, with a PMMA prism diffuser.					
	The diffuser to be manufactured with optical grade MMA single crystal.					
	The panels have a UGR <19 with a lumen package of >100 lm /W.					
	Complete with 5A plugtop and 3m cabtyre					
	RECESSED MOUNTED					
	The luminaires shall be as per Genesis One or equal approved					
	2 FOOT (600mm length):					
H 88	Honeycomb: 600 x 600, 30W, 3000 lm	No	1			
H 89	Honeycomb: 600 x 600, 40W, 4000 lm	No	1			
H 90	Honeycomb: 600 x 600, 48W, 5000 lm	No	1			
	Carried to Collection Page 48 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		4 FOOT (1200mm length):					
H	91	Honeycomb: 1200 x 300, 40W, 4000 lm	No	1			
H	92	Honeycomb: 1200 x 300, 54W, 5400 lm	No	1			
H	93	Honeycomb: 1200 x 600, 50W, 5000 lm	No	1			
H	94	Honeycomb: 1200 x 600, 60W, 6000 lm	No	1			
H	95	Honeycomb: 1200 x 600, 72W, 7200 lm	No	1			
		5 FOOT (1500mm length):					
H	96	Honeycomb: 1500 x 500, 60W, 6000 lm	No	1			
H	97	Honeycomb: 1500 x 500, 72W, 7200 lm	No	1			
		SURFACE/SUSPENDEED MOUNTED					
		2 FOOT (600mm length):					
H	98	Honeycomb: 600 x 600, 30W, 3000 lm	No	1			
H	99	Honeycomb: 600 x 600, 40W, 4000 lm	No	1			
H	100	Honeycomb: 600 x 600, 48W, 5000 lm	No	1			
		4 FOOT (1200mm length):					
H	101	Honeycomb: 1200 x 300, 40W, 4000 lm	No	1			
H	102	Honeycomb: 1200 x 300, 54W, 5400 lm	No	1			
H	103	Honeycomb: 1200 x 600, 50W, 5000 lm	No	1			
H	104	Honeycomb: 1200 x 600, 60W, 6000 lm	No	1			
H	105	Honeycomb: 1200 x 600, 72W, 7200 lm	No	1			
		5 FOOT (1500mm length):					
H	106	Honeycomb: 1500 x 500, 60W, 6000 lm	No	1			
H	107	Honeycomb: 1500 x 500, 72W, 7200 lm	No	1			
		HIGHBAY, LOWBAY & CANOPY					
		WAREHOUSE, INDUSTRIAL & FACTORY APPLICATIONS					
		HIGH/LOW BAY					
		Type: Surface or recessed type.					
		Louvre: High performance MIR04 silver louvre					
		Beam: Narrow					
		Body: Rolled mild steel body and a structured silver epoxy powder coated finish. Complete with 3m cabtyre and 5A plugtop. IP 20.					
		The luminaire shall be as per Lascon or equal approved					
		T5					
		4 FOOT (1195mm length):					
H	108	S-BAY-454-ELB	No	1			
		Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	5 FOOT (1495mm length):					
H 109	S-BAY-480-ELB	No	1			
	DIFFUSER					
H 110	Clear Diffuser for 4ft, T5 fittings as above	No	1			
H 111	Clear Diffuser for 5ft, T5 fittings as above	No	1			
	LED					
	4 FOOT (1195mm length):					
H 112	S-BAY-111-LED complete with diffuser	No	1			
H 113	S-BAY-148-LED complete with diffuser	No	1			
	HIGHBAY, LOWBAY & CANOPY					
	WAREHOUSE, INDUSTRIAL & FACTORY APPLICATIONS					
	HIGH/LOW BAY					
	Type: Surface.					
	Diffuser: UV stabalised, self-extinguishing polycarbonate					
	Beam: Narrow					
	Body: Glass reinforced polyester (GRP), IP 65, MIRO 4 Refelectedors,					
	Stainless steel latches, complete with mounting brackets					
	The luminaire shall be as per Lascon or equal approved					
	T5					
	4 FOOT (1330mm length):					
H 114	C-BAY-454-ELB	No	1			
	LED					
H 115	C-BAY-74-LED (80W) complete with diffuser	No	1			
H 116	C-BAY-111-LED (120W) complete with diffuser	No	1			
H 117	C-BAY-148-LED (160W) complete with diffuser	No	1			
	CANOPY					
	Type: Surface or recessed type.					
	Louvre: High performance MIR04 silver louvre					
	Beam: Narrow					
	Body: LM6 marine grade aluminium, chemically treated & epoxy coated.					
	Diffuser: Opal polycarbonate diffuser					
	Complete with 3m cabtyre and 5A plugtop					
	IP 65					
	LED					
H 118	CAN-33W-LED (530x280mm)	No	1			
H 119	CAN-67W-LED (530x280mm)	No	1			
	FLOODLIGHTS					
	GENERAL & AREA LIGHTING					
	All floodlights to be complete with all lamps, mounting brackets, fittings, fixtures and accessories required for the works.					
	The fittings(HID) shall have separate control gear housing.					
	All luminaires to be SANS approved.					
	HIGH INTENSITY DISCHARGE					
	The luminaire shall be as per Genlux or equal approved.					
H 120	Solar floodlight: Metal Halide 1000W	No	1			
H 121	Solar floodlight: HPS 1000W	No	1			
H 122	Anthea floodlight: Metal Halide 50W, Wide Beam	No	1			
H 123	Anthea floodlight: Metal Halide 100W, Wide Beam	No	1			
H 124	Anthea floodlight: Metal Halide 150W, Wide Beam	No	1			
H 125	Anthea floodlight: Mercury Vapour 80W, Wide Beam	No	1			
	Carried to Collection Page 48 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
H	126	Anthea floodlight: Mercury Vapour 125W, Wide Beam	No	1			
H	127	Anthea floodlight: High Pressure Sodium 70W, Wide Beam	No	1			
H	128	Anthea floodlight: High Pressure Sodium 100W, Wide B	No	1			
H	129	Anthea floodlight: High Pressure Sodium 125W, Wide B	No	1			
H	130	Anthea floodlight: High Pressure Sodium 150W, Wide B	No	1			
		CFL					
H	131	Anthea floodlight: CFL 2x18W, Wide Beam	No	1			
H	132	Anthea floodlight: CFL 2x26W, Wide Beam	No	1			
		HIGH INTENSITY DISCHARGE					
H	133	Odyssey floodlight: MH 250W, Wide Beam	No	1			
H	134	Odyssey floodlight: MH 400W, Wide Beam	No	1			
H	135	Odyssey floodlight: MV 250W, Wide Beam	No	1			
H	136	Odyssey floodlight: HPS 150W, Wide Beam	No	1			
H	137	Odyssey floodlight: HPS 250W, Wide Beam	No	1			
H	138	Odyssey floodlight: HPS 400W, Wide Beam	No	1			
H	139	Odyssey floodlight: HPS 600W, Wide Beam	No	1			
		LED					
		The luminaire shall be as per Lascon or equal approved.					
H	140	L18-218W-LED	No	1			
H	141	Pescara-33W-LED black	No	1			
H	142	Pescara-67W-LED black	No	1			
H	143	Genoa-35W-LED black	No	1			
		DOWNLIGHTERS RECESSED TYPE					
		APPLICATION: GENERAL AREAS, OFFICE,					
		CONFERENCE ROOMS & CORRIDORS					
		ALL DOWNLIGHTERS TO BE COMPLETE WITH					
		5A PLUGTOP & 3m CABTYRE					
		The luminaire shall be as per Lascon or equal approved.					
		CFL TYPE					
		FUTURA 1:					
		DIMENSION: 210mm dia x 170mm height					
H	144	FUT1 - 113 - ELB, 1x13W	No	1			
H	145	FUT1 - 118 - ELB, 1x18W	No	1			
		ACCESSORIES					
H	146	Decorative Flush glass accessory for the above fitting	No	1			
H	147	Decorative dropped glass accessory for the above fitting	No	1			
		Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	FUTURA 2: DIMENSION: 240mm dia x 170mm height					
H 148	FUT2 - 218 - ELB, 2x18W	No	1			
H 149	FUT2 - 226 - ELB, 2x26W	No	1			
	ACCESSORIES					
H 150	Decorative Flush glass accessory for the above fitting	No	1			
H 151	Decorative dropped glass accessory for the above fitting	No	1			
	FUTURA 3: DIMENSION: 240mm dia x 170mm height					
H 152	FUT3 - 213 - ELB, 2x13W complete with flush glass	No	1			
H 153	FUT3 - 218 - ELB, 2x18W complete with flush glass	No	1			
	HIGH INTENSITY DISCHARGE LAMP					
	FUTURA 4: DIMENSION: 240mm dia x 170mm height					
H 154	FUT4 - 70 - ELB, 1x70W complete with flush glass	No	1			
	FUTURA 5: DIMENSION: 174mm dia x 162mm height					
H 155	FUT5 - 35 - ELB, 1x35W complete with flush glass	No	1			
H 156	FUT5 - 70 - ELB, 1x70W complete with flush glass	No	1			
	LED					
	FUTURA 6: DIMENSION: 46mm dia x 16.5mm height					
H 157	FUT6 - 1W - LED complete with silver trim	No	1			
H 158	FUT6 - 3W - LED complete with silver trim	No	1			
	FUTURA 7: DIMENSION: 68mm dia x 64mm height					
H 159	FUT7-10.5W- LED-830 complete with silver trim	No	1			
H 160	FUT7-10.5W- LED-840 complete with silver trim	No	1			
	FUTURA 8: DIMENSION: 95mm dia x 87mm height					
H 161	FUT8-10.5W- LED-830 complete with silver trim	No	1			
H 162	FUT8-10.5W- LED-840 complete with silver trim	No	1			
	APPLICATION: COVER LIGHTING, RETAIL LIGHTING, STORAGE ROOMS, PARKING GARAGES The luminaires shall be as per Lascon or equal approved.					
	Carried to Collection Page 48 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
H	<p>FUTURA 9: DIMENSION: 140mm dia x 120mm height</p> <p>163 FUT9-17W- LED complete with silver trim</p> <p>FUTURA 10: DIMENSION: 190mm dia x 135mm height</p>	No	1			
H	164 FUT9-23W- LED complete with silver trim	No	1			
H	165 FUT9-38W- LED complete with silver trim	No	1			
	<p>EMERGENCY LIGHTING</p> <p>Emergency luminaires to be constructed from rolled mild steel body with a white epoxy coated finish and frosted prismatic diffuser. The luminaire shall have snap on injection moulded plastic end caps.</p> <p>The luminaire shall be of the maintained emergency type with 2.6hrs of emergency duration and 40% light output in emergency mode. The unit shall be complete with pictogram pack (1 x running man left, 1 x running man right, 1 x running down and 1 x EXIT pictogram)</p> <p>The luminaires shall be complete with all necessary fittings, fixtures and accessories required for the works.</p> <p>The luminaires shall be SABS approved.</p> <p>The luminaires shall be as per Lascon or equal approved</p>					
H	<p>166 LILI-1x8-ELB (L=420mm,W=208mm, H=77mm)</p> <p>complete with battery backup and pictogram pack</p> <p>The luminaire shall be constructed of a fibreglass frame, toughened glass lens, galvanised hanging bolts and electronic control gear.</p> <p>The luminaire shall be of the maintained emergency type with 2.6hrs of emergency duration and 40% light output in emergency mode. The unit shall be complete with pictogram pack (1 x running man left, 1 x running man right, 1 x running down and 1 x EXIT pictogram - Green on white)</p> <p>The luminaires shall be SABS approved.</p>	No	1			
	Carried to Collection Page 48 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		The luminaires shall be as per Lascon or equal approved					
		WALL MOUNTED					
		MAINTAINED					
H	167	E10-2x9-EMG (L=310mm, W=310mm, H=65mm) complete with battery backup and pictogram pack - Maintained version	No	1			
		CEILING MOUNTED					
		SINGLE SIDED					
		MAINTAINED					
H	168	E10-2x9-EMG (L=310mm, W=310mm, H=65mm) complete with battery backup and pictogram pack - Maintained version - Ceiling - Single sided	No	1			
		DOUBLE SIDED					
		MAINTAINED					
H	169	E10-2x9-EMG (L=310mm, W=310mm, H=65mm) complete with battery backup and pictogram pack - Maintained version - Ceiling - Double sided	No	1			
		SINGLE SIDED					
		NON - MAINTAINED					
H	170	E10-2x9-EMG (L=310mm, W=310mm, H=65mm) complete with battery backup and pictogram pack - Non-Maintained version - Ceiling - Single sided	No	1			
		DOUBLE SIDED					
		NON - MAINTAINED					
H	171	E10-2x9-EMG (L=310mm, W=310mm, H=65mm) complete with battery backup and pictogram pack - Non-Maintained version - Ceiling - Single sided	No	1			
		Carried to Collection Page 48 EE					

Item	Description					Amount
	ELECTRICAL WORKS					
	BILL OF QUANTITIES: BILL NO 8 OF 19					
	COLLECTION					
	LUMINAIRES					
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	LUMINAIRES:					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate
I		ELECTRICAL WORKS				
		BILL OF QUANTITIES: BILL NO 9 OF 19				
		LAMPS				
		COMPACT FLUORESCENT LAMPS:				
		WITH INTEGRATED CONTROL GEAR				
		The lamps shall be complete with integrated control gear.				
		The lamps shall be rated 220-240V, 50Hz.				
		The lamps to be Colour rendering index Ra ≥80, and available in 2700K, 4000K and 6500K.				
		The colour temperature shall be confirmed on site.				
		The lamps to be provided in either E14 or E27 types dependant upon the existing or new fitting lampholder.				
		The lamps shall have an average life of 10000hrs.				
		The lamps shall be as per Osram or Philips or equal approved.				
		STICK TYPE				
	I 1	DULUX STICK 8W	No	1		
	I 2	DULUX STICK 11W	No	1		
	I 3	DULUX STICK 15W	No	1		
	I 4	DULUX STICK 20W	No	1		
	I 5	DULUX STICK 23W	No	1		
		TWIST(SPIRAL) TYPE				
	I 6	DULUX TWIST 9W	No	1		
	I 7	DULUX TWIST 12W	No	1		
	I 8	DULUX TWIST 15W	No	1		
	I 9	DULUX TWIST 20W	No	1		
	I 10	DULUX TWIST 23W	No	1		
		CIRCULAR TYPE				
	I 11	CIRCOLUX 24W	No	1		
		CLASSIC BULB SHAPE TYPE				
	I 12	DULUX, CLA 11W	No	1		
	I 13	DULUX, CLA 15W	No	1		
	I 14	DULUX, CLA 20W	No	1		
		CANDLE SHAPE TYPE				
	I 15	DULUX, CLB 6W	No	1		
	I 16	DULUX, CLB 9W	No	1		
Carried to Collection Page 57 EE						

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		MINI BULLET SHAPE TYPE					
I	17	DULUX, CL P 6W	No	1			
I	18	DULUX, CL P 9W	No	1			
		GLOBE SHAPE TYPE					
I	19	DULUX, GL 15W	No	1			
I	20	DULUX, GL 20W	No	1			
		WITHOUT INTEGRATED CONTROL GEAR					
		The lamps shall be suitable for operation on conventional or electronic control gear as required.					
		The lamps shall be rated 220-240V, 50Hz.					
		The lamps to be Colour rendering index Ra ≥80, and available in 2700K, 4000K and 6500K.					
		The colour temperature shall be confirmed on site.					
		The lamps shall have an average life of 10000hrs.					
		The lamps shall be as per Osram or Philips or equal approved.					
		T PLUS					
		CFLni, 3 tubes, with 2-pin base for CCG operation					
I	21	DULUX T PLUS, 13W	No	1			
I	22	DULUX T PLUS, 18W	No	1			
I	23	DULUX T PLUS, 26W	No	1			
		T/E PLUS					
		CFLni, 3 tubes, with 4-pin base for ECG operation					
I	24	DULUX T/E PLUS, 13W	No	1			
I	25	DULUX T/E PLUS, 18W	No	1			
I	26	DULUX T/E PLUS, 26W	No	1			
I	27	DULUX T/E PLUS, 32W	No	1			
I	28	DULUX T/E PLUS, 42W	No	1			
		T/E CONSTANT					
		CFLni, 3 tubes, with 4-pin base for ECG operation					
I	29	DULUX T/E CONSTANT, 26W	No	1			
I	30	DULUX T/E CONSTANT, 32W	No	1			
I	31	DULUX T/E CONSTANT, 42W	No	1			
		Carried to Collection Page 57 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		T/E XT					
		CFLni, 3 tubes, with 4-pin base for ECG operation					
I	32	DULUX T/E, XT, 32W	No	1			
I	33	DULUX T/E, XT, 42W	No	1			
		D					
		CFLni, 3 tubes, with 2-pin base for ECG operation					
I	34	DULUX D, 10W	No	1			
I	35	DULUX D, 13W	No	1			
I	36	DULUX D, 18W	No	1			
I	37	DULUX D, 26W	No	1			
		D/E					
		CFLni, 2 tubes, with 4-pin base for ECG operation					
I	38	DULUX D/E, 10W	No	1			
I	39	DULUX D/E, 13W	No	1			
I	40	DULUX D/E, 18W	No	1			
I	41	DULUX D/E, 26W	No	1			
		S					
		Short CFLni, with 2-pin base for CCG operation					
I	42	DULUX S, 5W	No	1			
I	43	DULUX S, 7W	No	1			
I	44	DULUX S, 9W	No	1			
I	45	DULUX S, 11W	No	1			
		S/E					
		Short CFLni, with 4-pin base for ECG operation					
I	46	DULUX S/E, 7W	No	1			
I	47	DULUX S/E, 9W	No	1			
I	48	DULUX S/E, 11W	No	1			
		LUMILUX					
		CFLni, with 4-pin base 2G11 for ECG/CCG operation					
I	49	DULUX L, 18W	No	1			
I	50	DULUX L, 24W	No	1			
I	51	DULUX L, 36W	No	1			
I	52	DULUX L, 40W	No	1			
I	53	DULUX L, 55W	No	1			
I	54	DULUX L, 80W	No	1			
		Carried to Collection Page 57 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	CFL SQUARE: 2D TYPE: 2 PIN					
	Square CFLni, with 2-pin base GR8 base for					
	CCG operation					
I 55	Square, 16W	No	1			
I 56	Square, 28W	No	1			
	CFL SQUARE: 2D TYPE: 4 PIN					
	Square CFLni, with 4-pin base GR8 base for					
	ECG/CCG operation					
I 57	Square, 16W	No	1			
I 58	Square, 28W	No	1			
I 59	Square, 38W	No	1			
	TUBULAR FLUORESCENT LAMPS					
	The lamps shall be rated 220-240V, 50Hz.					
	The lamps to be Colour rendering index Ra ≥80, and					
	available in 2700K, 3500K, 4000K and 6500K.					
	The colour temperature shall be confirmed on site.					
	The lamps shall have an average life of 10000hrs.					
	The lamps shall be as per Osram or Philips or equal approved					
	T5					
	LUMILUX HE					
	Tubular fluorescent lamp 16mm, high efficiency,					
	with G5 base					
I 60	HE 14W	No	1			
I 61	HE 21W	No	1			
I 62	HE 28W	No	1			
I 63	HE 35W	No	1			
	LUMILUX HO					
	Tubular fluorescent lamp 16mm, high efficiency,					
	with G5 base					
I 64	HO 24W	No	1			
I 65	HO 39W	No	1			
I 66	HO 49W	No	1			
I 67	HO 54W	No	1			
I 68	HO 80W	No	1			
	Carried to Collection Page 57 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		LUMILUX FC					
		Circular fluorescent lamp, 16mm, with 2GX13 base					
I	69	FC 22W	No	1			
I	70	FC 40W	No	1			
I	71	FC 55W	No	1			
		T8					
		LUMILUX ES					
		Tubular fluorescent lamp 26mm, high efficiency, with G13 base, energy saver					
I	72	L 16W	No	1			
I	73	L 32W	No	1			
I	74	L 51W	No	1			
		T9					
		LUMILUX T9 C					
		Circular fluorescent lamp 29mm, with G10q base					
I	75	L 22W	No	1			
I	76	L 32W	No	1			
I	77	L 40W	No	1			
		LED LAMPS					
		The lamps to be Colour rendering index Ra ≥80, and available in 2700K or 4000K.					
		The colour temperature shall be confirmed on site.					
		The lamps shall have an average life of 15000hrs.					
		The lamps shall be as per Osram or Philips or equal approved					
		PARATHOM PAR 16					
		LED reflector lamps with retrofit plug base					
I	78	Parathom PAR 16, 2.6W	No	1			
I	79	Parathom PAR 16, 4.3W	No	1			
I	80	Parathom PAR 16, 6.9W	No	1			
		PARATHOM PRO PAR 16					
		Dimmable LED reflector lamps with retrofit plug base					
I	81	Parathom Pro, PAR 16, 4.6W	No	1			
I	82	Parathom Pro, PAR 16, 6.1W	No	1			
		PARATHOM MR 16					
		Low-voltage LED reflector lamps with retrofit plug base					
I	83	MR 16, 2.9W	No	1			
I	84	MR 16, 4.6W	No	1			
I	85	MR 16, 7.2W	No	1			
		Carried to Collection Page 57 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		PARATHOM MR 11 12V Low-voltage LED reflector lamps with retrofit plug base					
I	86	MR 11, 2.3W	No	1			
		PARATHOM Advanced MR 11 12V Dimmable Low-voltage LED reflector lamps with retrofit plug base					
I	87	ADV MR 11, 3.1W	No	1			
		PARATHOM Advanced PAR 20 Dimmable LED reflector lamps with retrofit screw base					
I	88	ADV PAR 20, 4.2W	No	1			
		PARATHOM Advanced PAR 30 Dimmable LED reflector lamps with retrofit screw base					
I	89	ADV PAR 30, 6.7W	No	1			
		PARATHOM CLASSIC A LED lamps, classic bulb shape					
I	90	Parathom CL A, 5W	No	1			
I	91	Parathom CL A, 8W	No	1			
I	92	Parathom CL A, 9W	No	1			
I	93	Parathom CL A, 23W	No	1			
		PARATHOM ADVANCED CLASSIC A Dimmable LED lamps, classic bulb shape					
I	94	Parathom ADV CL A, 6W	No	1			
I	95	Parathom ADV CL A, 9W	No	1			
I	96	Parathom ADV CL A, 10W	No	1			
I	97	Parathom ADV CL A, 14.4W	No	1			
I	98	Parathom ADV CL A, 21W	No	1			
		PARATHOM CLASSIC B LED lamps, classic mini-candle shape					
I	99	Parathom CL B, 3.3W	No	1			
I	100	Parathom CL B, 5.7W	No	1			
		PARATHOM ADVANCED CLASSIC B Dimmable LED lamps, classic mini-candle shape					
I	101	Parathom ADV CL B, 6W	No	1			
		Carried to Collection Page 57 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		LINEAR LED					
		SUBSTITUTE T8 VALUE EM					
		LED lamps, stick shaped, 27.5mm with G13 base					
		600mm					
I	102	ST8V, 8W	No	1			
		1200mm					
I	103	ST8V, 17W	No	1			
		1500mm					
I	104	ST8V, 20W	No	1			
		SUBSTITUTE T8 ADVANCED UNIVERSAL					
		LED lamps, stick shaped, 27mm with G13 base					
		1200mm					
I	105	ST8AU, XYW	No	1			
		1500mm					
I	106	ST8AU, XYW	No	1			
		HIGH INTENSITY DISCHARGE					
		MERCURY VAPOUR					
I	107	50W, MV	No	1			
I	108	80W, MV	No	1			
I	109	125W, MV	No	1			
I	110	250W, MV	No	1			
I	111	400W, MV	No	1			
		HIGH PRESSURE SODIUM					
		TUBULAR SINGLE SIDED					
I	112	50W	No	1			
I	113	70W	No	1			
I	114	100W	No	1			
I	115	150W	No	1			
I	116	250W	No	1			
I	117	400W	No	1			
I	118	1000W	No	1			
		ELLIPTICAL COATED SINGLE SIDED					
I	119	50W	No	1			
I	120	70W	No	1			
I	121	100W	No	1			
I	122	150W	No	1			
I	123	250W	No	1			
I	124	400W	No	1			
I	125	1000W	No	1			
		Carried to Collection Page 57 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		METAL HALIDE					
		CERAMIC METAL HALIDE:					
		SINGLE ENDED TUBULAR (CLEAR): HCI-T					
I	126	35W	No	1			
I	127	70W	No	1			
I	128	100W	No	1			
I	129	150W	No	1			
		SINGLE ENDED TUBULAR (CLEAR): HCI-TC					
I	130	20W	No	1			
I	131	35W	No	1			
I	132	70W	No	1			
		SINGLE ENDED TUBULAR (CLEAR): HCI-TF					
I	133	20W	No	1			
I	134	35W	No	1			
		DOUBLE ENDED TUBULAR (CLEAR): HCI-TS					
I	135	70W	No	1			
I	136	150W	No	1			
I	137	250W	No	1			
		QUARTZ METAL HALIDE					
		SINGLE ENDED TUBULAR (CLEAR): HQI-T					
I	138	250W	No	1			
I	139	450W	No	1			
I	140	1000W	No	1			
		SINGLE ENDED ELLIPTICAL COATED: HQI-E					
I	141	70W	No	1			
I	142	100W	No	1			
I	143	150W	No	1			
I	144	250W	No	1			
I	145	400W	No	1			
		DOUBLE ENDED TUBULAR CLEAR: HQI-TS					
I	146	1000W	No	1			
I	147	2000W, short arc	No	1			
I	148	2000W, long arc	No	1			
I	149	To hire a Cherry picker to reach a minimum of 15m in height	per day	1			
I	150	To erect scaffolding to a minimum height of 10m	per day	1			
		T8 TL-D LOW-PRESSURE MERCURY DISCHARGE LAMPS					
		WITH A TUBULAR 26mm ENVELOPE, G13 CAP BASE					
I	151	18W - 6200K, Cool Daylight	No	1			
I	152	36W - 6200K, Cool Daylight	No	1			
I	153	56W - 6200K, Cool Daylight	No	1			
		T5 TL-D LOW-PRESSURE MERCURY DISCHARGE LAMPS					
		WITH A TUBULAR 26mm ENVELOPE, G13 CAP BASE					
I	154	18W - 6200K, Cool Daylight	No	1			
I	155	36W - 6200K, Cool Daylight	No	1			
I	156	56W - 6200K, Cool Daylight	No	1			
		Carried to Collection Page 57 EE					

Item	Description					Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 9 OF 19 COLLECTION PAGE LAMPS Page 49 EE Page 50 EE Page 51 EE Page 52 EE Page 53 EE Page 54 EE Page 55 EE Page 56 EE					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
J	ELECTRICAL WORKS					
	BILL OF QUANTITIES: BILL NO 10 OF 19					
	LUMINAIRE ACCESSORIES					
	LIGHT POLES					
	GALVANISED STEEL POLES:					
	Body: Galvanised steel					
	Mounting: Plinth Mounted or buried					
	Finish: Raw					
	Accessories: Access door complete with circuit breaker, gland plate, wiring, etc.					
	Features: Tapered reduction or a flat reduction					
J	SANS: Manufactured from Grade S 355 steel in accordance to SANS 657/1&3. Hot Dipped galvanised in accordance to SANS 121					
	Colour: Matt Silver					
	All poles shall be complete with all necessary fittings, fixtures and accessories required for the works.					
	All poles are to be in accordance to the Ethekwini Municipality specification					
	The poles shall be as per Regent Lighting or equal approved.					
	STRAIGHT POLE					
	1 Straight, 6m TL	No	1			
	STEPPED 1 REDUCTION					
	2 Stepped 1, 6m TL	No	1			
	3 Stepped 1, 8m TL	No	1			
J	4 Stepped 1, 9,2m TL	No	1			
	STEPPED 2 REDUCTION					
	5 Stepped 2, 8.2m TL	No	1			
	6 Stepped 2, 9,2m TL	No	1			
	WOODEN POLES					
	CCA POLES: LEVEL H4					
	Copper chromium arsenic treated wooden pole, Level H4, SANS approved.					
	The poles shall be suitable for transmission and lighting purposes and in accordance with the Ethekwini Municipality specifications.					
	All poles shall be complete with all necessary fittings, fixtures and					
	Carried to Collection Page 61 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	accessories required for the works.					
J 7	6m pole	No	1			
J 8	7m pole	No	1			
J 9	8m pole	No	1			
J 10	9m pole	No	1			
	LUMINAIRE COMPONENTS					
	The luminaire components shall be as per Osram or equal approved					
	STARTERS					
J 11	ST 111, Longlife (4...65W;80W)	No	1			
J 12	ST 151, Longlife(4...22W)	No	1			
J 13	DEOS ST 171 SAFETY, (36...65W)	No	1			
J 14	DEOS ST 172 SAFETY, (18...22W)	No	1			
J 15	DEOS ST 173 SAFETY, (15...32W)	No	1			
	TRANSFORMERS					
J 16	ET PARROT low voltage halogen lamps	No	1			
	CONTROL GEAR					
	ELECTRONIC					
	FLUORESCENT					
J 17	Quicktronic, (28 to 80W), T5 & T8	No	1			
J 18	Quicktronic, Dimmable: T8	No	1			
J 19	Quicktronic, Multiwatt: CFL	No	1			
J 20	Quicktronic, Economic: CFL	No	1			
	LAMP HOLDERS					
J 21	RS Lampholder	No	1			
J 22	ES Lampholder	No	1			
J 23	BC Lampholder	No	1			
J 24	Fluorescent fitting Lampholder	No	1			
J 25	400W HPS Lampholder	No	1			
J 26	Brass Lampholder, ES or BC	No	1			
	Carried to Collection Page 61 EE					

Item	Description					Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 10 OF 19 COLLECTION PAGE LUMINAIRE ACCESSORIES Page 58 EE Page 59 EE Page 60 EE					
	LUMINAIRE ACCESSORIES					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

		Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
K			ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 11 OF 19 LIGHT SWITCHES STEEL COVER TYPE All switches shall be suitable for mounting in 100 x 50 x 50mm boxes and shall comply with SANS 1663 and shall bear the SANS mark. The light switches shall be rated 16A, 250V. The light switches shall be complete with a white switch/s on yoke, SS screws and WHITE STEEL coverplates(SANS 1084). The light switch shall include all necessary accessories to complete the works. The light switch shall be installed into existing extension boxes or into new galvanised steel boxes. The galvanised steel boxes are measured elsewhere. The light switches shall be as per Crabtree, Classic Range or equal approved.					
K	1	16A, Single lever one way		No	1			
K	2	16A, Two lever one way		No	1			
K	3	16A, Three lever one way		No	1			
K	4	16A, Four lever one way		No	1			
K	5	16A, Five lever one way		No	1			
K	6	16A, Six lever one way		No	1			
K	7	16A, One lever one way with dimmer		No	1			
K	8	16A, Two lever one way with dimmer		No	1			
K	9	16A, One lever two way		No	1			
			All switches shall be suitable for mounting in 100 x 50 x 50mm boxes and shall comply with SANS 1663 and shall bear the SANS mark. The light switches shall be rated 16A, 250V. The light switches shall be complete with a white switch/s on yoke, SS screws and WHITE PLASTIC coverplates(SANS 1084). The light switch shall include all necessary accessories to complete the works. The light switch shall be installed into existing extension boxes or into new galvanised steel boxes. The galvanised steel boxes are measured elsewhere. The light switches shall be as per Crabtree, Classic Range or equal approved.					
K	10	16A, Single lever one way		No	1			
K	11	16A, Two lever one way		No	1			
K	12	16A, Three lever one way		No	1			
K	13	16A, Four lever one way		No	1			
K	14	16A, Five lever one way		No	1			
K	15	16A, Six lever one way		No	1			
K	16	16A, One lever one way with dimmer		No	1			
K	17	16A, Two lever one way with dimmer		No	1			
K	18	16A, One lever two way		No	1			
			Carried to Collection Page 64 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	INDUSTRIAL LIGHT SWITCHES All switches shall be suitable for mounting in 75 x 75mm boxes and shall comply with SANS 1663 and shall bear the SANS mark. The light switches shall be rated 16A, 250V. The light switches shall be complete with a white switch/s on yoke and steel coverplates(White or Orange)(SANS 1084). The light switch shall include all necessary accessories to complete the works. The light switch shall be installed into existing extension boxes or into new galvanised steel boxes. The galvanised steel boxes are measured elsewhere. The light switches shall be as per Crabtree, Classic Range or equal approved.					
K 19	16A, Single lever one way	No	1			
K 20	16A, Two lever one way	No	1			
K 21	16A, Three lever one way	No	1			
K 22	16A, Three lever two way	No	1			
	INDUSTRIAL WATER PROOF LIGHT SWITCHES All switches shall be suitable for mounting in 119 x 83mm weatherproof surface boxes and shall comply with SANS 1663 and shall bear the SANS mark. The light switches shall be rated 16A, 250V. The light switches shall be complete with a white switch/s on yoke and coverplates(White or Orange)(SANS 1084). The light switch shall include all necessary accessories to complete the works. The light switch shall be installed complete with new extension boxes. The light switches shall be as per Crabtree, Classic Range or equal approved.					
	STEEL TYPE					
K 23	16A, Single lever one way	No	1			
K 24	16A, Two lever one way	No	1			
K 25	16A, Three lever one way	No	1			
K 26	Limit Switches	No	1			
	PLASTIC TYPE					
K 27	16A, Single lever one way	No	1			
K 28	16A, Two lever one way	No	1			
K 29	16A, Three lever one way	No	1			
	Carried to Collection Page 64 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	WIRELESS LIGHT SWITCHES All switches shall be suitable for mounting in 75 x 75mm boxes and shall comply with SANS 1663 and shall bear the SANS mark. The light switches shall be rated 5A, 220V. The wireless light switch shall include all necessary accessories to complete the works. (Batteries, etc) The wireless light switches shall be as per QwikSwitch or equal approved.					
K 30	Receiver and relay. Max load 5A. Device is controllable from the WiFi Bridge remotely. Input and output supply at 220Vac, 50Hz. Radio frequency 868MHz. 30m Range through walls and floors, 100m line of site	No	1			
K 31	2 button wireless transmitter. Input supply 1 x CR2032 Battery to be included. From factor moulded casing 80mm (w) x 123mm (L) x 10mm (H) Radio frequency 868MHz. 30m Range through walls and floors, 100m line of site	No	1			
	Carried to Collection Page 64 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 11 OF 19 COLLECTION PAGE LIGHT SWITCHES Page 62 EE Page 63 EE					
	LIGHT SWITCHES:					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
L		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 12 OF 19 POWERSKIRTING, OUTLETS & ACCESSORIES PVC TYPE Supply, deliver and install PVC type powerskirting installed surface on wall surface, bricking, concrete, desktop,etc. The powerskirting shall be suitable for low voltage(600/1000V) conductors and 16A, 250V switched socket outlets well as for . telecommunication, data and power points. The powerskirting shall be supplied complete with all covers, necessary bends, elbows, corner pieces, tees, droppers, end caps and all other necessary fittings, fixtures and accessories required for the works. All outlets(sso), telephone, data, power, etc shall also be installed complete with covers, cradles, yokes, etc to complete the works. The powerskirting shall be as Legrand (Colour White) or equal approved. All outlets shall also be of the Legrand range or equal approved and compatible with the powerskirting. POWERSKIRTING					
L	1	Two Compartment with cover and accessories, etc	m	1			
L	2	Three Compartment with cover and accessories, etc	m	1			
		POWERSKIRTING OUTLETS					
L	3	16A, Single switched socket outlet - Normal - White	No	1			
L	4	16A, Single switched socket outlet - Dedicated - RED	No	1			
L	5	16A, Single switched socket outlet - UPS - Blue	No	1			
L	6	RJ11 Telephone outlets	No	1			
L	7	RJ45 Data outlets	No	1			
L	8	Blank Outlets	No	1			
		ACCESSORIES The following accessories are to be supplied, delivered and installed for existing powerskirting that require damaged, missing or replacements. These items however will form part of the costing per m length of new powerskirting systems and as such will not be paid for separately with the exception of the internal divider.					
L	9	Elbows	Item	1			
L	10	Internal/External bends	Item	1			
L	11	End Caps	Item	1			
L	12	Internal divider	m	1			
		POWERSKIRTING, OUTLETS & ACCESSORIES					
		TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
M		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 13 OF 19 SWITCHED SOCKET OUTLETS, ENCLOSURES & ACCESSORIES STEEL COVER TYPE All switches shall be suitable for mounting in 100 x 100 x 50mm boxes and shall comply with SANS 164 and shall bear the SANS mark. The switches shall be rated 16A, 250V. The switches shall be complete with a white switch/s on yoke, SS screws and WHITE STEEL coverplates(SANS 1084). The switch shall include all necessary accessories to complete the works. The switch shall be installed into existing extension boxes or into new galvanised steel boxes. The galvanised steel boxes are measured elsewhere. The switches shall be as per Crabtree, Classic Range or equal approved.					
	M 1	16A, Single switched socket outlet	No	1			
	M 2	16A, Double switched socket outlet	No	1			
	M 3	16A, Single switched socket outlet - Dedicated - RED	No	1			
		Switched socket outlet on 100 x 50 x 50mm extension boxes					
	M 4	16A, Single switched socket outlet	No	1			
	M 5	16A, Single switched socket outlet - Dedicated - RED	No	1			
		PLASTIC COVER TYPE All switches shall be suitable for mounting in 100 x 50 x 50mm boxes and shall comply with SANS 1664 and shall bear the SANS mark. The switches shall be rated 16A, 250V. The switches shall be complete with a white switch/s on yoke, SS screws and WHITE PLASTIC coverplates. The switches shall include all necessary accessories to complete the works. The switches shall be installed into existing extension boxes or into new galvanised steel boxes. The galvanised steel boxes are measured elsewhere. The light switches shall be as per Crabtree, Classic Range or equal approved.					
		Carried to Collection Page 72 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
M	6	16A, Single switched socket outlet	No	1			
M	7	16A, Double switched socket outlet	No	1			
M	8	16A, Single switched socket outlet - Dedicated - RED	No	1			
M	9	16A, VETi 2 Double RSA & Double RSA V-Slim Socket Outlet - White	No	1			
M	10	16A, VETi 2 Switched Socket with Single RSA & 3 x RSA V-Slim - White	No	1			
		Switched socket outlet on 100 x 50 x 50mm extension boxes					
M	11	16A, Single switched socket outlet	No	1			
M	12	16A, Single switched socket outlet - Dedicated - RED	No	1			
		INDUSTRIAL SWITCHED SOCKET OUTLETS					
		All switches shall be suitable for mounting in 119 x 83mm boxes and shall comply with SANS 1664 and shall bear the SANS mark. The switches shall be rated 16A, 250V.					
		The switches shall be complete with a white switch/s on yoke and steel coverplates(White or Orange).					
		The switch shall include all necessary accessories to complete the works.					
		The switches shall be installed complete with extension boxes.					
		The switches shall be as per Crabtree, Classic Range or equal approved.					
		STEEL TYPE					
M	13	16A, Single switched socket outlet	No	1			
M	14	16A, Double switched socket outlet	No	1			
		INDUSTRIAL WATER PROOF LIGHT SWITCHES					
		All switches shall be suitable for mounting in 119 x 83mm weatherproof surface boxes and shall comply with SANS 1664 and shall bear the SANS mark.					
		The switches shall be rated 16A, 250V.					
		The switches shall be complete with a white switch/s on yoke and coverplates(White or Orange).					
		The switch shall include all necessary accessories to complete the works.					
		The switches shall be installed complete with extension boxes.					
		The light switches shall be as per Crabtree, Classic Range or equal approved.					
		Carried to Collection Page 72 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
M	15	STEEL TYPE 16A, Single switched socket outlet	No	1			
M	16	PLASTIC TYPE 16A, Single switched socket outlet	No	1			
M	17	General Snapper - FBLP 31 - 8 way multiplug(4 x 16A, 4 x 5A, 0.5m cord) with surge protection	No	1			
M	18	5A plugtops	No	1			
M	19	16A plugtops - White	No	1			
M	20	16A plugtops - Red	No	1			
M	21	16A plugtops - Blue	No	1			
		GENERAL INDUSTRIAL SWITCHED SOCKET OUTLETS AND PLUG TOPS According to SANS / IEC 60309-1+2, 1999 PLUGS AND SOCKETS The units shall bear the SABS authorisation mark CEE ROUND TYPE PLUGS & SOCKETS: MOULDED The outlets shall be as per Powermite or equal approved.					
M	22	Ref Code: A3001: 250V, 32A, IP67 switched socket outlet	No	1			
M	23	Ref Code: A0138: 250V, 32A, IP67 moulded plugtop	No	1			
M	24	Ref Code: A3002: 400V, 16A, 4 PIN, IP67 switched socket outlet	No	1			
M	25	Ref Code: A0140: 400V, 16A, 4 PIN, IP67 moulded plugtop	No	1			
M	26	Ref Code: A3009: 400V, 32A, 5 PIN, IP67 switched socket outlet	No	1			
M	27	Ref Code: A0135: 400V, 32A, 5 PIN, IP67 moulded plugtop	No	1			
M	28	Ref Code: A3102: 400V, 63A, 5 PIN, IP67 switched socket outlet	No	1			
M	29	Ref Code: A0134: 400V, 63A, 5 PIN, IP67 moulded plugtop	No	1			
		EXTENSION BOXES All extension boxes shall be of the galvanised steel type and shall be of 1mm thickness. The boxes shall be suitable for standard switches(lights and plugs) application. The boxes shall be in accordance with SANS 1085 and the plates with SANS 1084					
M	30	100 x 100 x 50mm	No	1			
M	31	100 x 50 x 50mm	No	1			
		Carried to Collection Page 72 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		EXTENSION BOXES All PVC extension boxes shall be suitable for standard switches (lights and plugs) application. The boxes shall be in accordance with SANS 1085 and the plates with SANS 1084 The boxes shall be of ALLBRO type or equal approved.					
M	32	Ref Code: 04 - 788: Box: H62 x W107 x D51mm	No	1			
M	33	Ref Code: 04 - 789: Box: H109 x W108 x D51mm	No	1			
		BLANK COVER PLATES - WHITE STEEL TYPE					
M	34	100 x 100 x 50mm	No	1			
M	35	100 x 50 x 50mm	No	1			
		PLASTIC TYPE					
M	36	100 x 100 x 50mm	No	1			
M	37	100 x 50 x 50mm	No	1			
		ELECTRICAL YORK BOXES The electrical york(installation enclosure) boxes shall be of the outdoor weatherproof socket outlet enclosure type. The box shall be suitable for surface or semi-flush installation. The box is to have a sliding lid which is capable of being closed while the plug is in the socket. The box shall be constructed of polyester material(DMC). The boxes shall be of ABB/ALLBRO type or equal approved.					
M	38	100 x 100mm type box	No	1			
M	39	100 x 50mm type box	No	1			
		ELECTRICAL METER BOXES: YORK TYPE SINGLE PHASE - SMB The electrical meter york(installation enclosure) boxes shall be of the outdoor weatherproof single kwh meter enclosure type. The box shall be suitable for standard kWh meter. The mounting shall be, surface or semi-flush installation. It shall have square or triangular securing screw and a stand off for circuit breaker , a circuit breaker reset rod and pole mount brackets. ,Material - Polyester (DMC) The boxes shall be of ABB/ALLBRO type or equal approved.					
M	40	Single Phase Meter Box - SMB	No	1			
		Carried to Collection Page 72 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	GENERAL: WEATHERTIGHT BOXES General purpose weatherproof connection/enclosures. The box shall be suitable for surface or semi-flush installation. The box is to have a sliding lid which is capable of being closed while the plug/cable is in the socket. To include a Device plate in DMC and pole mount brackets. Housing Material - Polyester (DMC) The boxes shall be of ABB/ALLBRO type or equal approved.					
M 47	U2 Range	No	1			
M 48	U3 Range	No	1			
M 49	U4 Range	No	1			
M 50	U5 Range	No	1			
M 51	U6 Range	No	1			
M 52	U7 Range	No	1			
M 53	U8 Range	No	1			
	GENERAL: WEATHERTIGHT BOXES General purpose weatherproof connection/enclosures. The box shall be suitable for surface or semi-flush installation. The box is to have a sliding lid which is capable of being closed while the plug/cable is in the socket. To include a Device plate in CHIPBOARD and pole mount brackets. Housing Material - Polyester (DMC) The boxes shall be of ABB/ALLBRO type or equal approved.					
M 54	U2 Range	No	1			
M 55	U3 Range	No	1			
M 56	U4 Range	No	1			
M 57	U5 Range	No	1			
M 58	U6 Range	No	1			
M 59	U7 Range	No	1			
M 60	U8 Range	No	1			
	Carried to Collection Page 72 EE					

Item	Description					Amount
	<p>ELECTRICAL WORKS</p> <p>BILL OF QUANTITIES: BILL NO 13 OF 19</p> <p>COLLECTION</p> <p>SWITCHED SOCKET OUTLETS,</p> <p>ENCLOSURES & ACCESSORIES</p> <p>Page 66 EE</p> <p>Page 67 EE</p> <p>Page 68 EE</p> <p>Page 69 EE</p> <p>Page 70 EE</p> <p>Page 71 EE</p> <p>SWITCHED SOCKET OUTLETS,</p> <p>ENCLOSURES & ACCESSORIES:</p> <p>TOTAL CARRIED TO BILL SUMMARY Page 92 EE</p>					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
N		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 14 OF 19 GEYSER SPARES & ACCESSORIES Supply, deliver and install domestic geyser spares and accessories. The units shall be suitable for application at 250V, 50Hz and shall bear the SANS safety mark and in accordance with SANS 10254 Geyser Installation Specifications. The works shall include for the isolation, disconnection & removal of the existing equipment and replacement with the new equipment. It shall also include the disconnection and reconnection of the geyser. The equipment shall include all necessary fittings, fixtures and accessories to complete the works. The equipment shall be as per Kwikot or equal approved. SINGLE PHASE					
	N 1	2kW spiral element with thermostat pocket	No	1			
	N 2	3kW spiral element with thermostat pocket	No	1			
	N 3	4kW spiral element with thermostat pocket	No	1			
	N 4	Thermostat 20A	No	1			
	N 5	2kW Industrial Immersion element with thermostat pocket	No	1			
	N 6	3kW Industrial Immersion element with thermostat pocket	No	1			
	N 7	4kW Industrial Immersion element with thermostat pocket	No	1			
		THREE PHASE					
	N 8	6kW element	No	1			
N		GENERAL					
	N 9	Geyser Gasket	No	1			
		GEYSER SPARES & ACCESSORIES					
		TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
O		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 15 OF 19 HYDROBOILS Supply, deliver and install wall mounted hydroboils. The units shall be suitable for application at 250V, 50Hz and shall bear the SANS safety mark. The units shall be fully automatic, energy efficient, electronic controls, provide instant boiling water, designed to operate within 3°C of boiling point with thermal temperature control, energy conserving tap, two way tap control, steam free, white epoxy coated, concealed plumbing and electrical connections and a flexible 2m electrical cord with plugtop. The equipment shall include all necessary fittings, fixtures and accessories to complete the works. The hydroboils shall be as per Franke or equal approved					
O	1	2.5 litre white epoxy hydroboil	No	1			Rate only
O	2	5 litre white epoxy hydroboil	No	1			Rate only
O	3	7.5 litre white epoxy hydroboil	No	1			Rate only
O	4	10 litre white epoxy hydroboil	No	1			Rate only
O	5	15 litre white epoxy hydroboil	No	1			Rate only
O	6	25 litre white epoxy hydroboil	No	1			Rate only
		The hydroboils shall be as per Kwikot or equal approved					
O	7	2.5 litre white epoxy hydroboil	No	1			Rate only
O	8	5 litre white epoxy hydroboil	No	1			Rate only
O	9	7.5 litre white epoxy hydroboil	No	1			Rate only
O	10	10 litre white epoxy hydroboil	No	1			Rate only
O	11	15 litre white epoxy hydroboil	No	1			Rate only
O	12	25 litre white epoxy hydroboil	No	1			Rate only
		HYDROBOILS					
		TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
P	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 16 OF 19 FANS, DRYERS & EXTRACTORS Supply, deliver and install industrial ceiling and wall fans, wall mounted extractor fans and industrial hand dryers. The units shall be suitable for application at 250V, 50Hz and shall bear the SANS safety mark. The equipment shall include all necessary fittings, fixtures and accessories to complete the works. CEILING FAN The unit shall be a 4 speed, 3 blade industrial ceiling fan with a diameter of 1200/1400mm and a 450mm long down rod. A steel shackle is to be fixed to the upper end of the down rod by means of a nut and bolt which is complete with resilient rubber bush and a 'U' shaped ceiling hook. Both upper and lower fixings on the down rod together with the electrical connections are to be concealed behind plastic canopies. It shall have a permanent capacitor motor with external squirrel cage rotor in a lightweight steel housing. The stator and rotor is to be constructed from high grade silicon steel lamination stampings. The unit shall be complete with surface mounted speed regulator complete with 2 inserts for light switches. The unit shall be as Luft or equal approved.					
	1 1200mm (LCF48) ceiling fan complete with speed regulator	No	1			
	2 1400mm (LCF56) ceiling fan complete with speed regulator	No	1			
	3 4 speed (CF56) regulator	No	1			
Carried to Collection Page 78 EE						

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
P	<p>WALL MOUNTED AIR CIRCULATORS (FAN)</p> <p>The unit shall be a 3 speed, 2 blade industrial wall fan with a diameter of 730mm. The unit shall be robust, reliable, efficient, adjustable height and oscillation, low noise and finished in dark grey paint.</p> <p>The unit shall be complete with a wall arm mounting bracket, fittings, fixtures and accessories for the works.</p> <p>At speed setting 3 the unit shall operate at 1400rpm, 2.95 volume m/sec, 56dBA and 200W.</p> <p>The unit shall be as Luft or equal approved.</p>	No	1			
	<p>4 Wall circulator(FB65) (fan)</p> <p>PROPELLER(EXTRACTOR) FAN</p> <p>The complete fan assembly is to be mounted on an octagonal pressed steel mounting plate.</p> <p>The impeller shall comprise of four heavy gauge pressed steel blades bolted to the die cast aluminium alloy hub, dynamically balanced after assembly.</p> <p>The unit shall have four rigid mild steel arms provided for the fixing of the motor and impeller to the mounting plate by way of special vibration absorbers. The unit shall have a side wire guard to prevent accidental contact and air borne objects from passing through the fan.</p> <p>The unit shall be IP54 rated with sealed for life ball bearings and class 'E' insulation to BS2613/1970.</p> <p>The unit shall be suitable for operation in ambient temperatures between -20°C and 40°C in relative humidity up to 95%.</p> <p>The unit shall be rated at 250V, 50Hz and supplied with a 1m electrical cord.</p> <p>The units, louvres and cowls shall be as Luft or equal approved.</p>					
	<p>5 300mm, (FAC30/4), 130W, 52dBA, Extractor Fan with guard</p>					
	<p>6 400mm, (FAC40/4), 200W, 62dBA, Extractor Fan with guard</p>					
P	<p>LOUVRE SHUTTER</p> <p>7 Louvre shutter for FAC30/4 Extractor Fan</p>	No	1			
P	<p>8 Louvre shutter for FAC40/4 Extractor Fan</p>	No	1			
Carried to Collection Page 78 EE						

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 16 OF 19 COLLECTION FANS, DRYERS & EXTRACTORS Page 75 EE Page 76 EE Page 77 EE					
	FANS, DRYERS & EXTRACTORS					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 17 OF 19 COLLECTION OCCUPANCY SENSORS Page 79 EE Page 80 EE					
	OCCUPANCY SENSORS					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
R		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 18 OF 19 LIGHTNING & SURGE PROTECTION Supply, deliver and install low voltage surge protection equipment and devices. The equipment shall include all necessary fittings, fixtures and accessories to complete the works. BARE COPPER EARTH CABLE Supply, deliver and install low voltage(600/1000V), bare, stranded, compacted, copper conductor cables. Checking of cable and overhead conductor lengths. The Contractor shall check such lengths on site before ordering the cable as he will not be paid for excess cable after the completion of the service. Any allowance for off-cuts shall be made in the unit rates. The final measurements shall be based on the net route length of cables concerned, installed in accordance with the requirements. However, the onus is on the Contractor to prove compliance with the specification. The cabling shall be installed either in excavations, cable trays, trunking, wireways, ground, sleeves, ducts, etc(measured elsewhere) and shall include all necessary fittings, fixtures and accessories required for the works. The cables shall be as per Abedare Cables or equal approved.					
	R 1	70mm ² Bare Copper earth conductor	m	1			
	R 2	70mm ² Insulated Copper earth conductor	m	1			
	R 3	150mm ² Bare Copper earth conductor	m	1			
	R 4	150mm ² Insulated Copper earth conductor	m	1			
		EARTH ROD (Roof Conductor) Supply, deliver and install low voltage(600/1000V), copper clad, 16mm diameter, 1.8m earth rods, SABS approved. The rods shall be complete with all terminations, double nuts, washers, coupling, clamps, etc required for the works.					
	R 5	1.8m Copper Earth Rod	No	1			
	R 6	Extensible copper earth electrodes into ground mech driving, incl cpl driv blt	No	1			
	R 7	50mm ² Aluminium roof conductor insulated on roof including Aluminium fixing accessories	No	1			
		Carried to Collection Page 85 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		GENERAL ITEMS					
R	8	Sealing of joints with Denso tapes	No	1			
		Joining of various round/flat copper conductors by means of bolting, brazing or exothermic bonds					
R	9	Brass clamps termination to copper cable and to the top of the earth electrodes	No	1			
R	10	Bonding of air termination conductor between, roof, gutters, etc	No	1			
R	11	Bi-Metallic test joint between d/c system and earth	No	1			
R	12	Re-inforcing brass bracket complete with galvanised steel wire, U bolt, brass terminal	No	1			
R	13	Lightning protection points test in SIS Duo york box complete with PVC sliding lid, stainless steel screws and engraved cover.	No	1			
R	14	Allow for visiting of the site and the carrying out of the required pre resistivity tests, risk assessments and the issuing of the test results and construction shop drawings to the Engineer prior to the works (earthing & lightning protection system)	Item	1			
R	15	Allow for the testing of the completed system and the issue of a prescribed test certificate.	Item	1			
		SURGE ARRESTORS					
		Supply, deliver and install indoor surge arrestors in existing or new switchboards.					
		The units shall comply with SANS 61643 or VDE 0675.					
		The equipment shall include all necessary fittings, fixtures and accessories to complete the works.					
		The units shall be as Dehn or equal approved.					
		SINGLE PHASE					
		Combined SPDS TYPE 1: Type 1, Class 1					
R	16	Modular combined lightning current and surge arrestor	No	1			
		SINGLE PHASE					
		Combined SPDS TYPE 2: Type 2, Class 2					
R	17	Modular combined lightning current and surge arrestor	No	1			
		THREE PHASE					
		Combined SPDS TYPE 1: Type 1, Class 1					
R	18	Modular combined lightning current and surge arrestor	No	1			
		THREE PHASE					
		Combined SPDS TYPE 2: Type 2, Class 2					
R	19	Modular combined lightning current and surge arrestor	No	1			
		Carried to Collection Page 85 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 18 OF 19 COLLECTION LIGHTNING & SURGE PROTECTION Page 82 EE Page 83 EE Page 84 EE					
	LIGHTNING & SURGE PROTECTION					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
S		ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 19 OF 19 PHOTOVOLTAIC SYSTEMS Supply, deliver and install photovoltaics systems, including all accessories to complete the works in full compliance with applicable SABS or IEC and SANS standards. The technologies of the system must be market related. PV MODULES (inclusive of 25-year reliability and warranty) NB: Min +25 year performance warranty + 10 years equipment guarantee					
S	1	Canadian Solar SuperPower CS6K-305MS 305W Mono-crystalline Solar Panel with Integrated Compatible Power Optimizer, MC4 I/O connectors and all accessories inclusive or Equally Approved	ea	1			
S	2	Canadian Solar KuPower CS3K-320MS 320W Mono-crystalline Solar Panel with Integrated Compatible Power Optimizer, MC4 I/O connectors and all accessories inclusive or Equally Approved	ea	1			
S	3	Canadian Solar HiDM Black CS1H-320MS 320W Mono-crystalline Solar Panel with Integrated Compatible Power Optimizer, MC4 I/O connectors and all accessories inclusive or Equally Approved	ea	1			
S	4	Canadian Solar HiDM Black CS1H-325MS 325W Mono-crystalline Solar Panel with Integrated Compatible Power Optimizer, MC4 I/O connectors and all accessories inclusive or Equally Approved	ea	1			
S	5	Canadian Solar HiDM Black CS1H-330MS 330W Mono-crystalline Solar Panel with Integrated Compatible Power Optimizer, MC4 I/O connectors and all accessories inclusive or Equally Approved	ea	1			
S	6	Canadian Solar 330W Polycrystalline 72cells 35mm frame Polycrystalline Solar Panel with Integrated Compatible Power Optimizer, MC4 I/O connectors and all accessories inclusive or Equally Approved	ea	1			
S	7	Canadian Solar 265W Polycrystalline 60cells 40mm frame Polycrystalline Solar Panel with Integrated Compatible Power Optimizer, MC4 I/O connectors and all accessories inclusive or Equally Approved	ea	1			
		POWER OPTIMIZER NB: Min 25-year performance warranty + 10-years equipment guarantee (continue on next page)					
		Carried to Collection Page 91 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
S	8	Solaredge or equally approved UV Resistance Power Optimizer Module P300 (for 60-cell modules) including MC4 Input/Output Connectors and Double Insulated Wire	ea	1			
S	9	Solaredge or equally approved UV Resistance Power Optimizer Module P370 (for high power 60 / 72 cell modules) including MC4 Input/Output Connectors and Double Insulated Wire	ea	1			
S	10	Solaredge or equally approved UV Resistance Power Optimizer Module P404 (for 60 / 72 cell short strings) including MC4 Input/Output Connectors and Double Insulated Wire	ea	1			
S	11	Solaredge or equally approved UV Resistance Power Optimizer Module P730 (for 2x 72-cell modules) including MC4 Input/Output Connectors and Double Insulated Wire	ea	1			
		INVERTORS (inclusive of 25-year reliability and warranty)					
S	12	Solaredge or equally approved Grid-Tied Three Phase SE10K 10kW String Inverter with Synergy Technology including Anti-Islanding Protection	ea	1			
S	13	Solaredge or equally approved Grid-Tied Three Phase SE33.3K 33.3kW String Inverter with Synergy Technology including Anti-Islanding Protection	ea	1			
S	14	Solaredge or equally approved Grid-Tied Three Phase SE50K 50kW String Inverter with Synergy Technology including Anti-Islanding Protection	ea	1			
S	15	Solaredge or equally approved Grid-Tied Three Phase SE60K 60kW String Inverter with Synergy Technology including Anti-Islanding Protection	ea	1			
S	16	Solaredge or equally approved Grid-Tied Three Phase SE82.5K 82.5kW String Inverter with Synergy Technology including Anti-Islanding Protection	ea	1			
S	17	Solaredge or equally approved Off-Grid Three Phase SE10K 10kW String Inverter with Synergy Technology including Protection	ea	1			
S	18	Solaredge or equally approved Off-Grid Three Phase SE33.3K 33.3kW String Inverter with Synergy Technology including Protection	ea	1			
S	19	Solaredge or equally approved Off-Grid Three Phase SE50K 50kW String Inverter with Synergy Technology including Protection	ea	1			
S	20	Solaredge or equally approved Off-Grid Three Phase SE60K 60kW String Inverter with Synergy Technology including Protection	ea	1			
S	21	Solaredge or equally approved Off-Grid Three Phase SE82.5K 82.5kW String Inverter with Synergy Technology including Protection	ea	1			
		Carried to Collection Page 91 EE					

Item	Description	Unit	Qty			
	MISCELENIIOUS					
	NB: Min 25-year performance warranty + 10-years equipment guarantee					
S 22	SolarEdge Module temperature sensor (SE1000-SEN-TMOD-S2) or Equally approved	ea	1			
S 23	SolarEdge Ambient temperature sensor (SE1000-SEN-TAMB-S2) or Equally approved	ea	1			
S 24	SolarEdge Irradiance sensor (SE1000-SEN-IRR-S1) or Equally approved	ea	1			
S 25	SolarEdge Wind sensor (SE1000-SEN-WIND-S1) or Equally approved	ea	1			
S 26	ARTsolar 100Ah 12V GEL Deep-cycle Battery or Equally approved	ea	1			
S 27	ARTsolar 200Ah 12V GEL Deep-cycle Battery or Equally approved	ea	1			
S 28	SolarEdge StoreEdge Interface SEST1-S1 or Equally approved	ea	1			
S 29	SolarEdge StoreEdge Interface SEST1-S2 or Equally approved	ea	1			
S 30	SolarEdge StoreEdge Interface SEST1-S4 or Equally approved	ea	1			
S 31	Victron Energy or Equally approved SmartSolar Charge Controllers with load output MPPT BlueSolar 150/85	ea	1			
S 32	Victron Energy or Equally approved SmartSolar Charge Controllers with load output EasySolar 12/1600/70	ea	1			
S 33	Victron Energy or Equally approved SmartSolar Charge Controllers with load output EasySolar 24/3000/70-50 MPPT 150/70	ea	1			
S 34	Victron Energy or Equally approved SmartSolar Charge Controllers with load output EasySolar 48/5000/70-100 MPPT 150/100	ea	1			
	Carried to Collection Page 91 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	CABLES Cable installation Incl U-clamps, tag numbers and cable straps. Supply deliver to site and store 1000/600 volt Cu/PVC/SWA/PVC/ECC cables. Install, rack, strap and testing of cables as per specification including clamps, ties and cable numbering system. Rates to include for wastage. Contractor will only be reimbursed for installed cable measured on site between terminations. Cable bonding of all Earth Continuity Conductors from the incoming and outgoing cables will be properly crimped into cable lugs and bolted to their respective earth bars. NB: All cables installed in outdoors environment shall be UV resistance and shall have MC4 Input/Output connectors					
S 35	Lapp Ölflex Solar XLR 4mm² single core DC cable	ea	1			
S 36	Lapp Ölflex Solar XLR 6mm² single core DC cable	m	1			
S 37	Lapp Ölflex Solar XLR 10mm² single core DC cable	m	1			
S 38	Lapp Ölflex Solar XLR 16mm² single core DC cable	m	1			
S 39	LV AWA 25mm² PVC copper single core DC cable	m	1			
S 40	LV AWA 35mm² PVC copper single core DC cable	m	1			
S 41	16mm² x 4 core copper PVC/SWA+ECC 600/1000V + 10mm² Earth Wire	m	1			
S 42	25mm² x 4 core copper PVC/SWA+ECC 600/1000V + 16mm² Earth Wire	m	1			
S 43	50mm² x 4 core copper PVC/SWA+ECC 600/1000V + 25mm² Earth Wire	m	1			
S 44	70mm² x 4 core copper PVC/SWA+ECC 600/1000V + 35mm² Earth Wire	m	1			
	Carried to Collection Page 91 EE					

	Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
		TERMINATIONS					
		Cable terminations & Joints - Incl glands, cable numbers, wire numbers, lugs. For PVC/SWA/PVC/ECC cables, shall include supply installation and testing of the IP 65 glands with corrosion guard, making -off the cable, gland plate, switchgear or appliance and final connection of cable tails into board or terminals. NB: All cables terminations installed in outdoor environment shall be UV resistance and shall have MC4 Input/Output connectors					
S	45	Lapp Ölflex Solar XLR 4mm² single core DC cable	ea	1			Rate only
S	46	Lapp Ölflex Solar XLR 6mm² single core DC cable	ea	1			Rate only
S	47	Lapp Ölflex Solar XLR 10mm² single core DC cable	ea	1			Rate only
S	48	Lapp Ölflex Solar XLR 16mm² single core DC cable	ea	1			Rate only
S	49	LV AWA 25mm² PVC copper single core DC cable	ea	1			Rate only
S	50	LV AWA 35mm² PVC copper single core DC cable	ea	1			Rate only
S	51	16mm² x 4 core copper PVC/SWA+ECC 600/1000V + 10mm² Earth Wire	ea	1			Rate only
S	52	25mm² x 4 core copper PVC/SWA+ECC 600/1000V + 16mm² Earth Wire	ea	1			Rate only
S	53	50mm² x 4 core copper PVC/SWA+ECC 600/1000V + 25mm² Earth Wire	ea	1			Rate only
S	54	70mm² x 4 core copper PVC/SWA+ECC 600/1000V + 35mm² Earth Wire	ea	1			Rate only
		TESTING, MONITORING and COMMISSIONING					
S	55	Testing, Monitoring and Commission PV System to Remote Monitoring Software and Provide As-Built Maintenance Manuals and COC's in accordance to the applicable SANS for the complete installation	ea	1			Rate only
		Carried to Collection Page 91 EE					

Item	Description	Unit	Qty	Supply & Deliver Rate	Install Rate	Amount
	ELECTRICAL WORKS BILL OF QUANTITIES: BILL NO 19 OF 19 COLLECTION PHOTO-VOLTAIC SYSTEM Page 86 EE Page 87 EE Page 88 EE Page 89 EE Page 90 EE					
	PHOTOVOLTAIC SYSTEMS					
	TOTAL CARRIED TO BILL SUMMARY Page 92 EE					

	<u>Page</u>	<u>Description</u>	<u>Amount</u>
		<u>SCHEDULE OF RATES - BILL SUMMARY</u>	
A	1	BILL NO 1: ARTISAN	
B	2	BILL NO 2: CERTIFICATE OF COMPLIANCE	
C	13	BILL NO 3: CIRCUIT BREAKERS, SWITCHGEAR, DIST. BOARD & ASSOCIATED EQUIPMENT	
D	16	BILL NO 4: CABLE TRENCHING	
E	21	BILL NO 5: CABLE RETICULATION	
F	27	BILL NO 6: WIREWAYS & ACCESSORIES	
G	31	BILL NO 7: WIRING	
H	46	BILL NO 8: LUMINAIRES	
I	55	BILL NO 9: LAMPS	
J	62	BILL NO 10: LUMINAIRE ACCESSORIES	
K	62	BILL NO 11: LIGHT SWITCHES	
L	63	BILL NO 12: POWERSKIRTING	
M	70	BILL NO 13: SWITCHED SOCKET OUTLETS, ENCLOSURES & ACCESSORIES	
N	71	BILL NO 14: GEYSER SPARES & ACCESSORIES	
O	72	BILL NO 15: HYDROBOIL	
P	76	BILL NO 16: FANS, DRYERS & ACCESSORIES	
Q	79	BILL NO 17: OCCUPANCY SENSORS	
R	83	BILL NO 18: LIGHTNING & SURGE PROTECTION	
S	86	BILL No 19: PHOTOVOLTAIC SYSTEMS	
		TOTAL EXCLUDING VAT (CARRIED TO FINAL SUMMARY)	
		15% VAT	
		TOTAL INCLUDING 15% VAT	