

Electrical Engineering Department

ANNEXURE G



TRANSNET NATIONAL PORTS AUTHORITY
(A division of Transnet Ltd)
ELECTRICAL ENGINEERING

**SUPPLY AND DELIVERY OF ELECTRICAL COMPONENTS AND MAINTENANCE MATERIAL
FOR THE STORES AT POWER SUPPLIES AND SERVICES DEPOT IN THE PORT OF DURBAN
ON AN "AS AND WHEN REQUIRED" BASIS FOR A PERIOD OF THIRTY SIX (36) MONTHS**

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1. EXECUTIVE OVERVIEW

This contract provides for the supply and delivery of Electrical Components and Maintenance Material in the Port of Durban on an "as and when required" basis for a period of thirty six (36) months.

The scope of this contract includes but is not limited to the following items of work:

- Fully understanding and complying with all the requirements of this contract,
- Supply and deliver quality electrical components that are SABS Approved,
- Provide transport to source and deliver the required material
- Offload all material on delivery
- Provide compliance certification for all material delivered, this includes technical datasheets, material safety datasheets and relevant test reports.

2. SPECIFICATIONS OF THE GOODS

All electrical components to be supplied under this contract shall be designed and manufactured in accordance with the requirements of the latest standards referenced hereinafter and in accordance with the requirements of this specification. The electrical components shall be designed to operate satisfactory under the site conditions specified in this document and under normal and abnormal conditions.

Service Conditions:

The electrical components shall be rated for continuous operation under the following conditions:-

- Altitude - Sea level
- Ambient air temperature - Max. 40 °C; Min. -5 °C
- Humidity - As high as 86%
- Lightning conditions - Severe
- Electrical supply - L.V. = 230 / 1000 Volts (+/- 5%)
- M.V. = 6.6/11/ 33 kV (+/- 5%)

Applicable Standards:

The following publications are referred to herein:

SANS 1507-3	Electric cables with extruded solid electric insulation for fixed installations (300/ 500 V to 1900/ 3300 V), Part 3: PVC Distribution Cables
SANS 1574-1	Electric flexible cables with solid extruded dielectric insulation, Part 1: General
SANS 1574-3	Electric flexible cables with solid extruded dielectric insulation, Part 3: PVC insulated cables for industrial use

SANS 1332	Accessories for medium-voltage XLPE and impregnated paper insulated power cables
SANS 1803-1	Lugs and ferrules for insulated electric cables, Part 1: Copper conductors
NRS 075	Mechanical Torque Shear connectors for medium voltage application
SANS 164-0	Plug and socket-outlet systems for household and similar purposes for use in South Africa
SANS 122	Pressure-sensitive adhesive tapes for electrical purposes
SANS 61 238-1	Compression and mechanical connectors for power cables for rated voltages up to 30 kV ($U_m = 36$ kV), Part 1: Test methods and requirements
SANS 60 884	Plugs and socket-outlets for household and similar purposes, Part 1: General Requirements

2.1. PVC Adaptor Conduit

2.1.1. 20 mm Female Adaptor

Adaptor with female thread and male bush for connection of rigid or flexible conduits to junction boxes and enclosures. Temperature range -25 °C to +90 °C. The adaptor material is Polyvinyl Chloride (PVC), 20 mm in diameter and white in colour.

2.1.2. 20 mm Male Adaptor

Adaptor with a threaded lock ring and male bush for connection of rigid or flexible conduits to junction boxes and enclosures. Temperature range -25 °C to +90 °C. The adaptor material is Polyvinyl Chloride (PVC), 20 mm in diameter and white in colour.

2.2. Conduit Spacer Bar Saddle

2.2.1. Spacer Bar Saddle

Spacer bar saddle used for fixing of conduit to the wall. The spacer bar saddle shall be manufactured from Polyvinyl Chloride (PVC), 20 and 25 mm in diameter and white in colour.

2.3. Conduit Bends

2.3.1. Solid Bend

20 mm, PVC solid bend used for re-routing electrical wiring to its required terminations. The solid bend material shall be Polyvinyl Chloride, 20 mm in diameter and white in colour.

2.3.2. Inspection Bend

Inspection bend cable conduit fitting with a nominal size of 20 mm in diameter. The inspection bend consist of an inspection window on the bend that opens, allowing easy access for cable installation.

2.4. Conduits

2.4.1. PVC Conduit

Rigid PVC pipe with a 20/ 25 mm diameter, used to convey electrical wiring from one designated point to another.

2.4.2. Metal Flexible Conduit

Metal flexible cable conduit with a nominal diameter of 20 mm and zinc plated. IP 40 rated conduit for high temperature continuous flexing applications requiring high mechanical protection. Operating temperature range shall be – 50 °C to + 300 °C.

2.5. Conduit Boxes

2.5.1. Conduit Box 1 Way

One (1) way conduit box made of PVC with a nominal size of 20 mm diameter. The conduit box is white in color with a temperature range of - 25 °C to +90 °C.

2.5.2. Conduit Box 3 Way

Three (3) way conduit box used to re-route electrical wiring to its required terminations. The conduit box is made of PVC with a nominal size of 20 mm diameter. The conduit box is white in color with a temperature range of - 25 °C to +90 °C.

2.5.3. Conduit Box 4 Way

Four (4) way conduit box used to re-route electrical wiring to its required terminations. The conduit box is made of PVC with a nominal size of 20 mm diameter. The conduit box is white in color with a temperature range of - 25 °C to +90 °C.

2.5.4. Conduit Box 2 Way Angle

Two (2) way angle conduit box used to re-route electrical wiring to its required terminations. The conduit box is made of PVC with a nominal size of 20 mm diameter. The conduit box is white in color with a temperature range of - 25 °C to +90 °C.

2.5.5. Through Circular Conduit Box

White through circular box manufactured from PVC with a nominal size of 20 mm diameter. Temperature range of - 25 °C to +90 °C.

2.5.6. Conduit Box 8 Way

Eight (8) way conduit box used to re-route electrical wiring to its required terminations. The conduit box is made of PVC with a nominal size of 20 mm diameter. The conduit box is white in color with a temperature range of - 25 °C to +90 °C.

2.5.7. PVC Extension Boxes

2.5.7.1. (4×4) PVC extension box used for fixing of socket outlets, isolators, switches and circuits.

2.5.7.2. (2×4) Surface Mount PVC extension box used for fixing of switches and circuits.

2.5.8. Surface Mounted Weatherproof Extension Box

Surface-mounted extension box to accommodate 4×4 weatherproof isolator/ switch socket outlet. The enclosure shall be weatherproof with an IP rating of 55. The enclosure shall be manufactured of fibreglass.

2.6. Enclosures

2.6.1. UT3 General Purpose Enclosure

Enclosure box with a screw/ slide lid. The enclosure shall be UV resistant and IP 66/ IP 54 rated enclosure. The enclosure shall be white and manufactured from Glass Filled Reinforced Polyester (GRP).

2.6.2. York Electrical Enclosure

Orange durable electrical enclosure manufactured from steel with adequate capacity. The enclosure is IP 65 rated enclosure.

2.7. Low Voltage Cables

2.7.1. All low voltage cables are to be designed and manufactured in accordance with SANS 1507 and SANS 1574 standard codes of practice and shall be of 300/ 500 V or 600/ 1000 V with stranded copper conductors unless otherwise specified. The cables supplied shall bear the SABS mark.

2.7.2. PVC General Purpose Wire

The wires shall be of high conductivity annealed stranded copper conductors to SANS 1411 Part 1. Insulated with PVC and skin colored in plain colors to SANS 1411 Part 2. Cables shall be manufactured to SANS 1507 Part 3.

2.7.3. The following wires are to be supplied:

- 1.5 mm², single core, 600/ 1000 V, Black, PVC insulated wire
- 1.5 mm², single core, 600/ 1000 V, Red , PVC insulated wire
- 2.5 mm², single core, 600/ 1000 V, Black, PVC insulated wire
- 2.5 mm², single core, 600/ 1000 V, Red, PVC insulated wire
- 2.5 mm², single core, 600/ 1000 V, Green, PVC insulated wire
- 4 mm², single core, 600/ 1000 V, Black, PVC insulated wire
- 4 mm², single core, 600/ 1000 V, Red, PVC insulated wire
- 4 mm², single core, 600/ 1000 V, PVC insulated wire
- 4 mm², single core, 600/ 1000 V, PVC insulated wire
- 6 mm², single core, 600/ 1000 V, Black, PVC insulated wire
- 6 mm², single core, 600/ 1000 V, Red, PVC insulated wire

- 6 mm², single core, Copper Earth Wire, Green, PVC insulated wire
- 10 mm², single core, Copper Earth Wire, Green, PVC insulated wire
- 95 mm², single core, 600/ 1000 V, PVC insulated wire

2.7.4. Silicone Cabtyre Cable

The cable shall be of high conductivity stranded flexible copper conductors to SANS 1411 Part 1. Insulated with silicone rubber and sheathed with silicone rubber to SANS 1574.

- 1.5 mm², 3 core (Blue, Brown, and Yellow/ Green), silicone rubber insulated

2.7.5. Cabtyre Cable

High conductivity bunched plain flexible copper conductors to SANS 1411 Part 1. Insulated and colour coded with general purpose flexible grade PVC to SANS 1411 Part 2. Cores twisted together and sheathed with a flexible grade PVC.

- 0.75 mm², 3 Core (Blue, Brown and Yellow/Green), PVC insulated
- 1.5 mm², 3 Core (Blue, Brown and Yellow/Green), PVC insulated
- 2.5 mm², 3 Core (Blue, Brown and Yellow/Green), PVC insulated

2.7.6. Surfex Cable

The surfex cables shall have copper conductors that are in accordance to SANS 1411 Part 1, PVC insulated to SANS 1411 Part 2, laid up with a bare tinned copper earth wire in contact with a longitudinal aluminum laminated, UV stable PVC sheathed to SANS 1411 Part 2.

- 1.5 mm², 300/ 500 V, 4 Core (Red, Yellow, Blue and Black), White, PVC sheathed round surfex cable
- 1.5 mm², 600/ 1000 V, 2 Core (Red and Black), White, PVC sheathed round surfex cable
- 2.5 mm², 300/ 500 V, 4 Core (Red, Yellow, Blue and Black), PVC sheathed round surfex cable
- 2.5 mm², 300/ 500 V, 4 Core (Red, Yellow, Blue and Black), White, PVC sheathed round surfex cable
- 2.5 mm², 600/ 1000 V, 2 Core (Red and Black), PVC sheathed round surfex cable
- 4 mm², 300/ 500 V, 2 Core (Red and Black), White, PVC sheathed round surfex cable

2.7.7. Low Voltage PVC SWA PVC Cables

Mains low voltage cables are to be manufactured in accordance with SANS 1507 Part 3. The cables shall be stranded copper conductors, each core PVC insulated and coloured, PVC bedded, Steel Wire Armoured and PVC sheathed 600/ 1000 V cables.

- 4 mm², 4 core, PVC/ PVC/ SWA/ PVC Copper ECC cable
- 6 mm², 4 core, PVC/ PVC/ SWA/ PVC Copper ECC cable
- 10 mm², 4 core, PVC/ PVC/ SWA/ PVC Copper ECC cable
- 16 mm², 4 core, PVC/ PVC/ SWA/ PVC Copper ECC cable
- 35 mm², 4 core, PVC/ PVC/ SWA/ PVC Copper ECC cable

2.8. Cable Joint Kits

- 2.8.1. All cable joint kits are to be manufactured in accordance with SANS 1332 standard code of practice and shall be of heat shrink technology with elastomeric joint components that have been extruded, beamed and expanded polyolefin material. All joint kits shall be the anti-electrolysis type joint kits.
- 2.8.2. All joint kits shall be of the filled type to provide a longitudinal water block.
- 2.8.3. All joint kits shall be supplied with the required cleansing solvents, cloth and abrasives.
- 2.8.4. Jointing instructions shall clearly indicate the maximum length and diameter of the ferrule (ferrules) that may be used with the joint.
- 2.8.5. The joint kits shall be designed to accommodate crossing of cable cores within the joint. The method of core crossing shall be indicated in the jointing instructions.
- 2.8.6. All joint kits shall be supplied with a fiber reinforced heat shrinkable re-jacketing wraparound for extra mechanical protection.
- 2.8.7. The following joint kits are to be supplied:
 - 6.35/ 11 kV, 3 Core, PILC, 16 to 35 mm², filled, anti-electrolysis joint kit
 - 19/ 33 kV, 3 Core, 400 mm², XLPE to PILC, filled, anti-electrolysis transition joint kit
 - 3.8/ 6.6 kV to 6.35/ 11 kV, 3 Core, XLPE, 25 to 70 mm², filled, anti-electrolysis joint kit
 - 3.8/ 6.6 kV to 6.35/ 11 kV, 3 Core, PILC, 50 to 95 mm², filled, anti-electrolysis joint kit
 - 3.8/ 6.6 kV to 6.35/ 11 kV, 3 Core, PILC, 185 to 300 mm², filled, anti-electrolysis joint kit
 - 6.35/ 11 kV, 3 Core, XLPE, 16 to 35 mm², filled, anti-electrolysis joint kit
 - 6.35/ 11 kV, 3 Core, XLPE, 95 to 185 mm², filled anti-electrolysis joint kit
 - 6.35/ 11 kV, 3 Core, 95 to 185 mm², PILC to XLPE, filled, anti-electrolysis transition joint kit
 - 19/ 33 kV, 3 Core, 400 mm², PILC, filled, anti-electrolysis joint kit
 - 6.35/ 11 kV, 3 Core, PILC, 95 to 185 mm², filled, anti-electrolysis joint kit

2.9. Miniature Circuit Breakers (MCB's)

All MCB's to be supplied are to comply with SANS 156, SANS 556-1, and SANS 60947-2 standard codes of practice and shall be Selectivity Category A circuit breakers.

- 2.9.1. All MCB's and Earth Leakage Protection units shall be samite type unless otherwise specified.
- 2.9.2. The rated operational voltage shall be 230 V AC for single pole MCB's and 400 V AC for triple pole MCB's.
- 2.9.3. The rated current shall be as specified for each circuit breaker.
- 2.9.4. The minimum rated ultimate short circuit breaking capacity of the MCB's shall be 3 kA, 5 kA, or 6 kA as specified for each circuit breaker.
- 2.9.5. All MCB's shall be hydraulic-magnetic type circuit breakers with operating characteristic of either Curve B/ Curve 2 unless otherwise specified.

2.9.6. The technical data of the MCB's to be supplied shall be as indicated on the table below.

No.	Circuit Breaker Type	Rated Current (A)	Rated Voltage (V)	Breaking Capacity (kA)	No. of Poles	Type of Curve
29	Hydraulic-Magnetic Samite type	20	400	6	3	Curve B/ Curve 2
30	Hydraulic-Magnetic Samite type	15	230	3	1	Curve B/ Curve 2
31	Hydraulic-Magnetic Samite type	30	400	5	3	Curve B/ Curve 2
32	Hydraulic-Magnetic Samite type	60	400	5	3	Curve B/ Curve 2
33	Hydraulic-Magnetic Samite type	30	230	3	1	Curve B/ Curve 2
34	Hydraulic-Magnetic Samite type	30	230	5	1	Curve B/ Curve 2
35	Hydraulic-Magnetic Samite type	50	400	5	3	Curve B/ Curve 2
36	Hydraulic-Magnetic Samite type	40	230	3	1	Curve B/ Curve 2
37	Hydraulic-Magnetic Samite type	5	230	5	1	Curve B/ Curve 2
38	Hydraulic-Magnetic Samite type	80	400	5	3	Curve B/ Curve 2
39	Hydraulic-Magnetic Samite type	15	230	6	1	Curve B/ Curve 2
40	Hydraulic-Magnetic Samite type	60	230	5	1	Curve B/ Curve 2
41	Hydraulic-Magnetic Samite type	20	230	5	1	Curve B/ Curve 2
42	Hydraulic-Magnetic Samite type	25	400	5	3	Curve B/ Curve 2
43	Hydraulic-Magnetic Samite type	10	230	5	1	Curve B/ Curve 2

75	Hydraulic-Magnetic Samite type	10	230	3	1	Curve B/ Curve 2
76	Hydraulic-Magnetic Samite type	20	230	6	1	Curve B/ Curve 2
77	Hydraulic-Magnetic Samite type	20	230	3	1	Curve B/ Curve 2
78	Hydraulic-Magnetic Samite type	10	230	6	1	Curve B/ Curve 2
79	Hydraulic-Magnetic Samite type	5	230	3	1	Curve B/ Curve 2
80	Hydraulic-Magnetic Samite type	100	400	6	3	Curve B/ Curve 2

2.10. Lugs and Ferrules

2.10.1. Crimped Lugs and Ferrules

2.10.1.1. All crimped connecting lugs and ferrules shall be manufactured and tested in accordance with SANS 1803-1 and shall be designed to fit a specific conductor size and shall be marked with a number to indicate the conductor size in square millimetres.

2.10.1.2. The connectors shall be "Class A" as per SANS 61238-1.

2.10.1.3. The material of the connectors shall be electrolytic grade copper.

2.10.1.4. The electrolytic copper connectors shall be tinned.

2.10.1.5. The connectors shall have a clean finish and be free of surface and internal defects such as burrs, cracks, rolled seams, blisters, twists, press and chatter marks.

2.10.1.6. The connecting lugs and ferrules shall be rated on the current carrying capacity of the larger copper conductor and the ratings shall be as per SANS 97.

2.10.1.7. The connecting lugs and ferrules shall be type tested as per SANS/IEC 61238-1 and test reports shall be provided on delivery.

2.10.1.8. The following sizes of crimped lugs and ferrules shall be supplied:

Connector Type	Size
Crimped Lug	0.5 x 1.5 mm
Crimped Lug	10 x 8 mm
Crimped Lug	120 x 12 mm
Crimped Lug	16 x 10 mm
Crimped Lug	16 x 12 mm

Crimped Lug	16 x 6 mm
Crimped Lug	16 x 8 mm
Crimped Lug	185 x 12 mm
Crimped Lug	2.5 x 6 mm
Crimped Lug	35 x 10 mm
Crimped Lug	35 x 8 mm
Crimped Lug	4 x 6 mm
Crimped Lug	6 x 6 mm
Crimped Lug	6 x 8 mm
Crimped Lug	70 x 10 mm
Crimped Lug	95 x 12 mm
Connector Type	Size
Crimped Ferrule	1.5 mm ²
Crimped Ferrule	2.5 mm ²
Crimped Ferrule	4 mm ²
Crimped Ferrule	6 mm ²
Crimped Ferrule	16 mm ²

2.10.2. Mechanical Torque Shear Ferrules

- 2.10.2.1. All mechanical torque shear connectors shall be manufactured and tested in accordance with NRS 075 and shall be "Class A" connectors as per SANS 61238-1.
- 2.10.2.2. The mechanical torque shear connectors shall be capable of withstanding, without deterioration, the normal operating currents and short-circuit currents to which the electrical system is likely to be subjected.
- 2.10.2.3. The connectors shall have a clean finish and be free of surface and internal defects such as burrs, cracks, rolled seams, blisters, twists, press and chatter marks.
- 2.10.2.4. The bore of the connector barrel shall be suitably shaped to facilitate easy conductor entry.
- 2.10.2.5. The inside of the torque shear connectors shall be grooved and the contact are greased with an anti-oxide paste for corrosion protection.
- 2.10.2.6. The torque shear bolts shall be designed to ensure that a consistent connecting force is obtained.
- 2.10.2.7. The mechanical torque shear ferrules shall be solid centred. The minimum thickness of the barrier shall be 1 mm.

2.10.2.8. Mechanical torque shear connector ranges and dimensions shall be in accordance with the table below:

MTS Range (mm ²)	Conductor Shape	Minimum inner barrel diameter (mm)
16 - 35	Sector and Round	8.2
25 - 70	Sector and Round	11.7
50 - 95	Sector and Round	13.5
95 - 185	Sector and Round	19
120 - 240	Sector and Round	21.5
185 - 300	Sector and Round	24
400	Round	25.5
500	Round	30

2.10.2.9. Each mechanical torque shear connector shall be capable of being connected to the following type of conductors;

- Copper
- Round and Sector
- Stranded copper conductors
- Compacted and normal

2.10.2.10. All mechanical torque shear connectors shall have the conductor size range and quality control batch number indented on the barrel.

2.10.2.11. All mechanical torque shear connectors shall be individually sealed in transparent packages.

2.10.2.12. Installation instructions shall be supplied with each mechanical torque shear connector.

2.10.2.13. The torque shear bolts shall be fitted in position.

2.10.2.14. The packaging label shall contain the manufacturers name, trademark, and the part number.

2.10.2.15. The technical catalogue, installation instructions and the relevant type test reports shall be provided for each type of mechanical torque shear connector offered.

2.11. Local Area Network (LAN) Spares

The following LAN spares are to be supplied:

2.11.1. Black optical fiber patch panel with maximum design capacity of 24 cores, rack mount type with 2 side brackets. The patch panel shall have ST adapter, pigtail.

2.11.2. Patch cords with the following connectors:-

- ST to ST 1.5m Patch Leads (Single Mode - SM)
- ST to ST 1.5m Patch Leads (Multi Mode - MM)

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- ST to LC 1.5m Patch Leads (SM)
- ST to LC 1.5m Patch Leads (MM)
- ST to SC 1.5m Patch Leads (SM)
- ST to SC 1.5m Patch Leads (MM)

2.11.3. Network Switches:-

- 8 port, Power over Ethernet (PoE) Managed switch with 2 Small Form-Factor Pluggable (SFP) slots for fiber modules, similar to Cisco Catalyst or better.
- 24 port, PoE Managed switch with 2 SFP slots for fiber modules, similar to Cisco Catalyst or better.
- 12 SFP-based Port network switch, similar to Cisco Catalyst or better.

2.11.4. Media Converters:-

- Multimode (MM) Fiber to Ethernet Bridge Media Converter, SC Fiber to RJ45 Ethernet.
- Single Mode (SM) Fiber to Ethernet Bridge Media Converter, SC Fiber to RJ45 Ethernet.

2.11.5. Small Form-Factor Pluggable (SFP) Transceivers :-

- 1 Gbps LC SFP, GLC, SM, hot swappable transceiver module.
- 1 Gbps LC SFP, GLC, MM, hot swappable transceiver module.

2.11.6. Fibre Optic Joint Kit:-

The Optic Fibre Dome enclosure kit shall be designed and manufactured to SANS requirements. The enclosure shall be capable to accommodate up to maximum of 120 fibre distribution and shall be weatherproof.

2.11.7. Ethernet Cable:-

2.11.8. CAT 6 shielded Ethernet Cable, grey in color.

2.12. Electricity Meters and Communication Modules

2.12.1. Landis + Gyr meter or similar for the measurement of kWh, kVARh and kW or kVA in a three phase, three or four wire, 50 Hz network.

2.12.1.1. Meter Specification:

- Accuracy: Class 0.55 (kWh), Class 1.0 (kVARh)
- Voltage 3 x 58/100,..., 230/400V
- Current: -1/5A
- Tariffs: 24 Energy Registers
- 08 Total energy registers and 24 demand registers
- 04 Power Factor registers
- Other data: Instantaneous values
- Switching: Internal Clock
- Stored Values: 15 per register

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- Load Profile: 14 Channels
- Inputs and Outputs: 5 Inputs, 6 Outputs contacts
- Data Output: LCD

2.12.1.2. Construction:

- Display: Programmable 8 digit liquid crystal display, display while un-powered
- Figure Height: 8 mm
- Housing: Projection Pattern
- Dimensions: H x 281.5 mm, W x 177 mm, D x 75 mm
- Construction: Anti-static, glass fibre re-enforced plastic

2.12.2. Communication modules used inside meters:

2.12.2.1. Landis + Gyr CU-E22 or similar communication module for use with base meter, the module communication protocols are Ethernet port and RS 485 port.

2.12.2.2. Landis + Gyr CU-B2 or similar communication module for use with the base meter, the module communication protocols are two RS 485 ports.

2.13. Plugs and Socket Outlets

Plugs, socket-outlets and socket-outlet adaptors shall comply with the appropriate requirements of SANS 60884 and switches incorporated into the socket-outlet shall comply with the requirements of SANS 60669-1.

- Plugs and socket-outlets shall be marked as follows:
- Rated current in amperes,
- Rated voltage in volts,
- Symbol for nature of supply,
- Manufacturers' or responsible vendor's name, trade mark or identification mark.

2.13.1. Plugs

2.13.1.1. Three (3) pin in line female kettle connector plug with a rated current of 10 A and rated voltage of 230 V.

2.13.1.2. Three (3) pin rubber type plug top with a rated current of 16 A and rated voltage of 230 V

2.13.1.3. Three (3) pin dedicated plug top with a rated current of 16 A and rated voltage of 230 V

2.13.2. Socket Outlets

2.13.2.1. Industrial socket outlet

2.13.2.2. 4x4 Double switched socket-outlet with rated current of 16 AMP and rated voltage of 230 V and shall be steel type with screw on cover.

2.13.2.3. 4x4 Single switched socket-outlet with rated current of 16 A and rated voltage of 230 V and shall be steel type with screw on cover.

- 2.13.2.4. 4x2 switched socket-outlet with rated current of 16 A and rated voltage of 230 V and shall be steel type with screw on cover.
- 2.13.2.5. 4x2 dedicated switched socket-outlet with rated current of 16 A and rated voltage of 230 V and shall be steel type with screw on cover.

2.14. Light Fittings and Accessories

All light fittings and all accessories shall comply with the relevant SANS specifications where such exists and shall carry the SANS mark of approval.

2.14.1. Weather-Proof Fluorescent Light Fittings:

- 2.14.1.1. Fluorescent lightings fittings shall be surface mounted dustproof and weather-proof fittings mounted on the wall or ceiling.
- 2.14.1.2. The diffuser shall be one piece injection moulded high impact acrylic.
- 2.14.1.3. The fitting shall have a polyurethane gasket to ensure a high protection rating of IP 66.
- 2.14.1.4. The fittings shall have an induction/ electronic type ballast.
- 2.14.1.5. The following fittings are be supplied:
- Fluorescent fittings for double 2 FT, 4 FT and 5 FT fluorescent tubes.
 - Fluorescent fittings for a single 4 FT, 36 W fluorescent tube with an electronic ballast.

2.14.2. Open Channel Fluorescent Fittings

- 2.14.2.1. Open channel fluorescent fittings shall be surface mounted fittings to mountable either on the wall or ceiling.
- 2.14.2.2. The following open channel fittings are to be supplied:
- Surface mounted 4 FT single tube open channel fluorescent fitting with an electronic ballast.
 - Surface mounted double tube (2x 36 W) open channel fluorescent fitting with an electronic ballast.
 - Surface mounted double tube (2x 58 W) open channel fluorescent fitting with an electronic ballast.

2.14.3. Ballast

All ballast supplied shall have a ballast factor equal to or greater than 0.8. The ballast shall operate at a power factor of 0.95 or greater, and the harmonic distortion levels shall be limited so as to not cause interference on the electrical network (THD < 10%). The ballast shall be rated sufficiently to drive the lamps as per the specification below. The ballast shall also have circuitry for protection against overheating.

- Ballast 16 W, 230 W, 50 Hz
- The ballast shall be designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive a 65 W single tube.

- The ballast shall be designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive an 18 W single lamp.
- The ballast shall be an electronic ballast designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive two 36 W fluorescent lamps.
- The ballast shall be an electronic ballast designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive two 58 W fluorescent lamps.
- The ballast shall be an electronic ballast designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive two 26 W fluorescent lamps.
- The ballast shall be an electronic ballast designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive two 36 - 40 W lamps.
- The ballast shall be an electromagnetic (inductive) ballast designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive a 400 W High Pressure Sodium lamp.
- The ballast shall be an electromagnetic (inductive) ballast designed to operate at a nominal voltage of 230 V at a frequency of 50 Hz and shall be capable to drive a 250 W High Pressure Sodium lamp.

2.15. PVC Electrical Tapes

2.15.1. Tapes to be supplied shall preferably comply with SANS 122.

2.15.2. The pressure-sensitive adhesive tapes shall:

- Be of the Type B: Tapes suitable for use where the working temperature does not exceed 90 °C.
- Bear the SANS 122 mark of approval or alternative on the protective wrapping.
- Each roll of tape shall be free from telescoping and distortion.
- The edges of the tape shall be straight and unbroken.
- The tape shall be smooth, uniform and free from any lumps and bare spots when rolled.

2.15.3. The following colors of tapes shall be supplied:

- Red,
- Yellow,
- Blue,
- White,
- Black,
- And Green

2.15.4. Each roll of tape or its container shall be clearly and indelibly marked with the following information:

- The name or trade mark or other identification of the manufacturer;

- The catalogue number or other identification marking;
- The thickness, width and length;
- The color

3. SUPPLY REQUIREMENTS

3.1. Delivery Conditions

- 3.1.1. On delivery the Supplier shall issue to Transnet all technical specification, datasheets, catalogues, installation instructions and the relevant type test reports for each component offered.
- 3.1.2. All documentation shall be supplied in English.
- 3.1.3. The Supplier shall deliver all materials ordered within 6 to 10 working days from the time of notification from TNPA.

3.2. Marking, Labelling and Packaging

- 3.2.1. Each component supplied shall be properly packed and sealed. The packaging shall be properly labelled and shall contain the manufacturer's name, trademark, technical details of the component and the part number.
- 3.2.2. Cables shall be supplied on a wooden/ plastic drum.
- 3.2.3. Each drum shall be suitably marked with the manufacturer's name, date of manufacture, an arrow indicating the direction for rolling the drum, gross mass, net mass, number of drum, length of cable on the drum, size of the cable, cable type, number of cores, applicable SANS standards, voltage and contract number, by clearly stamping or burning both sides of the drum.

3.3. Transportation

- 3.3.1. All components shall be handled and transported with care so as to avoid damaging the components.
- 3.3.2. It is the Supplier's responsibility to provide a suitable transport for delivering the components.

3.4. Constraints at the delivery place

- 3.4.1. The Supplier shall comply with the following working hours on the day of delivery:
All deliveries of Goods shall be schedule within TNPA working hours i.e. weekdays 08:00 – 16:00. No deliveries shall be schedule on weekends or public holidays unless prior arrangement have been made with the Project Manager.

3.5. Management meetings

- 3.5.1. Meetings of a general nature may be convened and chaired by the Project Manager to discuss the overall contract progress and the Supplier's performance. These meetings will be setup at times and locations to suit both parties.

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- 3.5.2. All meetings will be recorded using minutes and an attendance register prepared and circulated by the person who convened the meeting.

4. QUALITY ASSURANCE PLAN

A quality management system shall be set up in order to assure the quality of the electrical components and maintenance material is of good quality and is fully compliant with this specification.

5. INVOICING AND PAYMENT

- 5.1.1. On delivery the Supplier shall issue the Project Manager with a delivery note and the tax invoice showing the amount due for payment equal to the quantity of material supplied.
- 5.1.2. The Supplier shall address the tax invoice to Project Manager and include on each invoice the following information:
- Name and address of the Supplier and the Project Manager;
 - The contract number and title;
 - Description of goods for each item invoiced based on the Price Schedule;
 - Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- 5.1.3. The original tax invoice will be presented either by email or by hand delivery.

6. DURATION OF THE CONTRACT

The contract shall be for a period of thirty-six (36) months. TNPA reserves the right to terminate this contract at any point in time should the electrical components supplied not comply with the requirements of the latest SABS Standards.

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7. SECTIONS

The following Sections form an integral part of this specification:

- SECTION A PRICING SCHEDULE – PART ONE
- SECTION B PRICING SCHEDULE – PART TWO
- SECTION C STATEMENT OF COMPLIANCE

SECTION A - PRICING SCHEDULE – PART ONE
STORE S13A AT POWER SUPPLIES

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
1.	ADAPTOR CONDUIT; FEMALE, PVC, 20 mm	EA	150		
2.	ADAPTOR CONDUIT; MALE, PVC, 20 mm	EA	150		
3.	LAMP BALLAST 16 W, 230 V, 50 Hz, INDUCTIVE	EA	25		
4.	LAMP BALLAST 65 W, 230 V, SINGLE TUBE , INDUCTIVE	EA	45		
5.	LAMP BALLAST, FLOURESCENT, 230 V SINGLE, 1x18 W, INDUCTIVE	EA	30		
6.	LAMP BALLAST FLUORESCENT, 230 V, 2x36 W (ELECTRONIC)	EA	100		
7.	LAMP BALLAST, FLUORESCENT, 230 V, 2x58 W (ELECTRONIC)	EA	75		
8.	LAMP BALLAST, FLUORESCENT, 230 V, 2x54 W, T5 (ELECTRONIC)	EA	75		
9.	LAMP BALLAST, FLUORESCENT, 230 V, 2x26 W (ELECTRONIC)	EA	50		
10.	LAMP BALLAST, FLUORESCENT, 230 V, 36-40 W, SINGLE LAMP, INDUCTIVE	EA	30		
11.	LAMP BALLAST, FLUORESCENT, 230 V, 2x36 W, INDUCTIVE	EA	25		
12.	LAMP BALLAST; FLUORESCENT, 230 V, 2x18 W, INDUCTIVE	EA	15		
13.	LAMP BALLAST; HIGH PRESSURE SODIUM (HPS), 230 V, 400 W, INDUCTIVE	EA	15		
14.	LAMP BALLAST, SODIUM VAPOUR, 250 W 230 V, INDUCTIVE	EA	15		
15.	SOLID BEND CONDUIT; 20 mm, PVC	EA	30		
16.	TWIST BIT; MASONARY, DIAMETER 6 mm, ROUND	EA	75		
17.	DRILL BIT; LENGTH 100 mm, DIAMETER 6 mm	EA	75		
18.	STANLEY KNIFE BLADE	EA	100		
19.	METAL JIGSAW BLADE; RIP, 123, P/N:2608638472	EA	30		
20.	BLANK FOR SAMITE DB 2.5 kA	EA	30		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
21.	PVC BOX 8 WAY EASY FIT REF 008	EA	30		
22.	ELECTRICAL CONNECTOR BOX; UT3 048-670 GENERAL PURPOSE WITH SCREW ON LID, DIMENSIONS: 200x130x100mm	EA	30		
23.	ELECTRICAL METER BOX; PPS3 GLASS FIBRE WITH SLIDE LID TO ACCOMMODATE 3 PHASE KILOWATT HOUR METER, DIMENSIONS: 330x320x170 mm	EA	30		
24.	ELECTRICAL BOX; SURFACE MOUNT EXTENSION BOX,WIDTH 125 mm, TO ACCOMODATE 4x4 WEATHERPROOF ISOLATOR AND SOCKET OUTLET	EA	90		
25.	EXTENSION BOX, PVC, 4x4	EA	90		
26.	EXTENSION BOX, PVC, 4x2	EA	90		
27.	ELECTRICAL BOX WITH SCREW ON LID, MPS 13, DIMENSIONS: 230x130x120 mm	EA	30		
28.	THROUGH CIRCULAR BOX, PVC, 20 mm	EA	75		
29.	CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 400 V, 20 A, 3 PHASE, 6 kA, SAMITE	EA	15		
30.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 15 A, 230 V, SINGLE PHASE, 3 kA, SAMITE	EA	45		
31.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 30 A, 400 V, 3 PHASE, 5 kA, SAMITE	EA	30		
32.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 60 A, 400 V, 3 PHASE, 5 kA, SAMITE	EA	30		
33.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 30 A, 230 V, SINGLE PHASE, 3 kA, SAMITE	EA	30		
34.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 30 A, 230 V, SINGLE PHASE, 5 kA, SAMITE	EA	30		
35.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 50 A, 400V, 3 PHASE, 5 kA, SAMITE	EA	15		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
36.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 40 A, 230 V, SINGLE PHASE, 3 kA, SAMITE	EA	30		
37.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 5 A, 230 V, SINGLE PHASE, 5 kA, SINGLE PHASE, SAMITE	EA	30		
38.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 80 A, 400 V, 3 PHASE, 5 kA, SAMITE	EA	15		
39.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 15 A, 230 V, SINGLE PHASE, 6 kA, SAMITE	EA	30		
40.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 60 A, 230 V, SINGLE PHASE, 5 kA, SAMITE	EA	30		
41.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 20 A, 230 V, SINGLE PHASE, 5 kA, SINGLE PHASE, SAMITE	EA	30		
42.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 25 A, 400 V, 3 PHASE, 5 kA, SAMITE	EA	15		
43.	MINIATURE CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 10 A, 230 V, SINGLE PHASE, 5 kA, SAMITE	EA	45		
44.	PAINT BRUSH; UTILITY, WIDTH 25 mm, HAIR	EA	100		
45.	PAINT BRUSH; UTILITY, WIDTH 50 mm, HAIR	EA	100		
46.	PAINT BRUSH; UTILITY, WIDTH 75 mm, HAIR	EA	75		
47.	BUTTERFLY CLIP, M5	EA	75		
48.	35 mm ² CABLE, 4 CORE, PVC SWA ECC	m	500		
49.	10 mm ² CABLE, 4 CORE, PVC SWA ECC	m	500		
50.	6 mm ² CABLE, 4 CORE, PVC SWA ECC	m	500		
51.	1.5 mm ² CABLE, CABTYRE, 3 CORE, SILICONE TYPE CABLE	m	500		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
52.	4 mm ² CABLE, 4 CORE, PVC, SWA, ECC	m	500		
53.	0.75 mm ² CABLE, CABTYRE, 3 CORE	m	500		
54.	2.5 mm ² CABLE, CABTYRE, 3 CORE, WHITE	m	500		
55.	1.5 mm ² CABLE, CABTYRE, 3 CORE	m	500		
56.	2.5 mm ² CABLE, 4 CORE, SURFIX, PVC SWA ECC	m	500		
57.	16 mm ² CABLE, 4 CORE, PVC SWA ECC	m	600		
58.	SHRINKABLE CABLE END CAP 93 mm ² TO 38 mm ² SHRINK ON CAPS	EA	30		
59.	4 mm ² CABLE, SURFEX, 230 V, WHITE, ROUND SURFEX CABLE, 2 CORE + E	m	500		
60.	1.5 mm ² CABLE;SURFEX, 400 V, WHITE, 4 CORES, ROUND SURFEX CABLE, 4 CORE + E	m	500		
61.	2.5 mm ² CABLE, SURFEX, 400 V, WHITE, 4 CORE, ROUND SURFEX CABLE, 4 CORE +E	m	500		
62.	1.5 mm ² CABLE, SURFEX, 600/1000 V, ROUND SURFEX CABLE, 2 CORE +E	m	500		
63.	2.5 mm ² CABLE, SURFEX, 600/1000V, WHITE, ROUND SURFEX CABLE, 2 CORE +E	m	500		
64.	CABLE TIES ELECT, INSULOK,3.6x135 mm, BLACK NYLON	EA	3000		
65.	CABLE TIES ELECT, INSULOK, 2.5x104 mm, BLACK NYLON	EA	3000		
66.	CABLE TIES ELECT, INSULOK, 4.7x198 mm, BLACK NYLON	EA	3000		
67.	CABLE TIE ELECT, INSULOK, 7.6x390 mm, BLACK NYLON	EA	3000		
68.	35 mm ² TRAILING CABLE, FLEXIBLE 4 CORE, BROWN, GREY, BLACK + EARTH, PVC SHEATH	m	300		
69.	CAPACITOR 20 MICROFARAD 25 A, 400 V, SPADE TERMINAL FEMALE	EA	30		
70.	CAPACITOR/LIGHTING 45 UF, 230 V, WIRE LEADS	EA	45		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
71.	CAPACITOR, 25 UF, 230 V, WIRE LEADS	EA	30		
72.	PHOTOELECTRIC CELL, NEMA SOCKET, DIFF 1.1.5, MOUNT ONTO BASE, 230 V	EA	45		
73.	PHOTOELECTRIC CELL, DAY LIGHT SWITCH, 230 V, 2 W	EA	45		
74.	CIRCUIT BREAKER ESCUTCHEON BLANK 5 kA	EA	75		
75.	CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 10 A, 230 V, SINGLE PHASE, SAMITE	EA	75		
76.	CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 20 A, 230 V, SINGLE PHASE SAMITE	EA	75		
77.	CIRCUIT BREAKER; HYDRAULIC MAGNITE, 20 A, 230 V, SINGLE PHASE, 3 kA, SAMITE	EA	75		
78.	CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 10 A, 230 V, SINGLE PHASE, SAMITE	EA	75		
79.	CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 5 A, 230 V, SINGLE PHASE, SAMITE	EA	30		
80.	CIRCUIT BREAKER; HYDRAULIC MAGNETIC, 100 A, 400 V, 3 PHASE, SAMITE	EA	15		
81.	EARTH SPIKE CLAMP FOR GRONDING;	EA	15		
82.	POLLY SADDLE, CABLE CLIP; SIZE 8 mm, WHITE PVC	EA	300		
83.	ROCKO CABLE CLIP, SIZE 10 mm, WHITE PVC	EA	300		
84.	PVC CONDUIT 20 mm, 4 METER LENGTH	m	300		
85.	PVC CONDUIT 25 mm, 4 METER LENGTH	m	300		
86.	PVC INSPECTION BEND CONDUIT 20 mm	EA	45		
87.	PVC CONDUIT BOX END 20 mm	EA	45		
88.	PVC CONDUIT BOX; 3 WAY, 20 mm	EA	45		
89.	PVC CONDUIT BOX; 4 WAY, 20 mm	EA	45		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
90.	PVC CONDUIT BOX; ANGLE, 20 mm	EA	45		
91.	METAL FLEXIBLE CONDUIT; SPRAGUE, ZINC PLATED, 20 mm	m	45		
92.	3 PIN INLINE FEMALE KETTLE PLUG CONNECTOR; 10 A, 230 V	EA	25		
93.	3 PIN, INDUSTRIAL SOCKET OUTLET, STEEL TYPE WITH SCREW ON COVER, 2x4	EA	40		
94.	4x4, 16 A, 230 V, 3 PIN, DOUBLE SWITCHED SOCKET OUTLET, STEEL TYPE WITH SCREW ON COVER, VERTICAL	EA	100		
95.	4x4, 3 PIN, SINGLE SWITCHED SOCKET OUTLET, FLUSH MOUNT, STEEL TYPE WITH SCREW ON COVER, VERTICAL	EA	100		
96.	2x4, 3 PIN, SWITCHED SOCKET OUTLET, 16 A, 230 V SOCKET, STEEL TYPE WITH SCREW ON COVER, VERTICAL	EA	100		
97.	2x4, 3 PIN, DEDICATED SOCKET OUTLET, STEEL TYPE WITH SCREW ON COVER, VERTICAL	EA	75		
98.	COUPLING CONDUIT PVC 20 mm	EA	200		
99.	COUPLING CONDUIT PVC 25 mm	EA	100		
100.	ACCESS COVER FOR A ROUND PVC BOX SECURED BY 2 SCREWS, WHITE, DIAMETER 50 mm	EA	300		
101.	ABRASIVE DISC; CUT, OUTER DIAMETER 230 mm, THICKNESS 3 mm	EA	15		
102.	DISTRIBUTION BOARD; POPULATED, PVC, LENGTH 250 mm, DIN MOUNT CIRCUIT BREAKERS, 12 WAY FITTED 12 W P5	EA	45		
103.	DISTRIBUTION BOX; DBM1 METER, THREE PHASE KWH METER BOX	EA	10		
104.	EARTH LEAKAGE; SINGLE PHASE, 30 A, 230 V WITH OVERLOAD PROTECTION, SAMITE	EA	45		
105.	EARTH LEAKAGE; SINGLE PHASE, 60 A, 230 V, WITH OVERLOAD PROTECTION, SAMITE	EA	45		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
106.	PVC EGGARD TUBING, 16x16 mm, WHITE	m	200		
107.	EGGARD TUBING PVC, 25x16 mm	m	200		
108.	ELBOW ELECTRICAL CONDUIT; 90° BEND, PVC, WHITE	EA	30		
109.	ORANGE PVC BARRIER MESH, LENGTH 50 x HEIGHT 1 m,	m	30		
110.	2.5 mm ² CRIMP FERRULE	EA	300		
111.	1.5 mm ² CRIMP FERRULE	EA	300		
112.	16 mm ² CRIMP FERRULE	EA	300		
113.	4 mm ² CRIMP FERRULE	EA	200		
114.	6 mm ² CRIMP FERRULE	EA	200		
115.	16 – 35 mm ² , MECHANICAL TORQUE SHEAR FERRULE	EA	30		
116.	25 – 70 mm ² MECHANICAL TORQUE SHEAR FERRULE	EA	30		
117.	50 – 95 mm ² MECHANICAL TORQUE SHEAR FERRULE	EA	30		
118.	95 – 185 mm ² MECHANICAL TORQUE SHEAR FERRULE	EA	30		
119.	120 – 240 mm ² MECHANICAL TORQUE SHEAR FERRULE	EA	30		
120.	185 – 300 mm ² MECHANICAL TORQUE SHEAR FERRULE	EA	30		
121.	400 mm ² MECHANICAL TORQUE SHEAR FERRULE	EA	30		
122.	2 FT, DOUBLE TUBE, WEATHERPROOF FLOURESCENT FITTING, WITH INDUCTION TYPE BALLAST, 23 0V	EA	100		
123.	4 FT, SINGLE TUBE, OPEN CHANNEL FLUORESCENT FITTING WITH ELECTRONIC BALLAST RECTANGULAR STEEL FRAME, 1 No. x 36 W, 230 V	EA	100		
124.	4 FT, SINGLE TUBE (1 No. x 36 W),WATERPROOF FLUORESCENT FITTING WITH ELECTRONIC BALLAST RML	EA	50		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
125.	5 FT, FLOURESCENT FITTING; WEATHER PROOF, 2 No. x 58 W WITH ELECTRONIC BALLAST, 230 V	EA	150		
126.	4 FT, DOUBLE TUBE, WATERPROOF FLOURESCENT FITTING, NON-ELECTRONIC WITH INDUCTION TYPE BALLAST, 230 V	EA	100		
127.	LIGHT FITTING; BULKHEAD, 16 W, 2D WITH ELECTRONIC BALLAST, WEATHER PROOF, 230 V	EA	150		
128.	5 FT, DOUBLE TUBE, WEATHERPROOF FLOURESCENT FITTING NON-ELECTRONIC WITH INDUCTION TYPE BALLAST, 230 V	EA	100		
129.	4 FT, DOUBLE TUBE (2 No. x 36 W), OPEN CHANNEL FLOURESCENT LIGHT FITTING WITH ELECTRONIC BALLAST, RECTANGULAR STEEL FRAME, 230 V	EA	150		
130.	5 FT, DOUBLE TUBE (2 No. x 58 W), OPEN CHANNEL FLOURESCENT LIGHT FITTING WITH ELECTRONIC BALLAST, RECTANGULAR STEEL FRAME, 230 V	EA	150		
131.	4 FT, DOUBLE TUBE (2 No. x 36 W), WEATHERPROOF FLOURESCENT LIGHT FITTING WITH ELECTRONIC BALLAST, 230 V	EA	150		
132.	COMPRESSION CABLE GLAND CABLE (STEEL), No. 0	EA	30		
133.	CAPTIVE CONE (STEEL) CABLE GLAND; No. 2	EA	30		
134.	CAPTIVE CONE(STEEL) CABLE GLAND; No. 0	EA	30		
135.	CAPTIVE CONE CABLE GLAND (STEEL); No. 4	EA	30		
136.	COMPRESSION CABLE GLAND (STEEL); No. 1	EA	30		
137.	COMPRESSION CABLE GLAND; No. 0, PVC, PUSH ON	EA	30		
138.	WATERTIGHT CABLE GLAND; EXTERNAL 20 mm, KOPEX GLAND	EA	30		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
139.	WATERTIGHT CABLE GLAND; EXTERNAL 25 mm, KOPEX GLAND	EA	30		
140.	CABLE GLAND (STEEL); No. 1 WITH SHROUD	EA	45		
141.	CABLE GLAND (STEEL); No. 3 WITH SHROUD	EA	30		
142.	UVEX PHYNOMIC WET UTILITY GLOVES, SIZE 10 cm	EA	70		
143.	UVEX PHYNOMIC WET UTILITY GLOVES, SIZE 7 cm	EA	70		
144.	UVEX PHYNOMIC WET, UTILITY GLOVES, SIZE 8 cm	EA	70		
145.	UVEX PHYNOMIC WET, UTILITY GLOVES, SIZE 9 cm	EA	70		
146.	HEATING ELEMENT FOR GEYSER; 230 V, 2000 W, SCREW TYPE, 300 mm LENGTH	EA	10		
147.	LAMP HOLDER; PORCELAIN	EA	10		
148.	150 W IGNITOR FOR HIGH PRESSURE SODIUM LAMP	EA	25		
149.	400 W IGNITOR FOR HIGH PRESSURE SODIUM LAMP	EA	50		
150.	INSECTICIDE ODOURLESS, 300 ml, AEROSOL SPRAY CAN	EA	50		
151.	ELECTRICAL INSULATING PUTTY COMPOUND ROLL, LOW VOLTAGE	EA	30		
152.	4x4, 30 A, ELECTRICAL ISOLATOR, 230 V, STEEL TYPE WITH SCREW ON COVER, VERTICAL	EA	30		
153.	60 A, DOUBLE POLE, DB MOUNT ISOLATOR, SAMITE TYPE	EA	15		
154.	100 A, THRIppLE POLE, DB MOUNT ISOLATOR, SAMITE TYPE	EA	15		
155.	60 A, THRIppLE POLE, DB MOUNT ISOLATOR, SAMITE TYPE	EA	15		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
156.	4x4, 60 A, ELECTRICAL ISOLATOR, 230 V, STEEL TYPE WITH SCREW ON COVER, VERTICAL	EA	15		
157.	30 A, NWi TYPE ISOLATOR, DOUBLE POLE, 400 V	EA	15		
158.	60 A, NWi TYPE ISOLATOR, DOUBLE POLE, 400 V	EA	15		
159.	11 kV, PILC, 16-35 mm ² , FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
160.	33 kV, 400 mm ² TRANSITION (XLPE TO PILC), 800 TO 1000A, FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
161.	6.6 TO 11 kV, XLPE, 25-70 mm ² , FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
162.	11 kV, PILC, 50-95 mm ² , 200 A, FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
163.	6.6 TO 11 kV, PILC, 185-300 mm ² , 400 A, FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
164.	11 kV, XLPE, 16-35 mm ² , 150 A, FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
165.	11 kV, XLPE, 95-185 mm ² , 300 A, FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
166.	11kV, PILC TO XLPE, 95-185 mm ² , FILLED, ANTI ELECTROLYSIS KIT, TRANSITION CABLE JOINT KIT	EA	4		
167.	33 kV, PILC, 400 mm ² , FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
168.	ELECTRICAL CABLE SPLICING, 91-A5 JOINT KIT, SCOTCHCAST TYPE, 120-150 mm ² cable, 1.1kV, OD 45-75 mm	EA	15		
169.	ELECTRICAL CABLE SPLICING, A3 JOINT KIT, SCOTCHCAST TYPE, 35-50 mm ² cable, 1.1kV, OD 23-39 mm	EA	35		
170.	ELECTRICAL CABLE SPLICING, A2 JOINT KIT, SCOTCHCAST TYPE, 16-25 mm ² cable, 1.1 kV, OD 14-33 mm	EA	35		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
171.	11kV, PILC, 95-185 mm ² , FILLED, ANTI ELECTROLYSIS CABLE JOINT KIT	EA	4		
172.	250 W HIGH PRESSURE SODIUM SON/T TUBULAR LAMP	EA	100		
173.	400 W HIGH PRESSURE SODIUM SON/T TUBULAR LAMP	EA	250		
174.	LAMP, LED DOWNLIGHTER, 12 V, 6 W, COOL WHITE, MR16 BASE	EA	20		
175.	LAMP, 10 W, 2 PIN, 10W/840, COOL WHITE, 230 V, FLOURESCENT, DULUX D G24 LAMP	EA	20		
176.	LAMP, 9 W, G23 BASE, 230 V, COOL WHITE, FLOURESCENT,	EA	200		
177.	LAMP, ENERGY SAVER, B22d BASE, 10 W, 230 V, COOL WHITE, FLOURESCENT	EA	200		
178.	LAMP, 13W/840, G24d-1, COOL WHITE, 230 V, COMPACT FLUORESCENT	EA	150		
179.	LAMP, 36W/840, 4 PIN, PL-L4P, 230 V, COOL WHITE, FLUORESCENT, 400 mm LENGTH	EA	150		
180.	LAMP, ENERGY SAVER, 11W/840, 230 V, COOL WHITE, EDISON SCREW, E27, FLUORESCENT	EA	150		
181.	LAMP, 26 W, 2 PIN, G24d-3, COOL WHITE, 230 V, FLUORESCENT	EA	100		
182.	LAMP, 18 W, 600 mm LONG, SLIMLINE, FLUORESCENT LAMP (2 FT), T8, COOL WHITE	EA	600		
183.	LAMP, 36 W, 1200 mm, 230 V, 4 FT, SLIMLINE FLUORESCENT LAMP, T8, COOL WHITE	EA	1500		
184.	LAMP, 54 W, 1500 mm, 230 V, FLUORESCENT TUBE, T5	EA	50		
185.	LAMP, 16 W/835/2P, GR8, 230 V, FLOURESCENT, COOL WHITE	EA	150		
186.	LAMP, 18 W, 2 PIN, GX24d, 18W/840, 230 V, FLUORESCENT, COOL WHITE	EA	75		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
187.	400 ml LIQUID GREASE SPRAY CAN USED FOR LUBRICATION	EA	50		
188.	LAMP, 18 W, 4 PIN, PL-C, 18W/840, G24q-3, 230 V, FLUORESCENT	EA	75		
189.	LAMP, 26 W, 4 PIN, PL-C, 26W/840, G24q-3, 230 V, FLUORESCENT, COOL WHITE	EA	75		
190.	LAMP, 58W, SLIMLINE FLUORESCENT, T8, 5 FT, 1500 mm, 230 V, COOL WHITE	EA	1500		
191.	LAMP, 20 W, 12 V, HALOGEN LAMP, CLEAR, BASE G4	EA	20		
192.	LAMP, LED DOWNLIGHTER, 6 W, 230 V, COOL WHITE	EA	30		
193.	LAMP, 400 W, 230 V, HPI-T PLUS, METAL HALIDE LAMP, E40 BASE, CLEAR	EA	150		
194.	LAMP, 150 W, 230 V, HQI, METAL HALIDE, CLEAR, E27 BASE	EA	20		
195.	LAMP, 20 W, 230 V, T5 830, COOL WHITE, TUBULAR FLUORESCENT;	EA	1500		
196.	10-WAY SWITCHED MULTIPLUG, LG 750 mm, 230 V, 5 x 16A x 3 PIN, 5 x 5A X 2 PIN WITH INDIVIDUAL SWITCHES	EA	200		
197.	LEAK DETECTOR FOR PRESSURISED SYSTEMS, FOR PIPE LEAKS ON AIRCONDITIONING SYSTEMS, 400 ml, AEROSOL CAN	EA	15		
198.	2x4, FLUSH MOUNT, SINGLE LEVER LIGHT SWITCH, STEEL TYPE WITH SCREW ON COVER, VERTICAL	EA	30		
199.	500 G COPPER COMPOUND, ASEMBLY LUBRICANT PASTE AND ANTI-SEIZE COMPOUND; (COPPER SLIP)	EA	15		
200.	0.5 x 1.5 mm CRIMP LUG	EA	200		
201.	10 x 8 mm CRIMP LUG	EA	200		
202.	120 x 12 mm CRIMP LUG	EA	200		
203.	16 x 10 mm CRIMP LUG	EA	250		
204.	16 x 12 mm CRIMP LUG	EA	250		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
205.	16 x 6 mm CRIMP LUG	EA	250		
206.	16 x 8 mm CRIMP LUG	EA	250		
207.	185 x 12 mm CRIMP LUG	EA	50		
208.	2.5 x 5 mm CRIMP LUG	EA	100		
209.	2.5 x 6 mm CRIMP LUG	EA	100		
210.	35 x 10 mm CRIMP LUG	EA	200		
211.	35 x 8 mm CRIMP LUG	EA	150		
212.	4 x 6 mm CRIMP LUG	EA	100		
213.	6 x 6 mm CRIMP LUG	EA	100		
214.	6 x 8 mm CRIMP LUG	EA	100		
215.	70 x 10 mm CRIMP LUG	EA	100		
216.	95 x 12 mm CRIMP LUG	EA	100		
217.	25 mm MASKING TAPE	EA	50		
218.	75 mm MASKING TAPE	EA	25		
219.	KILOWATT HOUR BASE METER: LANDIS & GYR E650 (OR SIMILAR):ZMD405CT44.2407, DIGITAL DISPLAY. TO BE SUPPLIED WITH 3 x 100/5 A CURRENT TRANSFORMER (CTS)	EA	4		
220.	KILOWATT HOUR METER, 3 PHASE 400V, 80 TO 100 A, ANALOGUE DISPLAY	EA	3		
221.	KILOWATT HOUR METER, SINGLE PHASE 230V, 60 TO 80 A, ANALOGUE DISPLAY	EA	3		
222.	LANDIS + GYR CU-B2 COMMUNICATION MODULE (OR SIMILAR)	EA	3		
223.	LANDIS + GYR CU-E22 COMMUNICATION MODULE (OR SIMILAR)	EA	3		
224.	NWi ISOLATOR BOX, WIDTH 100 mm, LENGTH 140 mm	EA	10		
225.	PENETRATING OIL, 500 ml, GR 800 ORAPI, ANTI SEIZE, AEROSOL CAN	EA	100		
226.	PENETRATING OIL, 300 ml, Q20, AEROSOL CAN	EA	150		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
227.	PLUGTOP, 3 PIN, 16 A, RUBBER TYPE	EA	250		
228.	PLUGTOP, 3 PIN, 16 A, DEDICATED PLUG, RED	EA	50		
229.	SADDLE, 20 mm, FOR CONDUIT, FLUTED (GALVANIZED)	EA	200		
230.	SADDLE, 25 mm, FOR CONDUIT, FLUTED (GLAVANIZED)	EA	100		
231.	PVC SADDLE WITH SPACER BAR FOR 20 mm CONDUIT	EA	200		
232.	PVC SADDLE WITH SPACER BAR FOR 25 mm CONDUIT	EA	100		
233.	ADAPTOR PLATE, SAMITE, FOR DISTRBUTION BOARD	EA	50		
234.	SCHROUDER ACCESS VALVE PIPE	EA	30		
235.	M10, STEEL TAPPING SCREW; LENGTH 12 mm, STAR	EA	100		
236.	M10, STEEL TAPPING SCREW; LENGTH 12 mm, STAR	EA	10		
237.	M6, SHIELD EXPANSION; RAWLBOLT, LENGTH 57 mm	EA	50		
238.	STEEL SHIELD EXPANSION; RAWLBOLT, DIMENSIONS DIA 8 X LG 65 mm	EA	50		
239.	SHIELD EXPANSION; ANCHOR, DIA 6 X LG 35 mm, ANCHOR HILTI NAIL 6x35 mm	EA	1000		
240.	260 ml, CLEAR SILICONE COMPOUND SEALANT;	EA	50		
241.	260 ml, WHITE SILICONE SEALANT; MOULD RESISTANT, 24 HR;	EA	50		
242.	260 ml, BLACK SILICONE SEALANT;	EA	50		
243.	COPPER EARTH SPIKE, DIAMETER 15 mm, LENGTH 1.8 m;	EA	10		
244.	80 W, 230 V, FLUORESCENT LAMP STARTER;	EA	1000		
245.	22 W, FLUORESCENT LAMP STARTER (ST151) 4	EA	500		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
246.	10 mm STAINLESS STEEL STRAP	EA	5		
247.	BANDIT STRAPPING; STAINLESS STEEL, 9.53 X 0.5 mm, SILVER	EA	5		
248.	STRIP CONNECTOR 15 A,	EA	200		
249.	STRIP CONNECTOR 5 A,	EA	100		
250.	STRIP CONNECTOR 30 A,	EA	100		
251.	STUFFING TUBE, 20 mm, TUFLON, PVC COMPRESION GLAND NO 0	EA	700		
252.	ONE LEVER FLUSH SWITCH + COVER CRABTREE, 2x4;	EA	20		
253.	MULTI HEAT & KNOB SWITCH	EA	5		
254.	TWO LEVER FLUSH SWITCH + COVER CRABTREE 230V,	EA	10		
255.	TOGGLE SWITCH; 2x2, 5 A, 230 V, IND,PTNTL, ROCKER; SINGLE GANG INDUSTRIAL	EA	10		
256.	TWO LEVER TOGGLE SWITCH; 20 A, STEEL TYPE WITH SCREW ON COVER	EA	20		
257.	THREE LEVER, TOGGLE SWITCH; 16 A, WHITE, STEEL TYPE WITH SCREW ON COVER;	EA	20		
258.	WATERTIGHT SWITCH, 5 A, 230 V;	EA	30		
259.	ELECTRICAL INSULATING TAPE; RUBBER SPLICING	EA	20		
260.	PVC ELECTRICAL INSULATION TAPE, COLOR: BLACK NITTO	EA	100		
261.	ALL WEATHER SCOTCHRAP TAPE 96 mm	EA	15		
262.	RED AND WHITE SAFETY BARRIER TAPE; CHEVRON, 500 m ROLL;	EA	20		
263.	WHITE POLYTETRAFLUOROETHYLENE (PTFE) THREAD TAPE; WD 12 mm;	EA	20		
264.	PVC EARTH MARKING INSULATION TAPE, NITTO	EA	20		
265.	PVC ELECTRICAL INSULATION TAPE; COLOR: BLUE NITTO	EA	150		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
266.	PVC ELECTRICAL INSULATION TAPE; COLOR: RED NITTO	EA	150		
267.	PVC ELECTRICAL INSULATION TAPE; COLOR: WHITE NITTO	EA	150		
268.	PVC ELECTRICAL INSULATION TAPE; COLOR: YELLOW NITTO	EA	150		
269.	INSULATED FEMALE SPADE CONNECTOR TERMINAL;	EA	100		
270.	HYDROBOIL THERMOSTAT, 20 A, 230 V;	EA	10		
271.	LONG GEYSER THERMOSTAT	EA	7		
272.	QAT-R-DM TIMER SWITCH, SAMITE	EA	10		
273.	24 HR/ SEVEN DAY PROGRAMMABLE ELECTRONIC TIME SWITCH,	EA	10		
274.	STEEL ABRASIVE GRINDING WHEEL; OD 115 mm;	EA	10		
275.	6 mm ² , SINGLE CORE, COPPER EARTH WIRE, GREEN;	m	300		
276.	1.5 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, BLACK;	m	300		
277.	2.5 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, BLACK;	m	300		
278.	4 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, BLACK;	m	300		
279.	6 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, BLACK	m	300		
280.	6 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, RED	m	300		
281.	10 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL EARTH WIRE, GREEN	m	300		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
282.	1.5 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, RED	m	300		
283.	4 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, RED	m	300		
284.	4 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, BLACK	m	300		
285.	4 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, EARTH GREEN/YELLOW	m	300		
286.	2.5 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, RED;	m	300		
287.	95 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, EARTH GREEN/YELLOW	m	300		
288.	2.5 mm ² , SINGLE CORE, 600/1000 V, COPPER, PVC INSULATED ELECTRICAL WIRE, GREEN;	m	300		
289.	24 CORE PATCH PANEL (BLACK)	EA	3		
290.	FIBER DOME JOINT (BLACK)	EA	10		
291.	8 ETHERNET PORTS AND 2 SFP PORTS CISCO NETWORK SWITCH	EA	3		
292.	24 ETHERNET PORTS AND 4 SFP PORTS CISCO NETWORK SWITCH	EA	3		
293.	12 SFP PORT CISCO NETWORK SWITCH	EA	3		
294.	ST to ST 1.5m PATCH LEADS (SM)	EA	30		
295.	ST to ST 1.5m PATCH LEADS (MM)	EA	9		
296.	ST to LC 1.5m PATCH LEADS (SM)	EA	15		
297.	ST to LC 1.5m PATCH LEADS (MM)	EA	9		
298.	ST to SC 1.5m PATCH LEADS (SM)	EA	20		
299.	ST to SC 1.5m PATCH LEADS (MM)	EA	9		
300.	CAT 6 SHIELDED ETHERNET CABLE (GREY)	m	200		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
301.	BRIDGE MEDIA CONVERTER (MM)- SC FIBER/ RJ45	EA	9		
302.	BRIDGE MEDIA CONVERTER (SM)- SC FIBER/ RJ45	EA	30		
303.	SFP TRANSCEIVER LC (1 GBPS); GLC-SM	EA	15		
304.	SFP TRANSCEIVER LC (1 GBPS); GLC-MM	EA	9		
305.	LED INDICATOR LIGHT, 110 VOLTS, 22 mm, PANEL MOUNT, GREEN;	EA	100		
306.	LED INDICATOR LIGHT, 110 VOLTS, 22 mm, PANEL MOUNT, RED;	EA	100		
307.	LED INDICATOR LIGHT, 110 VOLTS, 22 mm, PANEL MOUNT, WHITE	EA	100		
308.	LED INDICATOR LIGHT, 220 VOLTS, 22 mm, PANEL MOUNT, GREEN;	EA	100		
309.	LED INDICATOR LIGHT, 220 VOLTS, 22 mm, PANEL MOUNT, RED;	EA	100		
310.	LED INDICATOR LIGHT, 220 VOLTS, 22 mm, PANEL MOUNT, WHITE;	EA	100		
311.	LED INDICATOR LAMP, 110 VOLTS, WHITE BC;	EA	100		
312.	LED INDICATOR LAMP, 220 VOLTS, WHITE BC;	EA	100		
313.	MICROWAVE MAGNETORN 2M226	EA	30		
314.	MICROWAVE MAGNETORN 2M246	EA	30		
315.	PANEL MOUNT SELECTOR SWITCH 2 POSITION, 220 VOLT, 10 AMP;	EA	30		
316.	EXPLOSION PROOF SOLENOID VALVE, SINGLE ACTING FOR HYDRAULIS SYSTEM, 220 VOLT;	EA	2		
317.	3 CONTACT, NEMA SOCKET BASE PHOTOCELL, 220 VOLT, 10 AMP;	EA	30		
318.	LIQUID LEVEL FLOAT SWITCH WITH A 20 m CABLE, 24 VOLT, 8 AMP, ORANGE;	EA	45		
319.	CONTACTOR, WITH A 220 VOLT COIL, DIN MOUNT, 60 AMP, 400 VOLT, 3 POLE;	EA	20		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
320.	CEILING FAN, 3 BLADE, 1200 TO 14000 mm, 70 TO 80 WATT, 230 VOLT, WHITE	EA	30		
321.	MICROWAVE CAPACITOR, 1UF, 2100 VAC, 70 mm X 50 mm;	EA	12		
322.	V-BELT, LIGHT DUTY 17 X 1060 LP; SYNTHETIC RUBBER FRACTIONAL HORSEPOWER BELT	EA	5		
323.	V-BELT, LIGHT DUTY 17 X 110 LP/B42; SYNTHETIC RUBBER FRACTIONAL HORSEPOWER BELT	EA	5		
324.	V-BELT, CLASSICAL V-BELT B1010 B381 MADE OF SYNTHETIC RUBBER.	EA	5		
325.	V-BELT, LIGHT DUTY 17 X 970 LI; SYNTHETIC RUBBER FRACTIONAL HORSEPOWER BELT	EA	5		
326.	V-BELT SPB 3800, CLASSICAL V-BELT	EA	5		
327.	V-BELT SPB 3770, CLASSICAL V-BELT	EA	5		
328.	BAR FRIDGE COMPRESSOR - 1/15 FRIDGE COMPRESSOR, CURRENT 0.6, 0.75 AMP, 230-50HZ, 600a GAS	EA	4		
329.	ELECTROLYTIC RUN CAPACITOR – 40 mF +-5%, 450 V, 50HZ, PUSH SPADE SOCKET CONNECTOR	EA	12		
330.	FAN - EBMPAPST FAN, AC AXAIL FAN - HY BLADE, W4D630-C103-80, MOTOR M4D138,HF,	EA	6		
331.	FRIDGE COMPRESSOR - 1/5 FRIDGE COMPRESSOR, CURRENT 0.85-1 AMP, LRA-10 A. 230 V - 50HZ, R134a GAS	EA	6		
332.	FRIDGE FILTER DRIER, COPPER BRAZED ON DRIER, ¼ AND CAPILLARY SIZE ENDS	EA	6		
333.	STAR DELTA TIMER 5-30 SECONDS 230 V TNE	EA	12		
334.	PHASE FAILURE RHOMBERG A LINE RELAY, AP 430	EA	12		
335.	24V, 5-6sec, 11PIN DELAY ON RELEASE RELAY	EA	12		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
336.	SURFACE TEMPERATURE SENSOR (AS PER SAMPLE)	EA	10		
337.	1/2 INCH ARMOFLEX CLASS O FOAM PIPE INSULATION (ID 1/2 INCH)	m	100		
338.	1/8 INCH ARMOFLEX CLASS FOAM PIPE INSULATION (ID 1/8 INCH)	m	100		
339.	3/4 INCH ARMOFLEX CLASS O FOAM PIPE INSULATION (ID 3/4 INCH)	m	100		
340.	SPA 850 V-BELT, CLASSICAL BELT ; SYNTHETIC RUBBER TYPE	EA	6		
341.	MULTI FUNCTION RELAY, AT 100	EA	12		
342.	LEVATO BF09 10 AMP, 24 V COIL CONTACTOR, 3 POLE	EA	12		
343.	R600a GAS IN DISPOSABLE CANS-420G, OZONE FRIENDLY WITH THREADED MALE ADAPTER	EA	50		
344.	ELECTROLYTIC RUN CAPACITOR -30 mf +-5%, 450, 50 HZ, PUSH SPADE SOCKET CONNECTOR	EA	12		
345.	REFRIGERANT GAS - R407C,13, 6 KG DISPOSABLE CYLINDER	EA	10		
346.	3/8 INCH ARMOFLEX CLASS O FOAM PIPE INSULATION (ID 3/8 INCH)	m	100		
347.	REPLACABLE SOLID CORE FILTER DRIER (DCR)	EA	12		
348.	8W; 220V; 50HZ, SOLENOID VALVE SINGLE- MODEL DAM-220ATOS; M2, EEX, IP66;	EA	12		
349.	HIGH BAY LED LAMP - LED 30 W, 6500 K;E40 BASE, DAYLIGHT, SUPPLY 220 VAC , 50HZ	EA	50		
350.	DOWN LIGHTER LAMP - STRAIGHT DOWN LIGHT GU10 LAMP FOR 70 mm CUT OUT 220V, 5 TO 7 W	EA	60		
351.	LAMP, LED LIGHT TUBE, 9 W, 2 FT, 230 V, COOL WHITE	EA	200		

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Item no	Description	Unit	Estimated Quantities	Price per Item	Total Price
352.	LAMP, LED LIGHT TUBE, 18 W, 4 FT, 230 V, COOL WHITE	EA	200		
353.	LAMP, LED LIGHT TUBE, 24 W, 5 FT, 230 V, COOL WHITE	EA	200		
354.	35 x 12 mm Crimp Lug	EA	50		
355.	4 x 4, 230 V, 1 x 3 PIN, 1 x 2 PIN, 2 x USB SWITCHED SOCKET OUTLET,	EA	60		
PART ONE - TOTAL FOR 3 YEARS					

**SECTION B - PRICING SCHEDULE - PART TWO
STORE S13A AT MARINE SERVICES**

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantity	Price per Item	Total Price
1.	AA BATTERY	EA	50		
2.	AAA BATTERY	EA	50		
3.	AUXILIARY CONTACTS 22E	EA	10		
4.	BALLAST FLOURESCENT 230 V SINGLE, 2 X 18 W	EA	20		
5.	BATTERY 12 V 102 A/h DEEP CYCLE TIMBLE TYPE	EA	10		
6.	BATTERY 12V 102A/h DEEP CYCLE TYPE	EA	10		
7.	BATTERY 12V GP1272 28W	EA	10		
8.	BAYONET GLOBE PIN TYPE 24 V 60 W	EA	100		
9.	BLOCK RECTIFIERS 0-1000 V 35 AMP KBPC3510	EA	20		
10.	BLOCK RECTIFIERS KBPC25-005	EA	10		
11.	BOTTLE FUSE 10 A 500 V	EA	30		
12.	BUSSMAN FUSE 400V 4A 10.3 X 38 C10G6	EA	50		
13.	D SIZE BATTERY	EA	10		
14.	ELECTRO KLEEN AEROSOL	EA	5		
15.	ELECTROMATIC TIMER EXTERNAL START 24 V S1221166724	EA	5		
16.	ELETRONIC COMPONENT CLEANER NO.276	EA	5		
17.	FLEXIBLE CABLE, 3 CORE, 2.5 mm ² BLACK	m	30		
18.	FLOOD LIGHT BULBS 230 V, 400 W, HPS	EA	3		
19.	FLOOD LIGHT FITTING 230 V, 500 W, HPS	EA	10		
20.	FLOURESENT FITTING 4FT 230V WEATHER PROOF DOUBLE NORDLAND	EA	50		
21.	FUSE 230 V 10 AMP	EA	10		
22.	FUSE 630 AMP 1000 V P/N 3NE3336	EA	30		
23.	FUSE GEC HRC 6 A	EA	100		
24.	FUSE 230 V 10 AMP	EA	10		
25.	GLASS FUSE F2A 30 mm x 6 mm	EA	50		
26.	GLASS FUSE F30A 30 mm x 6 mm	EA	50		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantity	Price per Item	Total Price
27.	GLOBE B22 230 V 11 W COOL WHITE	EA	100		
28.	GLOBE SCREW TYPE 24 V 60 W	EA	100		
29.	GLOBE SCREW TYPE 32 V 60 W	EA	50		
30.	GOLF BALL GLOBES 230 V 40 W SCREW TYPE	EA	25		
31.	HALOGEN LAMP 2 PIN 24 V 50 W	EA	25		
32.	HALOGEN LAMPS 230 V 500 W	EA	10		
33.	HEAT SHRINK 2 mm	EA	10		
34.	HEAT SHRINK 4 mm	EA	10		
35.	HEAT SHRINK 6 mm	EA	10		
36.	HEAT SHRINK 8 mm	EA	5		
37.	HEATING ELEMENT FOR 200 L GEYSER	EA	10		
38.	ILME INSULATORS FEMALE 3 POLE	EA	100		
39.	INSTRUMENT GLOBE 24 V 3 W BAYONET	EA	100		
40.	LAMP FLRSCNT;230 V TLD18 W, 600 mm	EA	5		
41.	LED FLOODLIGHT 230 V, 30 W, IP67	EA	10		
42.	MALE PLUG MENNEKES 125 AMP	EA	2		
43.	METAL LUG 70 X 10 mm	EA	50		
44.	MULTI-FUNCTION TIMER ST100/30VDC-DP – MF TIMER TO 120s 10 -30 VAC/DC	EA	30		
45.	NAV LIGHT BULB 230 V 40 P28S	EA	12		
46.	NAV LIGHT BULB 24 V 40 P28S	EA	10		
47.	PLUG TOP 6H 400 V 32 AMP	EA	2		
48.	PORT NAV LIGHT SBb55 FITTINGS	EA	20		
49.	REVOLVING BEACON LIGHT 24 V AMBER	EA	5		
50.	SCAME PLUG 3PT-IP67-63A-6H	EA	10		
51.	SEARCH LIGHT BULBS 230 V 1000 W	EA	20		
52.	SIBA PUSH IN FUSE 100 A 500 V 120 kA	EA	50		
53.	SILICONE WIRE 1.5 mm ² BLACK	m	50		

Electrical Engineering Department

Item no	Description	Unit	Estimated Quantity	Price per Item	Total Price
54.	SILICONE WIRE 2.5 mm ² RED	m	50		
55.	SPEED SENSOR TO CURRENT CONVERTER 24 V DC 4-20 AMP O/P	EA	2		
56.	STARBOARD NAV LIGHT SSb55 FITTINGS	EA	50		
57.	STERN NAV LIGHT H55 WHITE FITTINGS	EA	50		
58.	STERN NAV LIGHT H55 YELLOW FITTINGS	EA	50		
59.	THERMOSTAT FOR 200L GEYSER	EA	10		
60.	TIMER (DELAY OFF) AC/DC 24V 1.5 – 30s TYPE ML 7863.81	EA	5		
61.	TRANSFORMER 100 VA 400 V/ 230 V	EA	3		
PART TWO - TOTAL FOR 3 YEARS					

TOTAL COST FOR YEAR 1 = (PART ONE TOTAL FOR 3 YEARS + PART TWO TOTAL FOR 3 YEARS)/ 3	
TOTAL COST FOR YEAR 2 = TOTAL COST FOR YEAR 1 X CPI (%) + TOTAL COST FOR YEAR 1	
TOTAL COST FOR YEAR 3 = TOTAL COST FOR YEAR 2 X CPI (%) + TOTAL COST FOR YEAR 2	
TOTAL FOR 3 YEARS (Excl. VAT)	
VAT (15%)	
TOTAL FOR 3 YEARS (Incl. VAT)	

Note:

- Please state CPI for Year 2: _____
- Please state CPI for Year 3: _____

SECTION C

STATEMENT OF COMPLIANCE

THIS TENDER COMPLIES WITH ALL CLAUSES OF THIS SPECIFICATION IN ALL RESPECTS.

SIGNATURE OF TENDERER:

DATE:

**THIS TENDER COMPLIES GENERALLY WITH THE CLAUSES OF THIS SPECIFICATION, BUT
DEVIATES FROM IT ON THE FOLLOWING POINTS:**

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SIGNATURE OF TENDERER:

DATE:

END

**TNPA
PORT OF DURBAN**