

SECTION 2.1: SPECIFICATIONS**2.1 TECHNICAL SPECIFICATIONS AND COMPLIANCE****INDEX OF ITEMS**

Item No.	Description of Items
1	Cordless Power Tools, Batteries and Chargers
2	Mains-Operated Power Tools
3	Electrical and General Hand Tools & Tool Kits
4	Cable Preparation, Crimping, Termination and Pulling Tools
5A–5C	LV Electrical Testing and CoC Equipment
6A–6F	MV/HV Testing, Phasing and Voltage Detection Equipment
7A–7B	Earthing, Operating and Line-Safety Equipment
8A–8K	Specialised Electrical Diagnostic and Fault-Finding Equipment
9	General Measuring and Inspection Equipment
10	Vehicle and Field Auxiliary Power Inverters
11	Solar-Capable Auxiliary Power Equipment
12	Auxiliary Power Batteries
13	Solar PV Modules and Auxiliary Power Accessories
14	Workshop and Field Equipment
15	Ladders and Access Equipment
16	Specialised Mechanical and Pump Hand Tools
17	Pipework and Pump-Pipe Maintenance Tools
18A–18C	Motor, Pump, Bearing and Alignment Tools
19A–19C	Lifting and Handling Equipment
20	Heavy-Duty Fastening and Impact Equipment
21	Toolboxes and Equipment Storage

2.1.1 SPECIFICATIONS

GENERAL REQUIREMENTS APPLICABLE TO ALL ITEMS

- All goods shall be new, unused, genuine products sourced through traceable supply channels and suitable for professional municipal or industrial duty.
- Specifications are intended to be brand-neutral. Where an equivalent product is offered, the tenderer shall demonstrate compliance with every stated performance, safety, accessory, environmental, warranty and support requirement.
- All equipment shall be supplied complete and ready for normal operation, including normal OEM accessories, manuals and protective cases/bags where applicable, unless an accessory is separately priced.
- Electrical measuring instruments shall comply with the applicable IEC 61010 and IEC 61557 requirements for the intended application. Live-working and MV/HV safety equipment shall comply with the applicable standards stated in the item specification.
- Calibration, dielectric, proof-load, conformity and other applicable certificates shall identify the offered equipment by make, model and serial number where applicable and shall be current at delivery.
- Test and measuring instruments shall have reasonable access to repair, spare parts and calibration support within South Africa. The tenderer shall state the local support arrangement where requested.
- The quantities in Section 2.2 are notional evaluation quantities only and do not constitute a purchase commitment. Actual purchases will be made on an as-and-when-required basis by authorised Purchase Order.

Unless otherwise stated, all requirements specified under each item are minimum requirements. Tenderers may offer equipment with equal or superior specifications, provided full compliance is demonstrated.

Where a product offered is superseded, discontinued or improved during the contract period, the Municipality may approve equivalent or improved technologies introduced during the Contract period, provided that such technologies meet or exceed the minimum technical requirements specified in this Contract.

Delivery Requirements

The supplier shall:

- (a) deliver to Municipal stores, depots, workshops or other designated sites within the Hessequa municipal area;
- (b) deliver within the period stated on each official Purchase Order, which shall not exceed the lead time tendered in the pricing schedule;
- (c) deliver at no additional transport cost, all delivery costs being included in the tendered unit price (see Section 2.2);
- (d) replace damaged or defective items at no cost to the Municipality; and
- (e) notify the Municipality in writing without delay if a delivery date cannot be met.

Tenderers shall state separate lead times for standard stock items and special-order items in the pricing tables. Where an urgent delivery is requested outside the tendered lead time, the Municipality and the supplier may agree in writing on expedited delivery, and any additional transport cost shall be agreed before the order is accepted.

ITEM 1: CORDLESS POWER TOOLS, BATTERIES AND CHARGERS**Common Battery Platform Requirements**

All cordless tools, batteries and chargers offered under this Item shall be from a common interchangeable battery platform and shall be fully compatible with one another.

- Cordless tools shall operate on a common nominal 18 V class battery platform. Manufacturer-designated 18 V / 20 V Max equivalent platforms will be accepted.
- Batteries supplied shall be interchangeable between all compatible cordless tools offered under this Item.
- Chargers shall be compatible with all battery capacities offered under this Item.
- The tenderer shall offer one common manufacturer/OEM battery platform for the complete category.
- Where a tool requires more than one battery for operation, it shall use batteries from the same common platform.
- Batteries shall be rechargeable lithium-ion type.
- Spare batteries and chargers shall be available separately throughout the contract period.
- All tools, batteries and chargers shall be suitable for professional / industrial use.
- The tenderer shall state the manufacturer, battery platform and model/range offered.
- All equipment shall be new and unused.
- Pricing requirements for this Item are set out in Section 2.2.

1.1 Cordless Spray Gun

Cordless spray gun suitable for painting and maintenance of electrical kiosks, mini-substations and related equipment.

- Compatible with the Item 1 Common Battery Platform Requirements
- Container capacity approximately 1 litre or greater
- Adjustable paint/material flow
- Adjustable horizontal, vertical and circular spray patterns
- Suitable for general paint and protective-coating applications
- Supplied with applicable spray nozzle(s) and cleaning accessories
- Suitable for professional maintenance use

1.2 Cordless Orbital Sander

Professional cordless orbital sander suitable for preparation of painted and metallic surfaces.

- Compatible with the Item 1 Common Battery Platform Requirements
- Approximately 125-150 mm sanding pad or equivalent professional configuration
- Variable or multi-stage speed
- Dust collection facility and/or dust extraction connection
- Brushless motor
- Suitable for professional maintenance work

1.3 Cordless Rotary Hammer Drill

Professional cordless rotary hammer drill suitable for electrical installation and maintenance.

- Compatible with the Item 1 Common Battery Platform Requirements
- SDS-Plus tool holder
- Rotary drilling and hammer drilling functions
- Variable speed
- Forward and reverse operation
- Brushless motor
- Suitable for concrete, masonry and similar materials

1.4 Cordless Industrial Blower

Professional cordless blower suitable for cleaning electrical equipment, kiosks, mini-substations and work areas.

- Compatible with the Item 1 Common Battery Platform Requirements
- Variable or multi-stage speed
- Suitable for professional cleaning applications
- Brushless motor
- Supplied with suitable blower nozzle

1.5 Cordless Drill / Driver

Professional cordless drill/driver suitable for electrical installation and maintenance.

- Compatible with the Item 1 Common Battery Platform Requirements
- Minimum 13 mm keyless chuck
- Variable speed
- Forward and reverse operation
- Adjustable torque settings
- Electronic brake
- Brushless motor

1.6 Cordless Impact Driver

Professional cordless impact driver.

- Compatible with the Item 1 Common Battery Platform Requirements
- 1/4 inch hex tool holder
- Variable speed / impact control
- Forward and reverse operation
- Brushless motor

1.7 Cordless Impact Wrench - 1/2 inch Drive

Professional cordless impact wrench suitable for electrical and mechanical maintenance.

- Compatible with the Item 1 Common Battery Platform Requirements
- 1/2 inch square drive
- Variable speed / torque settings
- Forward and reverse operation
- Brushless motor
- Minimum fastening torque approximately 400 Nm

1.8 Cordless Impact Wrench - 3/4 inch Drive

Heavy-duty professional cordless impact wrench suitable for pump, electrical and mechanical maintenance.

- Compatible with the Item 1 Common Battery Platform Requirements
- 3/4 inch square drive
- Variable speed / torque settings
- Forward and reverse operation
- Brushless motor
- Minimum fastening torque approximately 800 Nm

1.9 Cordless Angle Grinder - 115 mm

Professional cordless angle grinder.

- Compatible with the Item 1 Common Battery Platform Requirements
- 115 mm disc
- Brushless motor
- Adjustable safety guard
- Side handle
- Anti-restart protection
- Electronic brake or equivalent rapid stopping system

1.10 Cordless Reciprocating Saw

Professional cordless reciprocating saw.

- Compatible with the Item 1 Common Battery Platform Requirements
- Variable speed
- Tool-free or quick-change blade system
- Brushless motor
- Suitable for cutting metal, conduit, timber and general maintenance materials

1.11 Cordless Circular Saw

Professional cordless circular saw.

- Compatible with the Item 1 Common Battery Platform Requirements
- Blade diameter approximately 165-185 mm
- Adjustable cutting depth
- Adjustable bevel angle
- Safety lock-off
- Electric brake
- Brushless motor

1.12 Cordless Heat Gun

Professional cordless heat gun suitable for electrical maintenance.

- Compatible with the Item 1 Common Battery Platform Requirements
- Minimum two temperature settings or variable temperature control
- Suitable for heat-shrink tubing and general electrical maintenance
- Supplied with appropriate nozzle attachments

1.13 Cordless LED Work Light

Professional cordless LED work light.

- Compatible with the Item 1 Common Battery Platform Requirements
- High-output LED light source
- Adjustable lighting angle
- Minimum two brightness settings
- Stable free-standing arrangement
- Suitable for workshop, kiosk, substation and field use

1.14 Spare Rechargeable Battery - Standard Capacity

- Compatible with the Item 1 Common Battery Platform Requirements
- Nominal 18 V class
- Lithium-ion
- Capacity approximately 4-5 Ah
- Battery charge/status indication
- OEM-approved for the offered battery platform

1.15 Spare Rechargeable Battery - High Capacity

- Compatible with the Item 1 Common Battery Platform Requirements
- Nominal 18 V class

- Lithium-ion
- Capacity minimum 6 Ah
- Battery charge/status indication
- OEM-approved for the offered battery platform

1.16 Fast Battery Charger

- Compatible with the Item 1 Common Battery Platform Requirements
- Compatible with all batteries offered under Item 1
- Suitable for 230 V, 50 Hz supply
- OEM-approved charger
- Automatic charge management and battery protection

1.17 Dual-Port / Multi-Port Battery Charger

- Compatible with the Item 1 Common Battery Platform Requirements
- Compatible with all batteries offered under Item 1
- Minimum two charging positions
- Suitable for 230 V, 50 Hz supply
- OEM-approved charger
- Automatic charge management and battery protection

ITEM 2: MAINS-OPERATED POWER TOOLS

General Requirements

The following general requirements shall apply to all goods offered under Item 2:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

2.1 Electric spray gun

Professional electric spray gun suitable for regular municipal field, workshop and maintenance use.

- 230 V professional HVLP-type spray gun.
- 800-1,000 ml container.
- Adjustable material flow and spray patterns.
- Interchangeable nozzles and cleaning accessories.

2.2 Electric orbital sander

Professional electric orbital sander suitable for regular municipal field, workshop and maintenance use.

- 230 V professional random orbital sander.
- 125-150 mm pad.
- Variable speed.
- Effective dust collection/extraction connection.

2.3 Electric industrial blower

Professional electric industrial blower suitable for regular municipal field, workshop and maintenance use.

- 230 V professional blower.
- Variable speed preferred.
- Suitable for workshop, panel and kiosk cleaning.
- Nozzle accessories included.

2.4 Angle grinder - 115 mm, 230 V

Professional angle grinder - 115 mm, 230 v suitable for regular municipal field, workshop and maintenance use.

- Professional 230 V grinder.
- 115 mm disc.
- Input at least 750 W.
- Restart/no-volt protection, adjustable guard, side handle and spindle lock.

2.5 Angle grinder - 230 mm, 230 V

Professional angle grinder - 230 mm, 230 v suitable for regular municipal field, workshop and maintenance use.

- Professional 230 V grinder.
- 230 mm disc.
- Input at least 2,000 W.
- Soft start, restart protection, anti-vibration side handle and spindle lock.

2.6 Electric drill - 13 mm

Professional electric drill - 13 mm suitable for regular municipal field, workshop and maintenance use.

- 230 V professional drill.
- Keyed/keyless 13 mm chuck.
- Input at least 700 W.
- Variable speed and reverse.
- Auxiliary handle.

2.7 Rotary hammer - SDS-plus

Professional rotary hammer - sds-plus suitable for regular municipal field, workshop and maintenance use.

- 230 V professional SDS-plus rotary hammer.
- Input at least 800 W.
- Drill/hammer/chisel modes.
- Impact energy at least 2.5 J.

2.8 Demolition / breaker hammer

Professional demolition / breaker hammer suitable for regular municipal field, workshop and maintenance use.

- 230 V professional breaker.
- Input at least 1,300 W.
- Anti-vibration handles preferred.
- Supplied with pointed and flat chisels and case.

2.9 Electric heat gun

Professional electric heat gun suitable for regular municipal field, workshop and maintenance use.

- 230 V heat gun.
- Input at least 1,600 W.
- Maximum temperature at least 500 degrees C.
- Multiple heat/airflow settings and nozzle set.

2.10 Electric impact wrench - 1/2 inch drive

Professional electric impact wrench - 1/2 inch drive suitable for regular municipal field, workshop and maintenance use.

- 230 V professional impact wrench.
- 1/2 inch square drive.
- Maximum torque at least 350 Nm.
- Forward/reverse operation.

2.11 Electric impact wrench - 3/4 inch drive

Professional electric impact wrench - 3/4 inch drive suitable for regular municipal field, workshop and maintenance use.

- 230 V heavy-duty impact wrench.
- 3/4 inch square drive.
- Maximum torque at least 700 Nm.
- Forward/reverse operation.

2.12 Electric reciprocating saw

Professional electric reciprocating saw suitable for regular municipal field, workshop and maintenance use.

- 230 V professional reciprocating saw.
- Input at least 900 W.
- Variable speed.

- Tool-less blade change.
- Wood/metal blades included.

2.13 Electric circular saw - 165 to 190 mm

Professional electric circular saw - 165 to 190 mm suitable for regular municipal field, workshop and maintenance use.

- 230 V professional circular saw.
- Input at least 1,200 W.
- 165-190 mm blade.
- Bevel adjustment and guide.
- Dust extraction port.

2.14 Bench grinder - approx. 150 mm

Professional bench grinder - approx. 150 mm suitable for regular municipal field, workshop and maintenance use.

- 230 V bench grinder.
- Wheel diameter approximately 150 mm.
- Motor at least 350 W.
- Eye shields, tool rests and spark guards.

2.15 Portable magnetic drill

Professional portable magnetic drill suitable for regular municipal field, workshop and maintenance use.

- 230 V magnetic-base drill suitable for structural steel.
- Annular cutter capacity at least 30 mm.
- Secure magnetic base.
- Coolant arrangement and safety strap.

ITEM 3: ELECTRICAL AND GENERAL HAND TOOLS & TOOL KITS

General Requirements

The following general requirements shall apply to all goods offered under Item 3:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

3.1 Insulated combination pliers

Professional insulated combination pliers suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated, individually marked for 1,000 V AC.

- Approximately 200 mm.
- Forged professional-grade steel.

3.2 Insulated long-nose pliers

Professional insulated long-nose pliers suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated, approximately 200 mm.
- Professional forged-steel construction.

3.3 Insulated diagonal cutters

Professional insulated diagonal cutters suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated, approximately 160-180 mm.
- Suitable for copper conductors.

3.4 Insulated cable cutters

Professional insulated cable cutters suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated.
- Approximately 200 mm.
- Suitable for normal LV copper/aluminium cable sizes within OEM rating.

3.5 Insulated water-pump pliers

Professional insulated water-pump pliers suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated.
- Approximately 250 mm.
- Multi-position jaws and anti-slip handles.

3.6 Manual wire stripper

Professional manual wire stripper suitable for regular municipal field, workshop and maintenance use.

- Professional manual stripper for common solid/stranded conductors approximately 0.5-6 mm².
- Cutting function preferred.

3.7 Automatic wire stripper

Professional automatic wire stripper suitable for regular municipal field, workshop and maintenance use.

- Self-adjusting professional stripper for common LV conductor sizes.
- Adjustable strip length.
- Cutter included.

3.8 Electrician cable knife

Professional electrician cable knife suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated electrician knife.
- Protected blade and ergonomic non-slip handle.

3.9 Electrician scissors

Professional electrician scissors suitable for regular municipal field, workshop and maintenance use.

- Professional electrical scissors.
- Serrated cutting edge.
- Suitable for cable insulation, tape and light conductor work.

3.10 Insulated flat / Phillips screwdriver set

Professional insulated flat / phillips screwdriver set suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 set for 1,000 V AC.
- Common slotted and Phillips sizes.
- Individually insulated tools in case/roll.

3.11 Insulated Pozidriv screwdriver set

Professional insulated pozidriv screwdriver set suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 set including common PZ sizes.
- Individually insulated and marked.

3.12 Insulated Torx screwdriver set

Professional insulated torx screwdriver set suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated Torx set covering common electrical terminal sizes.
- Protective case/holder.

3.13 Insulated nut-driver set

Professional insulated nut-driver set suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 insulated metric nut drivers covering common electrical equipment sizes.
- Durable holder/case.

3.14 Insulated torque screwdriver set

Professional insulated torque screwdriver set suitable for regular municipal field, workshop and maintenance use.

- IEC 60900 adjustable torque screwdriver approximately 1-5 Nm.
- Accuracy $\pm 6\%$ or better.
- Insulated bits, case and calibration certificate.

3.15 Heavy-duty non-insulated screwdriver set

Professional heavy-duty non-insulated screwdriver set suitable for regular municipal field, workshop and maintenance use.

- Professional slotted and Phillips set, minimum 8 pieces.
- Hardened tips and heavy-duty handles.

3.16 Combination spanner set - 6 to 32 mm

Professional combination spanner set - 6 to 32 mm suitable for regular municipal field, workshop and maintenance use.

- Professional chrome-vanadium metric combination spanner set, 6-32 mm, in roll/case.

3.17 Adjustable spanner - 250 mm

Professional adjustable spanner - 250 mm suitable for regular municipal field, workshop and maintenance use.

- Professional 250 mm adjustable spanner with hardened jaws and smooth adjustment.

3.18 Adjustable spanner - 300 mm

Professional adjustable spanner - 300 mm suitable for regular municipal field, workshop and maintenance use.

- Professional 300 mm adjustable spanner with hardened jaws and smooth adjustment.

3.19 Metric socket set - 1/2 inch drive, 8 to 32 mm

Professional metric socket set - 1/2 inch drive, 8 to 32 mm suitable for regular municipal field, workshop and maintenance use.

- Professional 1/2 inch six-point metric set 8-32 mm with ratchet, extension bars, universal joint and fitted case.

3.20 Heavy-duty socket set - 3/4 inch drive

Professional heavy-duty socket set - 3/4 inch drive suitable for regular municipal field, workshop and maintenance use.

- Professional 3/4 inch metric socket set including approximately 36-46 mm sizes, ratchet/handle and extension bar.

3.21 Allen / hex key set - 1.5 to 10 mm

Professional allen / hex key set - 1.5 to 10 mm suitable for regular municipal field, workshop and maintenance use.

- Professional long-arm metric hex key set 1.5-10 mm.
- Clearly marked holder.

3.22 Torx key set - T10 to T50

Professional torx key set - t10 to t50 suitable for regular municipal field, workshop and maintenance use.

- Professional Torx key set T10-T50.
- Hardened alloy steel and marked holder.

3.23 Ratchet spanner set

Professional ratchet spanner set suitable for regular municipal field, workshop and maintenance use.

- Professional metric ratcheting combination spanner set covering common electrical/mechanical sizes.

3.24 Breaker bar - 1/2 inch drive

Professional breaker bar - 1/2 inch drive suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty professional 1/2 inch breaker bar, approximately 450 mm or greater.

3.25 Breaker bar - 3/4 inch drive

Professional breaker bar - 3/4 inch drive suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty professional 3/4 inch breaker bar, approximately 600 mm or greater.

3.26 Hacksaw

Professional hacksaw suitable for regular municipal field, workshop and maintenance use.

- Professional 300 mm hacksaw frame with high-tension blade adjustment and spare blades.

3.27 Junior hacksaw

Professional junior hacksaw suitable for regular municipal field, workshop and maintenance use.

- Professional junior hacksaw with spare blades.

3.28 Ball-pein hammer - approx. 500 g

Professional ball-pein hammer - approx. 500 g suitable for regular municipal field, workshop and maintenance use.

- Forged professional 500 g ball-pein hammer with shock-resistant handle.

3.29 Soft-face hammer - approx. 1 kg

Professional soft-face hammer - approx. 1 kg suitable for regular municipal field, workshop and maintenance use.

- Non-marring soft-face hammer approximately 1 kg.
- Replaceable faces preferred.

3.30 Dead-blow hammer

Professional dead-blow hammer suitable for regular municipal field, workshop and maintenance use.

- Professional reduced-rebound dead-blow hammer with non-marring face.

3.31 Cold chisel set

Professional cold chisel set suitable for regular municipal field, workshop and maintenance use.

- Hardened steel cold-chisel set, minimum three common widths.

3.32 Centre punch set

Professional centre punch set suitable for regular municipal field, workshop and maintenance use.

- Hardened centre-punch set, minimum three sizes.

3.33 General pry-bar set

Professional general pry-bar set suitable for regular municipal field, workshop and maintenance use.

- Professional pry-bar set of at least three lengths for general workshop use.
- Hardened shafts and durable handles.

3.34 Complete electrician toolbox with tools

Professional complete electrician toolbox with tools suitable for regular municipal field, workshop and maintenance use.

- Lockable wheeled toolbox/hard case containing a comprehensive professional electrical hand-tool set including IEC 60900 screwdrivers/pliers/cable cutter, insulated spanners, 1/2 inch socket set, adjustable spanners, ratchet cable cutter, wire stripper, crimpers, torque screwdriver, hex/Torx keys, fish tape, hacksaw, hammer, level and tape.

3.35 Complete assistant tool bag with tools

Professional complete assistant tool bag with tools suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty lockable bag/backpack containing IEC 60900 screwdrivers and pliers, stripper, electrician knife, adjustable spanner, hacksaw, hammer, 5 m tape, 300 mm spirit level, LED headlamp and other normal assistant hand tools.

ITEM 4: CABLE PREPARATION, CRIMPING, TERMINATION AND PULLING TOOLS

General Requirements

The following general requirements shall apply to all goods offered under Item 4:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

4.1 Battery hydraulic crimper - approx. 10 to 400 mm²

Battery hydraulic crimper - approx. 10 to 400 mm² suitable for professional municipal auxiliary-power and maintenance applications.

- Professional electro-hydraulic crimper for copper/aluminium conductors approximately 16-400 mm².
- Rotating head, automatic pressure relief/return, complete matched die set, two batteries, charger, case and pressure/calibration certificate.

4.2 Manual hydraulic crimper - approx. 300 mm² and above

Professional manual hydraulic crimper - approx. 300 mm² and above suitable for regular municipal field, workshop and maintenance use.

- Manual hydraulic crimper suitable for large copper/aluminium lugs to at least 300 mm².
- Complete dies, pump/ram arrangement and case.

4.3 Hydraulic dieless crimper

Professional hydraulic dieless crimper suitable for regular municipal field, workshop and maintenance use.

- Professional dieless hydraulic crimper suitable for broad copper/aluminium lug range.
- Stated conductor range and output force.
- Case included.

4.4 Battery hydraulic cable cutter

Battery hydraulic cable cutter suitable for professional municipal auxiliary-power and maintenance applications.

- Electro-hydraulic cutter for copper/aluminium power cable up to at least 50 mm cable diameter or 240 mm².
- Rotating head, automatic return, overload protection, two batteries, charger and case.

4.5 Ratchet cable cutter - medium

Professional ratchet cable cutter - medium suitable for regular municipal field, workshop and maintenance use.

- Manual ratchet cutter for copper/aluminium cable up to at least 240 mm².
- Replaceable hardened blades.
- Not for ACSR/steel unless rated.

4.6 Ratchet cable cutter - heavy duty

Professional ratchet cable cutter - heavy duty suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty manual ratchet cutter for larger copper/aluminium cable.
- Bidder to state maximum conductor and cable diameter capacity.

4.7 Cable sheath stripping tool

Professional cable sheath stripping tool suitable for regular municipal field, workshop and maintenance use.

- Adjustable professional tool for safe removal of outer cable sheath without conductor damage.
- Suitable for LV/MV cable diameters stated by bidder.

4.8 LV insulation stripping tool

Professional lv insulation stripping tool suitable for regular municipal field, workshop and maintenance use.

- Professional adjustable stripping tool for LV cable insulation.
- Controlled cutting depth and replaceable blade preferred.

4.9 MV outer sheath stripping tool

Professional mv outer sheath stripping tool suitable for regular municipal field, workshop and maintenance use.

- Professional MV cable outer-sheath stripping tool with controlled depth and circumferential/longitudinal cut capability.

4.10 MV semi-conductive screen stripping tool

Professional mv semi-conductive screen stripping tool suitable for regular municipal field, workshop and maintenance use.

- Purpose-designed tool for controlled removal of bonded/strippable semi-conductive screen on MV cable.
- Adjustable depth.

4.11 Insulation chamfering tool

Professional insulation chamfering tool suitable for regular municipal field, workshop and maintenance use.

- MV cable insulation chamfering/edge-preparation tool.
- Adjustable and suitable for common cable diameters.

4.12 Cable gland tool / spanner set

Professional cable gland tool / spanner set suitable for regular municipal field, workshop and maintenance use.

- Professional set for common brass/nylon cable gland sizes.
- Suitable for electrical installation and maintenance.

4.13 Hand lug crimper

Professional hand lug crimper suitable for regular municipal field, workshop and maintenance use.

- Mechanical crimper for non-insulated copper lugs within stated range.
- Ratchet/compound action preferred.

4.14 Ferrule crimper

Professional ferrule crimper suitable for regular municipal field, workshop and maintenance use.

- Professional ratchet ferrule crimper approximately 0.25-16 mm² with calibrated release.

4.15 Insulated terminal crimper

Professional insulated terminal crimper suitable for regular municipal field, workshop and maintenance use.

- Professional ratchet crimper for pre-insulated terminals approximately 0.5-6 mm².
- Positive release.

4.16 Solar PV connector crimping set

Professional solar pv connector crimping set suitable for regular municipal field, workshop and maintenance use.

- Professional crimping, assembly and release tools for common PV connector systems.
- Suitable for 2.5-6 mm² PV cable.
- Case included.

4.17 Hydraulic knockout punch set

Professional hydraulic knockout punch set suitable for regular municipal field, workshop and maintenance use.

- Hydraulic knockout system for electrical enclosures.
- Round punches approximately 22-64 mm.
- Draw studs, spacers and case.
- Capacity/material thickness stated.

4.18 Manual knockout punch set

Professional manual knockout punch set suitable for regular municipal field, workshop and maintenance use.

- Manual punch set for common electrical conduit/gland holes approximately 20-63 mm.
- Dies and draw studs in case.

4.19 Fish tape - 30 m

Professional fish tape - 30 m suitable for regular municipal field, workshop and maintenance use.

- Non-conductive or insulated professional fish tape at least 30 m in durable reel case.
- Replaceable pulling eye.

4.20 Fish tape - 60 m

Professional non-conductive fish tape suitable for pulling conductors through conduits and cable routes.

- Flexible non-conductive polyester, nylon or fibreglass fish tape at least 60 m long, supplied in a durable enclosed reel/case with rewind handle.
- Replaceable pulling eye or leader; metre markings preferred; suitable for professional conduit and cable-pulling work.

4.21 Fibreglass duct rodder / pulling rod - approx. 50 m

Professional semi-rigid fibreglass duct rodder suitable for pulling draw ropes and cables through ducts and conduits.

- Non-conductive fibreglass rod approximately 50 m long on a robust reel cage, with replaceable guide head and pulling eye; metre markings and repair kit preferred.

4.22 Cable pulling grip / stocking

Professional cable pulling grip / stocking suitable for regular municipal field, workshop and maintenance use.

- Flexible mesh pulling grip for power cable.
- Bidder to state cable-diameter range and safe working load.

4.23 Cable roller set

Professional cable roller set suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty straight/corner cable rollers suitable for pulling LV power cables.
- Corrosion-resistant construction.
- Set composition stated.

4.24 Cable drum jack / stand and spindle set

Professional cable drum jack / stand and spindle set suitable for regular municipal field, workshop and maintenance use.

- Pair of stable mechanical/hydraulic cable-drum stands with spindle and retaining collars.
- SWL at least 3 tonnes per set.
- Positive locking and load/test certification.

4.25 Stainless-steel banding tensioner and cutter

Professional stainless-steel banding tensioner and cutter suitable for regular municipal field, workshop and maintenance use.

- Manual tensioning/cutting tool compatible with stainless-steel band approximately 4.8-19 mm.
- Hardened frame, spring gripper, spin handle and integral cutter.

4.26 Compact portable electrical label printer

Professional compact portable electrical label printer suitable for regular municipal field, workshop and maintenance use.

- Handheld rechargeable printer with integrated keyboard.
- Durable adhesive, cable-wrap/flag and self-laminating labels.
- Heat-shrink printing preferred.
- Maximum label width approximately 18-24 mm.
- Cutter, case and starter consumables.

4.27 Large portable electrical label printer

Professional large portable electrical label printer suitable for regular municipal field, workshop and maintenance use.

- Portable rechargeable professional printer with integrated keyboard/display.
- Supports cable, panel, equipment, self-laminating and heat-shrink labels.
- Maximum label width at least approximately 36 mm.
- Cutter, USB/wireless preferred, case and starter consumables.

ITEM 5: LV ELECTRICAL TESTING AND COC EQUIPMENT**General Requirements**

The following general requirements shall apply to all goods offered under Item 5:

- All instruments shall be new, unused and suitable for professional municipal electrical testing, diagnostic or measurement work.
- Applicable IEC safety and functional standards stated in the item specification shall be met.
- Instruments shall be supplied complete with normal test leads, probes, clamps, chargers/batteries, software and protective cases where applicable.
- A traceable calibration or verification certificate shall be supplied where applicable.
- The tenderer shall state the make, model, measurement range, accuracy, safety category, warranty and South African support arrangement where requested.

5.1 Earth-leakage unit / RCD tester

Professional earth-leakage unit / rcd tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Standalone RCD tester to IEC 61557-6.
- Common 10/30/100/300/500 mA settings.
- Trip-time, ramp/trip-current and 0/180-degree testing.

- Robust CAT-rated leads and traceable calibration certificate.

5.2 Digital multimeter

Professional digital multimeter suitable for municipal electrical testing, measurement and diagnostic applications.

- Professional DMM measuring AC/DC voltage to at least 600 V, current, resistance, continuity and diode.
- Minimum CAT III 600 V.
- Fused leads, case and calibration certificate.

5.3 True-RMS digital multimeter

Professional true-rms digital multimeter suitable for municipal electrical testing, measurement and diagnostic applications.

- Industrial True-RMS DMM.
- AC/DC voltage to 1,000 V.
- Current, resistance, continuity, frequency and capacitance.
- CAT IV 600 V / CAT III 1,000 V preferred.
- Case and calibration certificate.

5.4 AC clamp meter

Professional ac clamp meter suitable for municipal electrical testing, measurement and diagnostic applications.

- True-RMS AC clamp meter to at least 600 A.
- Voltage, resistance and continuity.
- Minimum CAT III 600 V.
- Case and calibration certificate.

5.5 AC/DC True-RMS clamp meter

Professional ac/dc true-rms clamp meter suitable for municipal electrical testing, measurement and diagnostic applications.

- True-RMS AC/DC clamp meter to at least 1,000 A.
- Voltage, resistance, continuity, frequency/capacitance preferred.
- Inrush.
- CAT IV 600 V preferred.
- Calibration certificate.

5.6 Insulation resistance tester - up to 1 kV

Professional insulation resistance tester - up to 1 kv suitable for municipal electrical testing, measurement and diagnostic applications.

- Test voltages 250/500/1,000 V.
- Insulation range at least 20 Gohm.

- PI/DAR preferred.
- Automatic discharge, live-circuit warning.
- IEC 61557-2.
- Case and calibration certificate.

5.7 Earth resistance tester

Professional earth resistance tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Two-/three-/four-pole earth resistance testing.
- Range to at least 2 kohm.
- Interference warning.
- Soil resistivity preferred.
- Stakes, leads/reels, case and calibration certificate.

5.8 Clamp-on earth resistance tester

Professional clamp-on earth resistance tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Clamp-on earth resistance tester suitable for multi-grounded systems.
- Resistance and leakage-current measurement.
- Data hold/logging preferred.
- Case and calibration certificate.

5.9 Low-resistance / continuity tester

Professional low-resistance / continuity tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable low-resistance/continuity tester with at least 200 mA continuity test current.
- Lead-zero function.
- IEC 61557-4 where applicable.
- Calibration certificate.

5.10 Loop impedance / PSC tester

Professional loop impedance / psc tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Loop/line impedance with no-trip mode.
- Prospective short-circuit/earth-fault current.
- IEC 61557-3.
- CAT III 600 V or better.
- Plug adaptor, leads, case and calibration certificate.

5.11 Phase rotation tester

Professional phase rotation tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Three-phase sequence/presence tester covering at least 120-480 V AC, 50 Hz.
- Clockwise/counter-clockwise indication.
- IEC 61557-7.
- CAT III 600 V or better.

5.12 Two-pole voltage tester

Professional two-pole voltage tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Professional two-pole tester up to at least 1,000 V AC/DC.
- Continuity and phase indication.
- Load/low-impedance function preferred.
- Suitable CAT rating.

5.13 Non-contact LV voltage detector

Professional non-contact LV voltage detector suitable for municipal electrical testing, measurement and diagnostic applications.

- Dual-range non-contact detector covering approximately 12-1,000 V AC.
- Audible/visual alarm, self-test, low-battery indication and pocket clip.

5.14 Socket polarity tester

Professional socket polarity tester suitable for municipal electrical testing, measurement and diagnostic applications.

- 230 V South African plug-in tester for common wiring/polarity checks.
- RCD functional test preferred.

5.15 Multifunction installation tester

Professional multifunction installation tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Professional installation tester for fixed wiring verification: continuity, insulation, loop/line impedance, PSC/PEFC, RCD testing, phase sequence and voltage/frequency.
- Relevant IEC 61557 parts.
- Memory/reporting preferred.
- Calibration certificate.

5.16 Complete CoC compliance testing kit

Professional complete CoC compliance testing kit suitable for regular municipal field, workshop and maintenance use.

- Complete professional kit suitable for SANS 10142-1 verification, including multifunction installation tester, True-RMS clamp meter and all leads/adaptors required for continuity, insulation, loop/PSC, RCD, earth and phase-sequence testing.

- Hard case and calibration certificates.

5.17 Portable appliance tester

Professional portable appliance tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable appliance safety tester for Class I, Class II and extension leads.
- Protective-earth continuity, insulation and leakage/substitute leakage.
- Automatic sequences, pass/fail, memory/reporting preferred.
- SA socket adaptor and calibration certificate.

5.18 Motor rotation tester

Professional motor rotation tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Non-energised motor rotation/winding-sequence tester capable of indicating expected motor rotation and phase sequence.
- Leads/clips, case and calibration certificate.

ITEM 6: MV/HV TESTING, PHASING AND VOLTAGE DETECTION EQUIPMENT

General Requirements

The following general requirements shall apply to all goods offered under Item 6:

- All equipment shall be new, unused and suitable for professional municipal MV/HV electrical work on 50 Hz systems.
- Equipment shall be supplied complete with normal probes, electrodes, leads, adaptors, batteries/chargers and protective cases required for operation.
- Safety-critical equipment shall have permanent traceable identification and applicable current dielectric, conformity or calibration documentation.
- Replacement batteries, leads, probes and service components shall be reasonably available in South Africa during the contract period.
- The tenderer shall state the make, model, voltage/range, applicable standard and South African support arrangement.

6.1 MV/HV contact voltage detector

Professional mv/hv contact voltage detector suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable capacitive contact voltage detector covering municipal MV systems including 11, 22 and 33 kV.
- Audible/visual indication, self-test, operating-stick interface, case and current test certificate.
- IEC 61243-1.

6.2 MV phase comparator / phasing stick set

Professional mv phase comparator / phasing stick set suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable phase-comparison system for 11-33 kV AC (6.6 kV capability preferred).
- Clear in-phase/out-of-phase indication.
- Wired, memory or wireless system acceptable.
- Complete operating sections, contacts, case and test certificates.
- IEC 61481-1.

6.3 5 kV diagnostic insulation resistance tester

Professional 5 kv diagnostic insulation resistance tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Diagnostic insulation tester with selectable voltages to 5 kV.
- Minimum 1 Tohm range.
- PI/DAR, timed test, guard terminal, automatic discharge, memory/data transfer and high-voltage lead set.
- IEC 61557-2 and applicable IEC 61010.
- Calibration certificate.

6.4 10 kV diagnostic insulation resistance tester

Professional 10 kv diagnostic insulation resistance tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Diagnostic insulation tester with selectable voltages to 10 kV.
- Minimum 2 Tohm range.
- PI/DAR, step/ramp or equivalent diagnostics, guard terminal, automatic discharge, memory/data transfer and 10 kV leads.
- Calibration certificate.

6.5 Voltage detector functional proving / checking unit

Professional voltage detector functional proving / checking unit suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable OEM-approved checker/proving device compatible with Item 6.1, or manufacturer-approved equivalent verification method.
- Clear status indication and case/pouch.

6.6 MV/HV static discharge stick

Professional mv/hv static discharge stick suitable for regular municipal field, workshop and maintenance use.

- Insulated static/residual-charge discharge stick suitable up to at least 33 kV.
- Contact hook, flexible earth lead and heavy-duty earth clamp.
- Serial number and dielectric/conformity test certificate.

6.7 Personal MV/HV proximity voltage alarm

Professional personal mv/hv proximity voltage alarm suitable for regular municipal field, workshop and maintenance use.

- Wearable non-contact warning device for at least 11/22/33 kV environments.
- Audible and visual alarms, vibration preferred, self-test and low-battery indication.
- Helmet/body mounting.
- Weather-resistant.

6.8 VDS / VDIS interface tester

Professional vds / vdis interface tester suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable tester for MV switchgear voltage-detection/indicating interfaces.
- Suitable up to at least 33 kV equipment.
- HR and/or LRM legacy compatibility and IEC 62271-213 VDIS functionality as applicable.
- Adaptors and case included.

ITEM 7: EARTHING, OPERATING AND LINE-SAFETY EQUIPMENT**General Requirements**

The following general requirements shall apply to all goods offered under Item 7:

- All equipment shall be new, unused and suitable for professional utility / municipal line, switching and electrical-safety work.
- Live-working and portable earthing equipment shall have applicable current dielectric, test or conformity certification and permanent identification.
- Equipment shall be compatible with the stated municipal voltage range and operating-stick interfaces where applicable.
- Protective bags/cases and normal operating accessories shall be supplied.
- The tenderer shall state the make, model, rating, applicable standard and certificate reference.

7.1 Portable MV earthing and short-circuiting kit

Professional portable mv earthing and short-circuiting kit suitable for regular municipal field, workshop and maintenance use.

- Three-phase kit for 6.6-33 kV networks.
- Rated short-time current at least 10 kA/1 s or stated higher duty.
- Phase clamps, cluster, earth clamp/spike, flexible copper leads, operating-stick attachment, bag and current test certificate.
- IEC 61230.

7.2 Portable LV earthing / short-circuiting kit

Professional portable lv earthing / short-circuiting kit suitable for regular municipal field, workshop and maintenance use.

- Portable LV earthing/short-circuiting set for municipal LV systems.
- Suitable phase/neutral clamps, flexible copper leads, earth connection, bag and current test certificate.

7.3 Telescopic link stick - approx. 9 m

Professional telescopic link stick - approx. 9 m suitable for regular municipal field, workshop and maintenance use.

- High-grade non-conductive fibreglass telescopic stick, extended length at least 9 m.
- Universal spline fitting.
- Secure locks.
- Carry bag.
- Individual dielectric test certificate.
- IEC 60855-1 and/or recognised equivalent.

7.4 Telescopic insulated operating stick

Professional telescopic insulated operating stick suitable for regular municipal field, workshop and maintenance use.

- Professional insulated operating stick suitable for municipal MV switching/operating accessories.
- Stated working length/voltage.
- Universal fitting.
- Bag and dielectric test certificate.

7.5 Fuse operating / puller attachment

Professional fuse operating / puller attachment suitable for regular municipal field, workshop and maintenance use.

- Insulated operating-stick attachment suitable for municipal fuse links/cut-outs and compatible with offered universal spline system.

7.6 Insulated rescue hook

Professional insulated rescue hook suitable for regular municipal field, workshop and maintenance use.

- Electrical rescue hook with non-conductive shaft at least 1.5 m.
- Suitable for electrical rescue environment.
- Hand guard, wall brackets/bag and individual test marking.

7.7 Conductor come-along clamp / wire grip

Professional conductor come-along clamp / wire grip suitable for regular municipal field, workshop and maintenance use.

- Rated conductor grip/come-along clamp for utility conductor work.
- Bidder to state conductor size/type range and rated load.
- Forged professional construction.

7.8 Lever hoist / come-along - 1 ton

Professional lever hoist / come-along - 1 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Manual lever hoist, WLL at least 1 ton.
- Positive load brake, safety-latch hooks and current load/test certificate.

7.9 Lever hoist / come-along - 2 ton

Professional lever hoist / come-along - 2 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Manual lever hoist, WLL at least 2 ton.
- Positive load brake, safety-latch hooks and current load/test certificate.

7.10 Ratchet cable / conductor puller

Professional ratchet cable / conductor puller suitable for regular municipal field, workshop and maintenance use.

- Professional ratchet puller for conductor/cable positioning and tensioning.
- Rated pulling capacity stated.
- Hooks/grips with safety latches.

7.11 Podger / erection spanner set

Professional podger / erection spanner set suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty erection/podger spanner set covering common linework fastener sizes.
- Forged alloy steel.

7.12 Heavy-duty line spanner set

Professional heavy-duty line spanner set suitable for regular municipal field, workshop and maintenance use.

- Professional heavy-duty spanner set suitable for overhead line and substation maintenance.
- Common metric utility sizes.

7.13 Electrical lockout / tagout kit

Professional electrical lockout / tagout kit suitable for regular municipal field, workshop and maintenance use.

- Portable LOTO kit containing insulated padlocks keyed differently, hasps, MCB/MCCB lockouts, plug lockout, cable lockout, danger tags, marker and pouch/case.
- Minimum two keys per padlock.

7.14 Low-voltage electrical rescue kit

Professional low-voltage electrical rescue kit suitable for regular municipal field, workshop and maintenance use.

- Portable/wall-mountable rescue kit with insulated rescue hook, insulating mat/blanket, suitable LV voltage detector, insulating gloves with protectors where applicable, safety signage and CPR guidance.
- Certificates where required.

ITEM 8: SPECIALISED ELECTRICAL DIAGNOSTIC AND FAULT-FINDING EQUIPMENT

General Requirements

The following general requirements shall apply to all goods offered under Item 8:

- All instruments shall be new, unused and suitable for professional municipal electrical testing, diagnostic or measurement work.
- Applicable IEC safety and functional standards stated in the item specification shall be met.
- Instruments shall be supplied complete with normal test leads, probes, clamps, chargers/batteries, software and protective cases where applicable.
- A traceable calibration or verification certificate shall be supplied where applicable.
- The tenderer shall state the make, model, measurement range, accuracy, safety category, warranty and South African support arrangement where requested.

8.1 Acoustic imaging camera

Professional acoustic imaging camera suitable for municipal electrical testing, measurement and diagnostic applications.

- Handheld acoustic imager for compressed-air/gas leak detection and electrical partial-discharge assessment.
- Frequency band to at least 100 kHz, visual acoustic overlay, still/video recording, rechargeable battery, reporting/export and hard case.
- Onsite training included.

8.2 Thermal imaging camera

Professional thermal imaging camera suitable for municipal electrical testing, measurement and diagnostic applications.

- Industrial handheld thermal imager with infrared resolution at least 320 x 240.
- Temperature range at least -20 to 400 degrees C.
- Accuracy ± 2 degrees C or $\pm 2\%$.
- Thermal sensitivity 60 mK or better preferred.
- Visual image blending, storage/reporting, rechargeable battery and hard case.

8.3 Infrared thermometer

Professional infrared thermometer suitable for municipal electrical testing, measurement and diagnostic applications.

- Professional non-contact IR thermometer.
- Temperature range at least -30 to 500 degrees C.
- Adjustable emissivity preferred.
- Laser aiming, min/max and carry case.

8.4 Three-phase power quality analyser

Professional three-phase power quality analyser suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable three-phase power-quality analyser compliant with IEC 61000-4-30 Class A, for voltage/current/power/energy, harmonics, unbalance, dips/swells/interruptions, events and logging.
- Four voltage and four current channels.
- Software, flexible clamps, hard case, calibration and onsite training.

8.5 Three-phase power / energy logger

Professional three-phase power / energy logger suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable three-phase logger for voltage/current/power/energy, power factor, demand, THD and harmonics, with long-duration logging, flexible current probes, memory, data export/report software, case and calibration certificate.

8.6 Electricity meter verification test set

Professional electricity meter verification test set suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable field system/reference standard for on-site verification of electricity meters.
- Suitable for 230/400 V 50 Hz systems and common single-/three-phase meters.
- High-accuracy reference measurement, pulse input, active/reactive energy/power tests, result storage/export and traceable calibration.
- Complete accessories and training.

8.7 Underground cable / utility locator set

Professional underground cable / utility locator set suitable for municipal electrical testing, measurement and diagnostic applications.

- Professional receiver and signal generator.
- Passive power/radio and active modes.
- Depth estimation, signal-strength indication, overload/strike warning preferred.
- Connection leads, clamp, earth stake, bag and calibration/validation certificate.

8.8 Cable identification / tracing set

Professional cable identification / tracing set suitable for regular municipal field, workshop and maintenance use.

- Professional transmitter/receiver system for identifying and tracing de-energised or energised cables as rated.
- Selective identification, clamp/direct connection accessories, rechargeable battery and case.

8.9 Time-domain reflectometer (TDR) cable fault locator

Professional time-domain reflectometer (tdr) cable fault locator suitable for municipal electrical testing, measurement and diagnostic applications.

- Handheld TDR for metallic power/control cables.
- Range at least 5 km depending on cable type.
- Adjustable velocity factor.

- Open/short/impedance-change location.
- Automatic cursor/distance.
- Rechargeable battery, leads and calibration certificate.

8.10 LV/MV cable thumper / surge generator

Professional lv/mv cable thumper / surge generator suitable for regular municipal field, workshop and maintenance use.

- Portable cable fault surge generator suitable for municipal LV/MV cable fault pre-location and pinpointing.
- Selectable surge output of at least 12 kV and surge energy of at least 500 J; higher output capability preferred; integrated discharge/earthing safety features, emergency stop/key-enable/interlocks, high-voltage leads, transport case/trolley and training.

8.11 Stationary battery impedance / internal-resistance tester

Stationary battery impedance / internal-resistance tester suitable for professional municipal auxiliary-power and maintenance applications.

- Professional tester for stationary battery cells, modules and strings used in substations, UPS and auxiliary DC systems; VLA and VRLA lead-acid compatibility required, with NiCd compatibility preferred.
- Cell/module internal impedance, resistance or conductance measurement together with cell/module voltage measurement; temperature measurement required.
- Inter-cell/strap resistance measurement preferred; pass/warn/fail limits and comparison against baseline/string averages shall be supported.
- Internal storage for multiple battery strings/sites with result trending and data export by USB, removable media and/or wireless communication.
- Supplied complete with suitable probes/clamps, rechargeable battery/charger, software or reporting utility where applicable, protective case and traceable calibration or verification certificate.

8.12 Phase angle / power factor meter

Professional phase angle / power factor meter suitable for municipal electrical testing, measurement and diagnostic applications.

- Portable instrument for phase-angle and power-factor measurements on single/three-phase systems.
- Voltage/current inputs or clamps as applicable.
- Case and calibration certificate.

8.13 Data-logging AC/DC clamp meter

Professional data-logging ac/dc clamp meter suitable for municipal electrical testing, measurement and diagnostic applications.

- True-RMS AC/DC clamp meter to at least 1,000 A with internal or wireless logging/trending.
- Voltage, frequency and inrush.
- CAT IV 600 V preferred.
- Case and calibration certificate.

8.14 Cable fault pinpointer / surge receiver

Professional cable fault pinpointer / surge receiver suitable for regular municipal field, workshop and maintenance use.

- Portable acoustic/electromagnetic surge pinpointer compatible with common cable thumper systems.
- Ground sensor/microphone, headphones, adjustable gain/sensitivity, clear signal indication, rechargeable battery and case.

8.15 Battery hydrometer

Battery hydrometer suitable for professional municipal auxiliary-power and maintenance applications.

- Professional temperature-compensated hydrometer for flooded lead-acid batteries.
- Specific gravity approximately 1.100-1.300, resolution 0.005 or better.
- Acid-resistant construction and protective case.

8.16 Battery conductance and load tester

Battery conductance and load tester suitable for professional municipal auxiliary-power and maintenance applications.

- Digital tester for 6/12/24 V lead-acid batteries including flooded, AGM and gel.
- CCA approximately 100-2,000 A.
- Battery, cranking and charging-system tests.
- Reverse-polarity protection.
- Result storage/export preferred.
- Case.

ITEM 9: GENERAL MEASURING AND INSPECTION EQUIPMENT**General Requirements**

The following general requirements shall apply to all goods offered under Item 9:

- All instruments shall be new, unused and suitable for professional municipal electrical testing, diagnostic or measurement work.
- Applicable IEC safety and functional standards stated in the item specification shall be met.
- Instruments shall be supplied complete with normal test leads, probes, clamps, chargers/batteries, software and protective cases where applicable.
- A traceable calibration or verification certificate shall be supplied where applicable.
- The tenderer shall state the make, model, measurement range, accuracy, safety category, warranty and South African support arrangement where requested.

9.1 Digital lux meter

Professional digital lux meter suitable for municipal electrical testing, measurement and diagnostic applications.

- Illuminance range at least 0.1-200,000 lux.
- Accuracy within $\pm 3\%$.
- Cosine-corrected sensor.

- Data hold/min/max.
- Case and calibration certificate.

9.2 Laser distance meter - minimum 50 m

Professional laser distance meter - minimum 50 m suitable for municipal electrical testing, measurement and diagnostic applications.

- Professional laser distance meter, range at least 50 m.
- Area, volume and indirect/Pythagoras functions.
- IP54 preferred.
- Pouch.

9.3 Laser level

Professional laser level suitable for regular municipal field, workshop and maintenance use.

- Self-levelling cross-line/rotary laser suitable for installation work.
- Visible horizontal/vertical lines.
- Tripod/mount and carry case.

9.4 Digital tachometer

Professional digital tachometer suitable for municipal electrical testing, measurement and diagnostic applications.

- Contact/non-contact tachometer for rotating equipment.
- Laser/photo measurement preferred.
- Suitable range for motors/pumps.
- Case and calibration certificate.

9.5 Digital vernier caliper - 0 to 150 mm

Professional digital vernier caliper - 0 to 150 mm suitable for regular municipal field, workshop and maintenance use.

- Stainless-steel digital caliper.
- 0-150 mm.
- 0.01 mm resolution.
- Accuracy ± 0.03 mm or better.
- Metric/imperial.
- Case and calibration certificate.

9.6 Outside micrometer - 0 to 25 mm

Professional outside micrometer - 0 to 25 mm suitable for municipal electrical testing, measurement and diagnostic applications.

- Professional micrometer.
- 0-25 mm.
- Resolution 0.01 mm or better.

- Carbide faces, ratchet stop.
- Case and calibration certificate.

9.7 Steel tape measure - 30 m

Professional steel tape measure - 30 m suitable for regular municipal field, workshop and maintenance use.

- Professional 30 m steel tape in enclosed/open reel.
- Durable metric graduations and winding handle.

9.8 Tape measure - 5 m

Professional tape measure - 5 m suitable for regular municipal field, workshop and maintenance use.

- Professional 5 m metric tape with locking blade, belt clip and robust case.

9.9 Tape measure - 8 m

Professional tape measure - 8 m suitable for regular municipal field, workshop and maintenance use.

- Professional 8 m metric tape with locking blade, belt clip and robust case.

9.10 Spirit level - 300 mm

Professional spirit level - 300 mm suitable for regular municipal field, workshop and maintenance use.

- Professional 300 mm spirit level with horizontal/vertical vials and durable body.

9.11 Spirit level - 600 mm

Professional spirit level - 600 mm suitable for regular municipal field, workshop and maintenance use.

- Professional 600 mm spirit level with horizontal/vertical vials and durable body.

9.12 Feeler gauge set - approx. 0.02 to 1.00 mm

Professional feeler gauge set - approx. 0.02 to 1.00 mm suitable for regular municipal field, workshop and maintenance use.

- Stainless/hardened feeler gauge set covering approximately 0.02-1.00 mm.
- Clearly marked leaves and holder.

9.13 Precision straight edge - approx. 600 mm

Professional precision straight edge - approx. 600 mm suitable for regular municipal field, workshop and maintenance use.

- Machined precision straight edge approximately 600 mm for alignment/flatness checks.
- Protective storage.

9.14 Industrial inspection camera / borescope

Professional industrial inspection camera / borescope suitable for municipal electrical testing, measurement and diagnostic applications.

- Colour inspection camera.
- Probe diameter no greater than approximately 8.5 mm.

- Probe at least 1 m.
- Adjustable LED lighting.
- Image/video capture.
- Probe IP67.
- Rechargeable battery, hook/magnet accessories and case.

9.15 Digital angle / inclination meter

Professional digital angle / inclination meter suitable for municipal electrical testing, measurement and diagnostic applications.

- Digital inclinometer with relative/absolute angle measurement.
- Range at least 0-90 degrees each quadrant.
- Magnetic base preferred.
- Case.

ITEM 10: VEHICLE AND FIELD AUXILIARY POWER INVERTERS

General Requirements

The following general requirements shall apply to all goods offered under Item 10:

- All equipment shall be new, unused and suitable for professional auxiliary-power, vehicle or field applications.
- Electrical ratings, continuous and surge ratings, battery/PV voltage ranges and protection functions shall be stated where applicable.
- Equipment shall include the normal terminals, cables/connectors and accessories required for the specified application unless separately priced.
- The tenderer shall state the make, model, warranty and local support arrangement.

10.1 Pure-sine inverter - 12 V DC / approx. 2 kW

Professional pure-sine inverter - 12 v dc / approx. 2 kw suitable for regular municipal field, workshop and maintenance use.

- Pure sine wave 230 V AC 50 Hz.
- Continuous output at least 2 kW.
- Surge at least 2x nominal preferred.
- Efficiency at least 90%.
- Overload, short-circuit, over-temperature, low/high DC protection.
- Remote on/off preferred.

10.2 Pure-sine inverter - 24 V DC / approx. 2 kW

Professional pure-sine inverter - 24 v dc / approx. 2 kw suitable for regular municipal field, workshop and maintenance use.

- Pure sine wave 230 V AC, 50 Hz; continuous output at least 2 kW; nominal 24 V DC input; efficiency at least 90%; overload, short-circuit, over-temperature and low/high DC-voltage protection.
- High surge capability and remote on/off control preferred; correctly rated DC terminals/connections shall be provided.

10.3 Pure-sine inverter - 24 V DC / approx. 5 kW

Professional pure-sine inverter - 24 v dc / approx. 5 kw suitable for regular municipal field, workshop and maintenance use.

- Pure sine 230 V 50 Hz.
- Continuous output at least 5 kW.
- High surge capability.
- Efficiency at least 90%.
- Comprehensive DC/AC protections and remote control/monitoring preferred.

10.4 Pure-sine inverter - 48 V DC / approx. 5 kW

Professional pure-sine inverter - 48 v dc / approx. 5 kw suitable for regular municipal field, workshop and maintenance use.

- Pure sine wave 230 V AC, 50 Hz; continuous output at least 5 kW; nominal 48 V DC input; efficiency at least 90%; high surge capability and comprehensive DC/AC protection.
- Remote on/off and monitoring/communications preferred.

10.5 Inverter / charger - 12 V / approx. 2 kW

Professional inverter / charger - 12 v / approx. 2 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine inverter/charger, 12 V battery system, 230 V AC input/output, continuous output at least 2 kW.
- Multi-stage charger, automatic transfer and programmable settings.

10.6 Inverter / charger - 24 V / approx. 2 kW

Professional inverter / charger - 24 v / approx. 2 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine inverter/charger for a nominal 24 V battery system, with 230 V AC input/output and continuous output at least 2 kW; multi-stage charger, automatic transfer, configurable charging and battery protections.

10.7 Inverter / charger - 24 V / approx. 5 kW

Professional inverter / charger - 24 v / approx. 5 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine inverter/charger, nominal 24 V, at least 5 kW, automatic transfer, configurable AC charger and battery protections.
- Communications preferred.

10.8 Inverter / charger - 48 V / approx. 5 kW

Professional inverter / charger - 48 v / approx. 5 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine inverter/charger for a nominal 48 V battery system, with 230 V AC input/output and continuous output at least 5 kW; automatic transfer, configurable AC charger, comprehensive battery/inverter protections and communications preferred.

ITEM 11: SOLAR-CAPABLE AUXILIARY POWER EQUIPMENT

General Requirements

The following general requirements shall apply to all goods offered under Item 11:

- All equipment shall be new, unused and suitable for professional auxiliary-power, vehicle or field applications.
- Electrical ratings, continuous and surge ratings, battery/PV voltage ranges and protection functions shall be stated where applicable.
- Equipment shall include the normal terminals, cables/connectors and accessories required for the specified application unless separately priced.
- The tenderer shall state the make, model, warranty and local support arrangement.

11.1 Solar inverter / charger - 12 V / approx. 2 kW

Professional solar inverter / charger - 12 v / approx. 2 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine inverter/charger with integrated MPPT solar charger.
- Nominal 12 V battery, at least 2 kW output.
- Programmable AC/solar charging, automatic transfer, protections and battery settings.

11.2 Solar inverter / charger - 24 V / approx. 2 kW

Professional solar inverter / charger - 24 v / approx. 2 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine solar inverter/charger with integrated MPPT, nominal 24 V battery system and continuous output at least 2 kW; programmable AC/solar charging, automatic transfer and comprehensive protection functions.
- Tenderer shall state maximum PV open-circuit voltage, MPPT operating range, maximum PV input current and solar/AC charging current.

11.3 Solar inverter / charger - 24 V / approx. 5 kW

Professional solar inverter / charger - 24 v / approx. 5 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine 5 kW-class inverter/charger with integrated MPPT.

- Nominal 24 V battery.
- Manufacturer-rated PV input range/current stated.
- Automatic transfer, configurable charging and communications.

11.4 Solar inverter / charger - 48 V / approx. 5 kW

Professional solar inverter / charger - 48 v / approx. 5 kw suitable for regular municipal field, workshop and maintenance use.

- Pure-sine 5 kW-class inverter/charger with integrated MPPT.
- Nominal 48 V battery.
- Manufacturer-rated PV input range/current stated.
- Automatic transfer, configurable charging and BMS communications preferred.

11.5 MPPT solar charge controller - 20 to 30 A

Professional mppt solar charge controller - 20 to 30 a suitable for regular municipal field, workshop and maintenance use.

- MPPT controller, rated output approximately 20-30 A.
- Suitable for 12/24 V batteries.
- Configurable charge profile and electronic protections.

11.6 MPPT solar charge controller - 40 to 50 A

Professional mppt solar charge controller - 40 to 50 a suitable for regular municipal field, workshop and maintenance use.

- MPPT controller, rated output approximately 40-50 A.
- Suitable for 12/24/48 V as offered.
- Configurable charge profile and electronic protections.

11.7 MPPT solar charge controller - 60 A or greater

Professional mppt solar charge controller - 60 a or greater suitable for regular municipal field, workshop and maintenance use.

- MPPT controller rated at least 60 A.
- PV open-circuit voltage and battery voltage ranges stated.
- Configurable charge profile, monitoring and protections.

11.8 DC-DC vehicle charger - 12 V system

Professional dc-dc vehicle charger - 12 v system suitable for regular municipal field, workshop and maintenance use.

- Professional DC-DC charger for 12 V vehicle/auxiliary battery systems.
- Multi-stage charging, alternator compatibility and protections.
- Lithium profiles preferred.

11.9 DC-DC vehicle charger - 24 V system

Professional dc-dc vehicle charger - 24 v system suitable for regular municipal field, workshop and maintenance use.

- Professional DC-DC charger for 24 V vehicle/auxiliary systems.
- Multi-stage charging, alternator compatibility and protections.

11.10 DC-DC charger with solar MPPT

Professional dc-dc charger with solar mppt suitable for regular municipal field, workshop and maintenance use.

- Combined vehicle DC-DC charger and solar MPPT.
- Automatic source management.
- Lithium/lead-acid profiles, temperature/voltage protections and monitoring preferred.

ITEM 12: AUXILIARY POWER BATTERIES

General Requirements

The following general requirements shall apply to all goods offered under Item 12:

- All equipment shall be new, unused and suitable for professional auxiliary-power, vehicle or field applications.
- Electrical ratings, continuous and surge ratings, battery/PV voltage ranges and protection functions shall be stated where applicable.
- Equipment shall include the normal terminals, cables/connectors and accessories required for the specified application unless separately priced.
- The tenderer shall state the make, model, warranty and local support arrangement.

12.1 LiFePO4 battery - 12.8 V 100 Ah

LiFePO4 battery - 12.8 V 100 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- LiFePO4 battery approximately 1.28 kWh.
- Integrated BMS with over/under-voltage, over-current, short-circuit and temperature protection.
- Deep-cycle use.
- Cycle-life and warranty stated.

12.2 LiFePO4 battery - 12.8 V 200 Ah

LiFePO4 battery - 12.8 V 200 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- LiFePO4 battery approximately 2.5 kWh.
- Integrated BMS and protections.
- Continuous/peak discharge ratings, cycle life and warranty stated.

12.3 LiFePO4 battery - 25.6 V 100 Ah

LiFePO4 battery - 25.6 V 100 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- LiFePO4 battery approximately 2.5 kWh.

- Integrated BMS, protections and deep-cycle rating.
- Discharge capability and warranty stated.

12.4 LiFePO4 battery - 25.6 V 200 Ah

LiFePO4 battery - 25.6 V 200 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- LiFePO4 battery approximately 5 kWh.
- Integrated BMS, protections and deep-cycle rating.
- Discharge capability and warranty stated.

12.5 LiFePO4 battery - 48/51.2 V approx. 5 kWh

LiFePO4 battery - 48/51.2 V approx. 5 kWh suitable for professional municipal auxiliary-power and maintenance applications.

- 48/51.2 V LiFePO4 battery, usable energy approximately 5 kWh.
- Integrated BMS.
- CAN/RS485 communication preferred.
- Rack/wall format acceptable.
- Stated usable DoD, cycle life, current ratings and warranty.

12.6 LiFePO4 battery - 48/51.2 V approx. 10 kWh

LiFePO4 battery - 48/51.2 V approx. 10 kWh suitable for professional municipal auxiliary-power and maintenance applications.

- 48/51.2 V LiFePO4 battery, usable energy approximately 10 kWh.
- Integrated BMS and communications.
- Stated usable DoD, cycle life, current ratings and warranty.

12.7 AGM / Gel battery - 12 V 100 Ah

AGM / Gel battery - 12 V 100 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- Maintenance-free deep-cycle AGM or Gel battery, nominal 12 V 100 Ah.
- Cycle-life and warranty stated.

12.8 AGM / Gel battery - 12 V 200 Ah

AGM / Gel battery - 12 V 200 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- Maintenance-free deep-cycle AGM or Gel battery, nominal 12 V 200 Ah.
- Cycle-life and warranty stated.

ITEM 13: SOLAR PV MODULES AND AUXILIARY POWER ACCESSORIES**General Requirements**

The following general requirements shall apply to all goods offered under Item 13:

Initials of Service Provider's Authority:

- All equipment shall be new, unused and suitable for professional auxiliary-power, vehicle or field applications.
- Electrical ratings, continuous and surge ratings, battery/PV voltage ranges and protection functions shall be stated where applicable.
- Equipment shall include the normal terminals, cables/connectors and accessories required for the specified application unless separately priced.
- The tenderer shall state the make, model, warranty and local support arrangement.

13.1 Monocrystalline PV module - approx. 200 to 250 W

Professional monocrystalline pv module - approx. 200 to 250 w suitable for regular municipal field, workshop and maintenance use.

- Monocrystalline module 200-250 W.
- IEC 61215/61730 or equivalent certification.
- MC4-compatible connectors or equivalent.
- Product/performance warranty stated.

13.2 Monocrystalline PV module - approx. 400 to 500 W

Professional monocrystalline pv module - approx. 400 to 500 w suitable for regular municipal field, workshop and maintenance use.

- Monocrystalline module 400-500 W.
- IEC 61215/61730 or equivalent.
- Efficiency, dimensions, Voc/Isc and warranties stated.

13.3 Portable / folding PV module - approx. 200 W

Professional portable / folding pv module - approx. 200 w suitable for regular municipal field, workshop and maintenance use.

- Portable folding solar module approximately 200 W.
- Weather-resistant fabric/frame, integrated stand, suitable connectors and carry bag.

13.4 Battery box - approx. 100 Ah

Battery box - approx. 100 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- Ventilated robust battery box suitable for 12 V 100 Ah battery.
- Secure lid, cable exits and tie-down provisions.

13.5 Battery box - approx. 200 Ah

Battery box - approx. 200 Ah suitable for professional municipal auxiliary-power and maintenance applications.

- Heavy-duty battery box suitable for 12 V 200 Ah battery.
- Secure lid, cable exits and tie-down provisions.

13.6 Heavy-duty battery isolator / disconnect

Heavy-duty battery isolator / disconnect suitable for professional municipal auxiliary-power and maintenance applications.

- DC-rated battery isolator sized for auxiliary inverter systems.
- Continuous/interruption current and voltage ratings stated.
- Enclosed or panel-mount as applicable.

13.7 Automatic / voltage-sensitive battery isolator

Automatic / voltage-sensitive battery isolator suitable for professional municipal auxiliary-power and maintenance applications.

- Automatic VSR/isolator for vehicle auxiliary battery charging.
- Suitable system voltage/current.
- Override and protection preferred.

13.8 Inverter battery cable set - approx. 2 kW

Inverter battery cable set - approx. 2 kW suitable for professional municipal auxiliary-power and maintenance applications.

- Matched flexible copper DC cable set, correctly sized for approximately 2 kW inverter installation, with crimped lugs, fuse and holder.

13.9 DC fuse and fuseholder

Professional dc fuse and fuseholder suitable for regular municipal field, workshop and maintenance use.

- High-current DC fuse/fuseholder suitable for inverter/battery circuits.
- Rating to be selected by Purchase Order.
- Touch-safe cover preferred.

13.10 Solar PV DC cable set

Professional solar pv dc cable set suitable for regular municipal field, workshop and maintenance use.

- UV-resistant double-insulated PV cable, red/black pair, suitable cross-section and length stated.
- IEC/EN PV cable standard compliance preferred.

13.11 Solar PV connector set

Professional solar pv connector set suitable for regular municipal field, workshop and maintenance use.

- Matched male/female PV connector set suitable for offered PV cable.
- UV/weather resistant and touch-safe.

13.12 Vehicle / trailer PV mounting kit

Professional vehicle / trailer pv mounting kit suitable for regular municipal field, workshop and maintenance use.

- Corrosion-resistant brackets/rails/fasteners suitable for mounting PV modules on service vehicle/trailer.
- Complete hardware set.

13.13 Fixed PV mounting kit

Professional fixed pv mounting kit suitable for regular municipal field, workshop and maintenance use.

- Corrosion-resistant aluminium/steel rails, clamps and fasteners for small fixed PV installation.
- Roof/ground application to be stated in Purchase Order

ITEM 14: WORKSHOP AND FIELD EQUIPMENT

General Requirements

The following general requirements shall apply to all goods offered under Item 14:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

14.1 High-pressure washer - approx. 120 bar

Professional high-pressure washer - approx. 120 bar suitable for regular municipal field, workshop and maintenance use.

- 230 V heavy-duty washer.
- Rated working pressure at least 120 bar.
- Flow at least 6.5 L/min preferred.
- Auto-stop.
- Minimum 6 m hose, adjustable lance and detergent accessory.

14.2 Heavy-duty pressure washer - 150 to 200 bar

Professional heavy-duty pressure washer - 150 to 200 bar suitable for regular municipal field, workshop and maintenance use.

- 230 V or suitable industrial supply.
- Rated/maximum pressure within 150-200 bar class.
- High-flow pump.
- At least 8 m hose, wheeled frame, adjustable/turbo lance and detergent accessory.

14.3 Air compressor with spray-paint accessories

Professional air compressor with spray-paint accessories suitable for regular municipal field, workshop and maintenance use.

- 230 V mobile compressor.
- Receiver at least 50 L.

- Motor approximately 2 hp or greater.
- Max pressure at least 8 bar.
- Regulator, gauges, safety valve and water trap.
- At least 10 m hose, HVLP spray gun, blow gun, tyre inflator and couplings.

14.4 Wet / dry industrial vacuum cleaner

Professional wet / dry industrial vacuum cleaner suitable for regular municipal field, workshop and maintenance use.

- Professional wet/dry vacuum, capacity at least 20 L.
- 230 V.
- Suitable accessories for workshop and field cleaning.
- Durable wheels/casters.

14.5 Portable 230 V LED flood / work light

Professional portable 230 v led flood / work light suitable for regular municipal field, workshop and maintenance use.

- Mains-powered portable LED floodlight, output at least 2,000 lumens.
- Adjustable stand/handle.
- Minimum IP54.
- Suitable for field/workshop use.

14.6 Extension lead - 20 m, 16 A

Professional extension lead - 20 m, 16 a suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty 230 V extension lead, 20 m, 16 A, outdoor-duty flexible cable, robust SA plug/socket and strain relief.

14.7 Extension lead - 30 m, 16 A

Professional extension lead - 30 m, 16 a suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty 230 V extension lead, 30 m, 16 A, outdoor-duty flexible cable, robust SA plug/socket and strain relief.

14.8 Extension cable reel - minimum 30 m, 16 A

Professional extension cable reel - minimum 30 m, 16 a suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty 30 m or longer 16 A cable reel.
- Thermal overload protection, winding handle and robust frame.
- Outdoor-duty cable.

14.9 Bench vice - approx. 125 to 150 mm

Professional bench vice - approx. 125 to 150 mm suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty bench vice with jaw width approximately 125-150 mm.
- Swivel base preferred.

- Replaceable jaws.

14.10 Heavy-duty jumper leads - approx. 1,000 A

Professional heavy-duty jumper leads - approx. 1,000 A suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty booster cable set, rated approximately 1,000 A, length at least 3 m.
- Flexible copper conductors and insulated clamps.

14.11 Rechargeable headlamp

Professional rechargeable headlamp suitable for regular municipal field, workshop and maintenance use.

- Rechargeable LED headlamp, output at least 300 lumens.
- Multiple modes.
- Adjustable headband.
- Weather-resistant.

14.12 Rechargeable hand torch

Professional rechargeable hand torch suitable for regular municipal field, workshop and maintenance use.

- Rechargeable LED hand torch, output at least 500 lumens.
- Multiple modes, robust housing and charging cable/dock.

14.13 Heavy-duty gazebo - 3 m x 3 m

Professional heavy-duty gazebo - 3 m x 3 m suitable for regular municipal field, workshop and maintenance use.

- Commercial pop-up gazebo, 3 m x 3 m.
- Waterproof/UV-resistant canopy.
- Robust replaceable frame, side walls, guy ropes/pegs, weighted-leg bags and wheeled carry bag.

14.14 Portable workshop / field fan - min. 400 mm

Professional portable workshop / field fan - min. 400 mm suitable for regular municipal field, workshop and maintenance use.

- Portable heavy-duty fan with blade diameter at least 400 mm.
- Multiple speeds, stable frame and suitable guarding.

14.15 Portable air mover / ventilation blower

Professional portable air mover / ventilation blower suitable for regular municipal field, workshop and maintenance use.

- Portable high-volume ventilation blower for general equipment-room/work-area ventilation.
- Robust duct connection, portable frame and stated airflow.
- Not to be represented as certified confined-space ventilation unless specifically certified.

ITEM 15: LADDERS AND ACCESS EQUIPMENT**General Requirements**

The following general requirements shall apply to all goods offered under Item 15:

- All ladders and access equipment shall be new, unused and suitable for professional electrical and municipal field use.
- Fibreglass ladders shall have non-conductive side rails, slip-resistant feet and appropriate locking / anti-collapse arrangements.
- Rated load shall be clearly marked and shall be at least 150 kg where specified.
- Applicable SANS/EN portable-ladder compliance shall be stated and supporting documentation supplied where requested.

15.1 Fibreglass extension ladder - approx. 9 m

Professional fibreglass extension ladder - approx. 9 m suitable for municipal electrical and field-maintenance applications.

- Professional two-/three-section ladder with non-conductive fibreglass side rails.
- Extended length approx. 9 m.
- Rated load at least 150 kg.
- Slip-resistant rungs/feet, rope/pulley and positive locks.
- SANS 50131-2 / EN 131-2 or equivalent.

15.2 Fibreglass extension ladder - approx. 6 m

Professional fibreglass extension ladder - approx. 6 m suitable for municipal electrical and field-maintenance applications.

- Professional non-conductive fibreglass extension ladder approximately 6 m extended.
- Rated load at least 150 kg.
- Slip-resistant rungs/feet and secure locks.

15.3 Fibreglass step ladder - approx. 1.8 m

Professional fibreglass step ladder - approx. 1.8 m suitable for municipal electrical and field-maintenance applications.

- Non-conductive fibreglass step ladder approximately 1.8 m.
- Rated load at least 150 kg.
- Wide slip-resistant steps, secure spreaders and non-slip feet.

15.4 Fibreglass step ladder - approx. 2.4 m

Professional fibreglass step ladder - approx. 2.4 m suitable for municipal electrical and field-maintenance applications.

- Non-conductive fibreglass step ladder approximately 2.4 m.
- Rated load at least 150 kg.
- Wide slip-resistant steps, secure spreaders and non-slip feet.

15.5 Fibreglass platform ladder

Professional fibreglass platform ladder suitable for municipal electrical and field-maintenance applications.

- Non-conductive fibreglass platform ladder with working platform and guard/handrail.
- Rated load at least 150 kg.
- Slip-resistant steps/platform.
- Bidder to state platform/working height.

15.6 Ladder stabiliser / stand-off device

Professional ladder stabiliser / stand-off device suitable for municipal electrical and field-maintenance applications.

- Heavy-duty stabiliser/stand-off compatible with offered extension ladders.
- Corrosion-resistant and secure attachment.
- Non-damaging contact pads preferred.

15.7 Ladder safety / securing strap set

Professional ladder safety / securing strap set suitable for municipal electrical and field-maintenance applications.

- Heavy-duty adjustable webbing/ratchet straps suitable for securing ladders during transport/use.
- Weather-resistant hardware.

15.8 Vehicle-carried fibreglass combination ladder

Professional vehicle-carried fibreglass combination ladder suitable for municipal electrical and field-maintenance applications.

- Non-conductive fibreglass combination/extension ladder.
- Extended length at least 4.5 m.
- Rated load at least 150 kg.
- Secure locking hinges/rung locks and roof-rack securing provisions.
- EN/SANS portable-ladder standard.

ITEM 16: SPECIALISED MECHANICAL AND PUMP HAND TOOLS

General Requirements

The following general requirements shall apply to all goods offered under Item 16:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

16.1 Torque wrench - approx. 10 to 60 Nm

Professional torque wrench - approx. 10 to 60 nm suitable for regular municipal field, workshop and maintenance use.

- Professional reversible click/electronic torque wrench covering approx. 10-60 Nm.
- Accuracy $\pm 4\%$ or better.
- Case and traceable calibration certificate.

16.2 Torque wrench - approx. 40 to 200 Nm

Professional torque wrench - approx. 40 to 200 nm suitable for regular municipal field, workshop and maintenance use.

- Professional reversible torque wrench covering approx. 40-200 Nm.
- 1/2 inch drive preferred.
- Accuracy $\pm 4\%$ or better.
- Case and calibration certificate.

16.3 Torque wrench - approx. 100 to 500 Nm

Professional torque wrench - approx. 100 to 500 nm suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty reversible torque wrench covering approx. 100-500 Nm.
- 3/4 inch drive preferred.
- Accuracy $\pm 4\%$ or better.
- Case and calibration certificate.

16.4 Locking pliers - approx. 250 mm

Professional locking pliers - approx. 250 mm suitable for regular municipal field, workshop and maintenance use.

- Professional 250 mm locking pliers with adjustable hardened jaws and quick-release lever.

16.5 Internal circlip plier set

Professional internal circlip plier set suitable for regular municipal field, workshop and maintenance use.

- Professional internal circlip pliers covering approximately 19-60 mm.
- Straight/angled tips preferred.
- Case.

16.6 External circlip plier set

Professional external circlip plier set suitable for regular municipal field, workshop and maintenance use.

- Professional external circlip pliers covering approximately 19-60 mm.
- Straight/angled tips preferred.
- Case.

16.7 Club / engineer hammer - approx. 4 lb

Professional club / engineer hammer - approx. 4 lb suitable for regular municipal field, workshop and maintenance use.

- Forged steel head approximately 4 lb / 1.8 kg with shock-resistant handle and non-slip grip.

16.8 Sledge hammer - approx. 4.5 kg / 10 lb

Professional sledge hammer - approx. 4.5 kg / 10 lb suitable for regular municipal field, workshop and maintenance use.

- Forged carbon/alloy steel head approx. 4.5 kg with bevelled faces and approximately 900 mm fibreglass handle.

16.9 Rubber mallet

Professional rubber mallet suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty non-marring rubber mallet suitable for assembly/pipework work.

16.10 Crowbar / wrecking bar

Professional crowbar / wrecking bar suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty hardened steel crowbar approximately 900 mm or longer for field/mechanical leverage.

16.11 Heavy-duty pry / power bar

Professional heavy-duty pry / power bar suitable for regular municipal field, workshop and maintenance use.

- High-strength heavy-duty pry/power bar approximately 600-900 mm, suitable for positioning pumps/motors and mechanical equipment.

ITEM 17: PIPEWORK AND PUMP-PIPE MAINTENANCE TOOLS

General Requirements

The following general requirements shall apply to all goods offered under Item 17:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

17.1 Pipe wrench - approx. 300 mm / 12 inch

Professional pipe wrench - approx. 300 mm / 12 inch suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty adjustable serrated-jaw pipe wrench, approx. 300 mm.
- Replaceable jaw components preferred.

17.2 Pipe wrench - approx. 450 mm / 18 inch

Professional pipe wrench - approx. 450 mm / 18 inch suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty adjustable serrated-jaw pipe wrench, approx. 450 mm.

- Replaceable jaw components preferred.

17.3 Pipe wrench - approx. 600 mm / 24 inch

Professional pipe wrench - approx. 600 mm / 24 inch suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty adjustable serrated-jaw pipe wrench, approx. 600 mm.
- Replaceable jaw components preferred.

17.4 Chain pipe wrench - approx. 450 mm

Professional chain pipe wrench - approx. 450 mm suitable for regular municipal field, workshop and maintenance use.

- Professional chain-type pipe wrench with heavy-duty chain and handle approx. 450 mm.
- Replaceable chain preferred.

17.5 Strap wrench

Professional strap wrench suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty non-marring strap wrench suitable for PVC, stainless and finished pipe surfaces.
- Adjustable capacity.

17.6 Pipe cutter - up to approx. 50 mm

Professional pipe cutter - up to approx. 50 mm suitable for regular municipal field, workshop and maintenance use.

- Professional adjustable metallic pipe cutter up to approx. 50 mm.
- Replaceable cutting wheel.
- Deburring tool preferred.

17.7 Pipe cutter - up to approx. 100 mm

Professional pipe cutter - up to approx. 100 mm suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty adjustable metallic pipe cutter up to approx. 100 mm.
- Replaceable cutting wheels.

17.8 Pipe threading machine - approx. 1/2 to 2 inch

Professional pipe threading machine - approx. 1/2 to 2 inch suitable for regular municipal field, workshop and maintenance use.

- 230 V powered threading machine for approx. 1/2-2 inch pipe.
- BSP die heads, pipe holding/clamping, reaming/cutting and lubrication arrangement.
- Complete standard dies/accessories.

17.9 Tap and die set - approx. M6 to M24

Professional tap and die set - approx. m6 to m24 suitable for regular municipal field, workshop and maintenance use.

- Professional metric tap/die set M6-M24 with tap wrenches and die holders in robust case.

17.10 Heavy-duty pipe vice

Professional heavy-duty pipe vice suitable for regular municipal field, workshop and maintenance use.

- Bench-mounted heavy-duty pipe vice with replaceable gripping jaws preferred.
- Capacity at least 2 inch.
- Bidder to state maximum pipe diameter.

ITEM 18: MOTOR, PUMP, BEARING AND ALIGNMENT TOOLS

General Requirements

The following general requirements shall apply to all goods offered under Item 18:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

18.1 Mechanical bearing puller set - approx. 50 to 200 mm

Professional mechanical bearing puller set - approx. 50 to 200 mm suitable for regular municipal field, workshop and maintenance use.

- Two-/three-jaw reversible puller set covering approx. 50-200 mm.
- Forged jaws and forcing screws.
- Separator plates and fitted case.

18.2 Hydraulic puller - up to approx. 10 ton

Professional hydraulic puller - up to approx. 10 ton suitable for regular municipal field, workshop and maintenance use.

- Hydraulic two-/three-jaw puller rated at least 10 tonnes.
- Adjustable reach/spread.
- Safety relief, ram/pump/hose and case.
- Load-test certificate.

18.3 Portable induction bearing heater

Professional portable induction bearing heater suitable for regular municipal field, workshop and maintenance use.

- 230 V induction heater for bearings/couplings.
- Automatic temperature/time control.
- Capacity suitable for bearings at least 20 kg.
- Temperature at least 150 degrees C.
- Demagnetisation cycle, probe, multiple yokes and gloves.

18.4 Laser shaft-alignment system

Professional laser shaft-alignment system suitable for regular municipal field, workshop and maintenance use.

- Portable laser system for horizontal motor-pump shaft alignment.
- Live correction in horizontal/vertical planes.
- Rugged rechargeable display/heads.
- Report generation, chain fixtures, extension rods/brackets, hard case, calibration and onsite training.

18.5 Dial indicator with magnetic base

Professional dial indicator with magnetic base suitable for regular municipal field, workshop and maintenance use.

- Professional dial indicator range at least 10 mm, resolution 0.01 mm or better.
- Adjustable magnetic base with fine adjustment.
- Case.

18.6 Impeller removal tool / set

Professional impeller removal tool / set suitable for regular municipal field, workshop and maintenance use.

- Purpose-designed adjustable tool/set for removing common municipal pump impellers without unnecessary shaft/impeller damage.
- Application range stated.

18.7 Pump shaft locking tool / set

Professional pump shaft locking tool / set suitable for regular municipal field, workshop and maintenance use.

- Professional adjustable shaft-locking tool/set for pump dismantling/assembly.
- Non-damaging grip.
- Shaft diameter range stated.

18.8 Mechanical seal installation tool set

Professional mechanical seal installation tool set suitable for regular municipal field, workshop and maintenance use.

- Professional installation sleeves/drivers for common pump mechanical seals.
- Non-damaging contact surfaces.
- Multiple sizes in case.

18.9 Bearing installation tool set

Professional bearing installation tool set suitable for regular municipal field, workshop and maintenance use.

- Professional impact rings/sleeves or equivalent for controlled bearing installation on shafts/housings.
- Broad common size range in fitted case.

18.10 Manual grease gun

Professional manual grease gun suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty lever grease gun for standard cartridges/bulk fill.

- Flexible high-pressure hose and four-jaw coupler.
- Industrial pressure rating.

18.11 Battery-operated grease gun

Battery-operated grease gun suitable for professional municipal auxiliary-power and maintenance applications.

- Professional cordless grease gun with high-pressure delivery, flexible hose, pressure relief and battery indication.
- Supplied with battery, charger and case.
- Not required to use Item 1 platform.

18.12 Pneumatic grease gun

Professional pneumatic grease gun suitable for regular municipal field, workshop and maintenance use.

- Professional compressed-air grease gun for cartridges/bulk grease.
- Flexible hose, coupler and air fitting.
- Suitable for workshop use.

18.13 Manual oil transfer pump

Professional manual oil transfer pump suitable for regular municipal field, workshop and maintenance use.

- Manual drum/container pump for lubricating oils and similar maintenance fluids.
- Delivery hose and corrosion-resistant construction.
- Compatible fluids/container sizes stated.

ITEM 19: LIFTING AND HANDLING EQUIPMENT

General Requirements

The following general requirements shall apply to all goods offered under Item 19:

- All lifting and handling equipment shall be new, unused and suitable for professional / industrial municipal use.
- Working Load Limit (WLL) / Safe Working Load (SWL) shall be permanently and clearly marked where applicable.
- Applicable proof-load, inspection, conformity and test certification shall be supplied at delivery.
- Hooks, chains, slings, shackles and lifting points shall incorporate appropriate safety arrangements and identification.
- The tenderer shall state the make, model, rated capacity and applicable standard/certification.

19.1 Chain block - 1 ton

Professional chain block - 1 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Manual chain hoist WLL at least 1 tonne.
- Lift at least 3 m.
- Positive load brake, safety-latch hooks, durable finish and current load/test certificate.

19.2 Chain block - 2 ton

Professional chain block - 2 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Manual chain hoist WLL at least 2 tonnes.
- Lift at least 3 m.
- Positive load brake, safety-latch hooks and current load/test certificate.

19.3 Chain block - 3 ton

Professional chain block - 3 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Manual chain hoist WLL at least 3 tonnes.
- Lift at least 3 m.
- Positive load brake, safety-latch hooks and current load/test certificate.

19.4 Certified lifting sling - 1 ton

Professional certified lifting sling - 1 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Certified polyester web/round sling, WLL at least 1 tonne, effective length approx. 2 m.
- Permanent identification and certificate.

19.5 Certified lifting sling - 2 ton

Professional certified lifting sling - 2 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Certified polyester web/round sling, WLL at least 2 tonnes, effective length approx. 2 m.
- Permanent identification and certificate.

19.6 Certified lifting sling - 3 ton

Professional certified lifting sling - 3 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Certified polyester web/round sling, WLL at least 3 tonnes, effective length approx. 2 m.
- Permanent identification and certificate.

19.7 Bow / D shackle - approx. 1 ton

Professional bow / d shackle - approx. 1 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Forged lifting-grade shackle, WLL at least approx. 1 tonne.
- Secure pin and permanent load marking.
- Certificate.

19.8 Bow / D shackle - approx. 2 ton

Professional bow / d shackle - approx. 2 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Forged lifting-grade shackle, WLL at least approx. 2 tonnes.
- Secure pin and permanent load marking.
- Certificate.

19.9 Bow / D shackle - approx. 3 ton

Professional bow / d shackle - approx. 3 ton suitable for municipal pump, motor and equipment lifting/handling applications.

- Forged lifting-grade shackle, WLL at least approx. 3 tonnes.
- Secure pin and permanent load marking.
- Certificate.

19.10 Portable lifting tripod

Professional portable lifting tripod suitable for municipal pump, motor and equipment lifting/handling applications.

- Portable heavy-duty tripod for lifting/lowering pumps/equipment at chambers.
- WLL at least 500 kg.
- Adjustable legs, anti-slip feet and central lifting point.
- Compatible with hoist/winches.
- Load/test certification.

19.11 Portable spreader / lifting beam

Professional portable spreader / lifting beam suitable for municipal pump, motor and equipment lifting/handling applications.

- Certified portable lifting beam, WLL at least 1 tonne.
- Multiple lifting points preferred.
- Permanently marked WLL and current load/test certificate.

ITEM 20: HEAVY-DUTY FASTENING AND IMPACT EQUIPMENT

General Requirements

The following general requirements shall apply to all goods offered under Item 20:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

20.1 Pneumatic impact wrench - 1/2 inch drive

Professional pneumatic impact wrench - 1/2 inch drive suitable for regular municipal field, workshop and maintenance use.

- Professional pneumatic impact wrench.
- 1/2 inch drive.
- Maximum torque at least 600 Nm.

- Forward/reverse and adjustable power.
- Standard workshop air connection.

20.2 Pneumatic impact wrench - 3/4 inch drive

Professional pneumatic impact wrench - 3/4 inch drive suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty pneumatic impact wrench.
- 3/4 inch drive.
- Maximum torque at least 1,000 Nm.
- Forward/reverse and adjustable power.
- Standard workshop air connection.

20.3 Impact socket set - 1/2 inch drive

Professional impact socket set - 1/2 inch drive suitable for regular municipal field, workshop and maintenance use.

- Impact-rated chrome-molybdenum or equivalent metric socket set, approx. 10-32 mm, 1/2 inch drive, in robust case.

20.4 Heavy-duty impact socket set - 3/4 inch drive

Professional heavy-duty impact socket set - 3/4 inch drive suitable for regular municipal field, workshop and maintenance use.

- Impact-rated heavy-duty metric socket set, approx. 24-46 mm or broader, 3/4 inch drive, in robust case.

20.5 Torque multiplier

Professional torque multiplier suitable for regular municipal field, workshop and maintenance use.

- Mechanical torque multiplier with output capacity at least 1,000 Nm.
- Reaction arm, stated ratio/input/output drives and protective case.

ITEM 21: TOOLBOXES AND EQUIPMENT STORAGE**General Requirements**

The following general requirements shall apply to all goods offered under Item 21:

- All goods shall be new and unused.
- All goods shall be suitable for professional / industrial municipal field and workshop use.
- The tenderer shall state the make and model/range offered where applicable.
- Normal operating accessories and a suitable case, holder or bag shall be included where normally applicable, unless separately priced.
- Replacement consumables, accessories and service parts shall be reasonably available during the contract period where applicable.

21.1 Heavy-duty aluminium toolbox - approx. 1,250 mm

Professional heavy-duty aluminium toolbox - approx. 1,250 mm suitable for regular municipal field, workshop and maintenance use.

- Aluminium construction, minimum approx. 3 mm material thickness, length approx. 1,250 mm and capacity approx. 180 L or greater.
- Reinforced heavy-duty lid/hinges, side handles, corrosion-resistant hardware, lock and minimum two keys.

21.2 Heavy-duty aluminium toolbox - approx. 900 to 1,000 mm

Professional heavy-duty aluminium toolbox - approx. 900 to 1,000 mm suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty aluminium box approximately 900-1,000 mm long.
- Reinforced body/lid, side handles, corrosion-resistant fittings, lock and minimum two keys.
- Dimensions/capacity/thickness stated.

21.3 Portable steel toolbox

Professional portable steel toolbox suitable for regular municipal field, workshop and maintenance use.

- Professional heavy-duty steel toolbox with corrosion-resistant finish, hinged lid, carry handle, tray/compartments and lockable provision.

21.4 Heavy-duty composite / plastic toolbox

Professional heavy-duty composite / plastic toolbox suitable for regular municipal field, workshop and maintenance use.

- Impact-resistant professional portable toolbox with reinforced lid/base, heavy-duty latches, carry handle, internal tray and lockable provision.
- Water/dust resistance preferred.

21.5 Wheeled workshop tool chest / cabinet

Professional wheeled workshop tool chest / cabinet suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty steel cabinet with multiple ball-bearing drawers, central locking, heavy-duty castors including brakes, side handle.
- Overall and drawer load ratings stated.

21.6 Heavy-duty electrician tool bag - empty

Professional heavy-duty electrician tool bag - empty suitable for regular municipal field, workshop and maintenance use.

- Abrasion-resistant professional tool bag with reinforced moisture-resistant base, multiple pockets, strong handles and shoulder strap.
- Lockable zips preferred.

21.7 Electrician tool backpack - empty

Professional electrician tool backpack - empty suitable for regular municipal field, workshop and maintenance use.

- Heavy-duty tool backpack with reinforced base, internal retaining loops/pockets, padded straps, carry handle and durable weather-resistant zip closures.

21.8 Small parts / consumables organiser case

Professional small parts / consumables organiser case suitable for regular municipal field, workshop and maintenance use.

- Impact-resistant organiser with multiple adjustable compartments, secure latches, carry handle and dividers that remain in position during transport.
- Stackable preferred.

2.1.2 TECHNICAL COMPLIANCE SCHEDULES

Tenderers shall complete the category compliance tables below. Major, high-value, safety-critical or technically specialised test instruments are additionally provided with their own detailed compliance schedules. A Yes/No response alone is insufficient for those detailed schedules: the offered value/specification and datasheet or certificate reference shall also be provided.

ITEM 1 - CORDLESS POWER TOOLS, BATTERIES AND CHARGERS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	Common Battery Platform Requirements				
1.1	Cordless Spray Gun				
1.2	Cordless Orbital Sander				
1.3	Cordless Rotary Hammer Drill				
1.4	Cordless Industrial Blower				
1.5	Cordless Drill / Driver				
1.6	Cordless Impact Driver				
1.7	Cordless Impact Wrench - 1/2 inch Drive				
1.8	Cordless Impact Wrench - 3/4 inch Drive				
1.9	Cordless Angle Grinder - 115 mm				
1.10	Cordless Reciprocating Saw				
1.11	Cordless Circular Saw				
1.12	Cordless Heat Gun				
1.13	Cordless LED Work Light				
1.14	Spare Rechargeable Battery - Standard Capacity				
1.15	Spare Rechargeable Battery - High Capacity				
1.16	Fast Battery Charger				
1.17	Dual-Port / Multi-Port Battery Charger				

ITEM 2 - MAINS-OPERATED POWER TOOLS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
2.1	Electric spray gun				
2.2	Electric orbital sander				
2.3	Electric industrial blower				
2.4	Angle grinder - 115 mm, 230 V				
2.5	Angle grinder - 230 mm, 230 V				
2.6	Electric drill - 13 mm				
2.7	Rotary hammer - SDS-plus				
2.8	Demolition / breaker hammer				
2.9	Electric heat gun				
2.10	Electric impact wrench - 1/2 inch drive				
2.11	Electric impact wrench - 3/4 inch drive				
2.12	Electric reciprocating saw				
2.13	Electric circular saw - 165 to 190 mm				
2.14	Bench grinder - approx. 150 mm				
2.15	Portable magnetic drill				

ITEM 3 - ELECTRICAL AND GENERAL HAND TOOLS & TOOL KITS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
3.1	Insulated combination pliers				
3.2	Insulated long-nose pliers				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
3.3	Insulated diagonal cutters				
3.4	Insulated cable cutters				
3.5	Insulated water-pump pliers				
3.6	Manual wire stripper				
3.7	Automatic wire stripper				
3.8	Electrician cable knife				
3.9	Electrician scissors				
3.10	Insulated flat / Phillips screwdriver set				
3.11	Insulated Pozidriv screwdriver set				
3.12	Insulated Torx screwdriver set				
3.13	Insulated nut-driver set				
3.14	Insulated torque screwdriver set				
3.15	Heavy-duty non-insulated screwdriver set				
3.16	Combination spanner set - 6 to 32 mm				
3.17	Adjustable spanner - 250 mm				
3.18	Adjustable spanner - 300 mm				
3.19	Metric socket set - 1/2 inch drive, 8 to 32 mm				
3.20	Heavy-duty socket set - 3/4 inch drive				
3.21	Allen / hex key set - 1.5 to 10 mm				
3.22	Torx key set - T10 to T50				
3.23	Ratchet spanner set				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
3.24	Breaker bar - 1/2 inch drive				
3.25	Breaker bar - 3/4 inch drive				
3.26	Hacksaw				
3.27	Junior hacksaw				
3.28	Ball-pein hammer - approx. 500 g				
3.29	Soft-face hammer - approx. 1 kg				
3.30	Dead-blow hammer				
3.31	Cold chisel set				
3.32	Centre punch set				
3.33	General pry-bar set				
3.34	Complete electrician toolbox with tools				
3.35	Complete assistant tool bag with tools				

ITEM 4 - CABLE PREPARATION, CRIMPING, TERMINATION AND PULLING TOOLS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
4.1	Battery hydraulic crimper - approx. 10 to 400 mm ²				
4.2	Manual hydraulic crimper - approx. 300 mm ² and above				
4.3	Hydraulic dieless crimper				
4.4	Battery hydraulic cable cutter				
4.5	Ratchet cable cutter - medium				
4.6	Ratchet cable cutter - heavy duty				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
4.7	Cable sheath stripping tool				
4.8	LV insulation stripping tool				
4.9	MV outer sheath stripping tool				
4.10	MV semi-conductive screen stripping tool				
4.11	Insulation channelling tool				
4.12	Cable gland tool / spanner set				
4.13	Hand lug crimper				
4.14	Ferrule crimper				
4.15	Insulated terminal crimper				
4.16	Solar PV connector crimping set				
4.17	Hydraulic knockout punch set				
4.18	Manual knockout punch set				
4.19	Fish tape - 30 m				
4.20	Fish tape - 60 m				
4.21	Fibreglass ductrodder / pulling rod - approx. 50 m				
4.22	Cable pulling grip / stocking				
4.23	Cable roller set				
4.24	Cable drum jack / stand and spindle set				
4.25	Stainless-steel banding tensioner and cutter				
4.26	Compact portable electrical label printer				
4.27	Large portable electrical label printer				

ITEM 5 - LV ELECTRICAL TESTING AND COC EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
5.1	Earth-leakage unit / RCD tester				
5.2	Digital multimeter				
5.3	True-RMS digital multimeter				
5.4	AC clamp meter				
5.5	AC/DC True-RMS clamp meter				
5.6	Insulation resistance tester - up to 1 kV				
5.7	Earth resistance tester				
5.8	Clamp-on earth resistance tester				
5.9	Low-resistance / continuity tester				
5.10	Loop impedance / PSC tester				
5.11	Phase rotation tester				
5.12	Two-pole voltage tester				
5.13	Non-contact LV voltage detector				
5.14	Socket polarity tester				
5.15	Multifunction installation tester				
5.16	Complete CoC compliance testing kit				
5.17	Portable appliance tester				
5.18	Motor rotation tester				

Detailed Compliance Schedule - 5.15 Multifunction installation tester

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Applicable standards	Relevant IEC 61557 parts for functions offered; IEC/EN 61010 safety requirements.			
Continuity	Protective-conductor continuity test current at least 200 mA; lead-zero/null function.			
Insulation	Selectable 250 V, 500 V and 1,000 V DC test voltages.			
Loop/line impedance	Includes no-trip loop testing on RCD-protected circuits and line impedance.			
PSC / PEFC	Prospective short-circuit and earth-fault current calculation/display.			
RCD testing	Trip-time and ramp/trip-current testing; 0/180 degree; common RCD types supported.			
Earth resistance	Earth-electrode testing preferred; if not included, bidder shall state.			
Phase sequence	Three-phase phase sequence/presence indication.			
Safety rating	At least CAT III 600 V / CAT IV 300 V or equivalent suitable rating.			
Data	Internal memory and PC/app report download preferred.			
Accessories	Complete fused leads, probes, crocodile clips, SA socket adaptor, remote probe, case and charger/batteries.			
Calibration	Traceable calibration certificate dated not more than six months before delivery unless approved otherwise.			

Detailed Compliance Schedule - 5.16 Complete CoC compliance testing kit

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Purpose	Complete kit suitable for electrical installation verification and CoC testing under SANS 10142-1.			
Core tester	Multifunction installation tester meeting or exceeding Item 5.15 functional requirements.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Clamp meter	True-RMS clamp meter suitable for AC/DC voltage and AC current, with appropriate CAT rating.			
Earth accessories	Earth stakes, colour-coded leads/reels and clamps where earth testing is included.			
Socket / lead adaptors	South African socket test lead/adaptor, fused probes/clips and remote probe.			
Reporting	Memory/report-download software or app preferred.			
Case	Robust fitted hard case or professional backpack protecting all instruments/accessories.			
Calibration	Traceable calibration certificates for all measurement instruments.			

ITEM 6 - MV/HV TESTING, PHASING AND VOLTAGE DETECTION EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
6.1	MV/HV contact voltage detector				
6.2	MV phase comparator / phasing stick set				
6.3	5 kV diagnostic insulation resistance tester				
6.4	10 kV diagnostic insulation resistance tester				
6.5	Voltage detector functional proving / checking unit				
6.6	MV/HV static discharge stick				
6.7	Personal MV/HV proximity voltage alarm				
6.8	VDS / VDIS interface tester				

Detailed Compliance Schedule - 6.1 MV/HV contact voltage detector

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Voltage range	Covers at least nominal 11 kV, 22 kV and 33 kV AC; 6.6 kV capability preferred.			
Frequency	50 Hz.			
Detection method	Portable capacitive contact-type detector.			
Indication	Clear high-visibility visual and audible indication.			
Self-test	Integral positive functional self-test; low-battery indication where applicable.			
Operating stick	Compatible approved insulating operating-stick interface/adaptor.			
Contacts	Suitable contact electrode(s) for normal overhead/switchgear applications.			
Standard	IEC 61243-1 or later applicable edition/equivalent recognised standard.			
Identification	Permanent serial number/traceability.			
Certification	Current dielectric/function/routine test certificate as applicable.			
Accessories	Batteries/charger as applicable and rugged protective case.			

Detailed Compliance Schedule - 6.2 MV phase comparator / phasing stick set

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Voltage range	Suitable for at least 11-33 kV AC; 6.6 kV capability preferred.			
Frequency	50 Hz.			
Function	Unambiguous in-phase / out-of-phase comparison.			
Technology	Two-pole wired, single-pole memory or wireless comparator acceptable.			
Indication	Visual and audible indication where applicable.			
Operating arrangement	Insulating sections or compatible operating-stick interfaces supplied.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Contacts	Suitable hooks/electrodes for municipal MV work.			
Self-check	Functional self-test/checking arrangement where applicable.			
Standard	IEC 61481-1 or later applicable edition/equivalent recognised standard.			
Certification	Current dielectric/function test certificates.			
Case	Rigid/protective carry case.			

Detailed Compliance Schedule - 6.3 5 kV diagnostic insulation resistance tester

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Test voltages	Includes 250 V, 500 V, 1,000 V, 2,500 V and 5,000 V DC or equivalent selectable range.			
Resistance range	At least 1 Tohm at maximum test voltage.			
Diagnostics	PI and DAR; timed test; ramp/step test preferred.			
Guard	Dedicated guard terminal.			
Safety functions	Automatic discharge and live-circuit warning/test inhibit.			
Additional measurements	Leakage current and capacitance preferred.			
Memory	Internal result storage.			
Communications	USB/Bluetooth or equivalent data transfer preferred.			
Power	Rechargeable battery with mains charger.			
Leads	HV-rated shielded leads/clamps suitable for full test voltage.			
Standards	IEC 61557-2 and applicable IEC 61010 requirements.			
Calibration	Traceable calibration certificate.			

Detailed Compliance Schedule - 6.4 10 kV diagnostic insulation resistance tester

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Test voltages	Includes 1,000 V, 2,500 V, 5,000 V and 10,000 V DC; lower steps preferred.			
Resistance range	At least 2 Tohm.			
Diagnostics	PI, DAR and timed tests; ramp/step-voltage or equivalent diagnostic test.			
Guard	Dedicated guard terminal.			
Safety functions	Automatic discharge; live-voltage warning/test inhibit.			
Additional measurements	Leakage current and capacitance preferred.			
Memory	Internal result storage with recall.			
Communications	USB or equivalent PC data transfer.			
Power	Rechargeable battery and charger.			
Leads	HV test leads/clamps rated for 10 kV.			
Standards	IEC 61557-2 and applicable IEC 61010 requirements.			
Calibration	Traceable calibration certificate.			

ITEM 7 - EARTHING, OPERATING AND LINE-SAFETY EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
7.1	Portable MV earthing and short-circuiting kit				
7.2	Portable LV earthing / short-circuiting kit				
7.3	Telescopic link stick - approx. 9 m				
7.4	Telescopic insulated operating stick				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
7.5	Fuse operating / puller attachment				
7.6	Insulated rescue hook				
7.7	Conductor come-along clamp / wire grip				
7.8	Lever hoist / come-along - 1 ton				
7.9	Lever hoist / come-along - 2 ton				
7.10	Ratchet cable / conductor puller				
7.11	Podger / erection spanner set				
7.12	Heavy-duty line spanner set				
7.13	Electrical lockout / tagout kit				
7.14	Low-voltage electrical rescue kit				

ITEM 8 - SPECIALISED ELECTRICAL DIAGNOSTIC AND FAULT-FINDING EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
8.1	Acoustic imaging camera				
8.2	Thermal imaging camera				
8.3	Infrared thermometer				
8.4	Three-phase power quality analyser				
8.5	Three-phase power / energy logger				
8.6	Electricity meter verification test set				
8.7	Underground cable / utility locator set				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
8.8	Cable identification / tracing set				
8.9	Time-domain reflectometer (TDR) cable fault locator				
8.10	LV/MV cable thumper / surge generator				
8.11	Stationary battery impedance / internal-resistance tester				
8.12	Phase angle / power factor meter				
8.13	Data-logging AC/DC clamp meter				
8.14	Cable fault pinpointing / surge receiver				
8.15	Battery hydrometer				
8.16	Battery conductance and load tester				

Detailed Compliance Schedule - 8.1 Acoustic imaging camera

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Applications	Compressed-air/gas leak detection and electrical partial-discharge detection/classification.			
Frequency band	Upper frequency at least 100 kHz; lower band suitable for industrial acoustic imaging.			
Detection distance	Useful detection from close range to at least approximately 50 m; longer range preferred.			
Acoustic image	Real-time acoustic overlay on visible image.			
Visible camera	At least 5 MP preferred.			
Display	Colour sunlight-readable display, approximately 5 inch or larger; touchscreen preferred.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Frequency filtering	User-selectable frequency band/filter.			
Leak analysis	Leak severity/size or quantitative leak analysis preferred.			
PD analysis	Partial-discharge mode with severity/classification functionality.			
Recording	Still images and video with acoustic overlay.			
Storage/export	Internal/removable storage and USB/Wi-Fi or equivalent export.			
Battery	Rechargeable; operating time at least 2.5 hours; 4 hours or more preferred; field-replaceable or spare battery capability preferred.			
Protection	Industrial portable enclosure; bidder to state IP rating.			
Accessories	Hard case, charger, straps and array/sensor protection.			
Training	At least one onsite practical training session in Riversdale for up to 10 municipal employees.			

Detailed Compliance Schedule - 8.2 Thermal imaging camera

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
IR resolution	At least 320 x 240 pixels.			
Temperature range	At least -20 degrees C to 400 degrees C.			
Accuracy	± 2 degrees C or $\pm 2\%$ of reading, whichever is greater, or better.			
Thermal sensitivity	NETD 60 mK or better preferred.			
Focus	Fixed focus acceptable; manual/auto focus preferred for higher capability.			
Visible camera	Integrated visible-light camera.			
Image fusion	Visible/IR blending or fusion.			
Emissivity	Adjustable emissivity correction.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Analysis	Hot/cold spot and user markers/boxes preferred.			
Storage	Still-image storage; radiometric files preferred.			
Reporting	PC/app reporting software included or available without recurring mandatory fee.			
Battery	Rechargeable; at least 3 hours typical operating time.			
Ruggedness	IP54 preferred and 2 m drop resistance preferred.			
Accessories	Charger, battery, hard case/transport bag and data cable.			
Calibration	Traceable calibration/verification certificate.			

Detailed Compliance Schedule - 8.4 Three-phase power quality analyser

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
System	Single- and three-phase topologies including 3P4W and 3P3W.			
Voltage channels	Four voltage inputs; up to at least 600 V CAT IV / 1,000 V CAT III class capability preferred.			
Current channels	Four current inputs using flexible/current clamps supplied.			
Core measurements	Voltage, current, frequency, kW, kvar, kVA, PF/DPF, energy and unbalance.			
Harmonics	Voltage/current harmonics and THD; at least 50th harmonic.			
Events	Dips, swells and interruptions; inrush/event capture.			
Transient capture	High-speed transient capture preferred for top-tier offered unit.			
PQ standard	IEC 61000-4-30 Class A compliance required.			
Logging	User-selectable logging intervals and sufficient memory for at least seven days continuous study.			
Display	Live waveforms/trends and numerical values.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Communications	USB and/or Ethernet/Wi-Fi/Bluetooth.			
Software	PC reporting/analysis software included or licensed for Employer use without mandatory annual fee.			
Accessories	Voltage leads, flexible current probes covering normal municipal ranges, hanging kit, charger/power supply and hard case.			
Calibration	Traceable calibration certificate.			
Training	At least one onsite practical training session in Riversdale for up to 10 municipal employees.			

Detailed Compliance Schedule - 8.5 Three-phase power / energy logger

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Topologies	Single- and three-phase systems including 3P4W and 3P3W.			
Measurements	Voltage, current, frequency, kW, kvar, kVA, PF, demand and energy.			
Power quality	THD and harmonics; voltage events preferred.			
Current probes	Flexible current probes suitable for distribution boards and cables.			
Logging	User-selectable intervals from seconds to at least 30 minutes; long-duration storage.			
Data	USB/Wi-Fi or equivalent export; PC reporting software.			
Safety	CAT rating suitable for 400/230 V distribution systems; CAT IV 600 V preferred.			
Accessories	Leads, probes, charger/power supply, case and hanging arrangement.			
Calibration	Traceable calibration certificate.			

Detailed Compliance Schedule - 8.6 Electricity meter verification test set

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Application	Portable on-site verification of revenue/billing electricity meters.			
Systems	Suitable for nominal 230/400 V, 50 Hz single- and three-phase meter installations.			
Reference accuracy	Internal/reference standard accuracy 0.1% or better; 0.05% preferred.			
Quantities	Active energy/power; reactive energy/power and power factor preferred.			
Current	Suitable for direct and/or CT-connected field measurements; current-clamp or phantom-current arrangement stated.			
Pulse input	Optical/electrical meter pulse sensing and test pulse input.			
Test points	Supports common full-load/light-load/power-factor meter checks or programmable test sequences.			
Data	Meter ID/user ID, test result storage and PC export/reporting.			
Traceability	ISO/IEC 17025-traceable calibration certificate for reference standard.			
Accessories	Complete leads, clamps/probes, optical sensor/pulse pickup, charger/power supply and transport case.			
Training	Onsite practical user training included.			

Detailed Compliance Schedule - 8.7 Underground cable / utility locator set

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Receiver modes	Passive power/radio and active transmitter/generator modes.			
Signal generator	Matching signal generator with direct connection and induction/clamp coupling.			
Depth	Depth estimation in active mode.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Guidance	Visual and audible signal-strength/direction indication.			
Safety	Overload/strike alert or equivalent preferred.			
Frequency	Multiple active frequencies preferred.			
Data	Logging/GPS or electronic validation preferred but not mandatory.			
Accessories	Connection leads, transmitter clamp, earth stake, batteries/charger and carry bag.			
Calibration	Calibration/validation certificate.			

Detailed Compliance Schedule - 8.8 Cable identification / tracing set

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Application	Identification/tracing of specific power cables among multiple cables and along accessible routes.			
Energised use	Suitable for energised and/or de-energised cables as rated by manufacturer; modes stated.			
Transmitter	Portable signal transmitter with direct connection and clamp coupling.			
Receiver	Selective receiver with clear signal strength/identification indication.			
Accessories	Inductive clamp(s), direct leads, earth lead/stake, charger/batteries and case.			
Safety	Input and clamp ratings suitable for intended LV applications; MV use only if specifically rated.			

Detailed Compliance Schedule - 8.9 Time-domain reflectometer (TDR) cable fault locator

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Range	At least 5 km maximum measurement range depending on cable type.			
Velocity factor	User-adjustable velocity of propagation.			
Faults	Open, short and impedance-change fault location.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Resolution	Fine near-end resolution and automatic/manual cursors.			
Channels	Single channel acceptable; dual channel preferred.			
Display	Graphical waveform display with distance readout.			
Memory	Trace storage/recall preferred.			
Power	Rechargeable or readily replaceable battery.			
Accessories	Fused test leads/adaptors and protective case.			
Calibration	Traceable calibration certificate.			

Detailed Compliance Schedule - 8.10 LV/MV cable thumper / surge generator

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Application	Portable LV/MV power-cable fault location by surge/thump method.			
Output voltage	Selectable surge output of at least 12 kV; higher 20-25 kV-class capability preferred. Bidder shall state all output-voltage ranges.			
Surge energy	At least 500 J at the applicable surge setting; higher energy preferred. Bidder shall state joule rating by voltage range.			
Safety	Emergency stop, key/enable control, earth/ground verification, automatic discharge/earthing arrangement and electrical/mechanical interlocks.			
Indication	Output voltage/energy status and readiness indication.			
Transport	Portable trolley/skid/case suited to field use.			
Accessories	HV output lead, earth lead, clamps and all normal operating accessories.			
Compatibility	Compatible with offered/commonly available acoustic-electromagnetic pinpointer.			
Documentation	Operating/safety manual and test/conformity documentation.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Training	Onsite practical user and safety training included.			

Detailed Compliance Schedule - 8.11 Stationary battery impedance / internal-resistance tester

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Application	Stationary battery-bank condition assessment for substation DC systems, UPS and auxiliary-power battery strings.			
Battery types	Vented lead-acid (VLA) and valve-regulated lead-acid (VRLA) required; NiCd compatibility preferred; bidder shall state all supported chemistries.			
Primary measurement	Cell/module internal impedance, internal resistance or conductance measurement suitable for trending battery condition.			
Voltage	Cell/module voltage measurement; bidder shall state measurement range and accuracy.			
Temperature	Battery/cell temperature measurement included or supported with supplied probe/sensor.			
Inter-cell connections	Inter-cell/strap resistance measurement preferred; bidder shall state capability and measurement method.			
Assessment	User-settable pass/warn/fail limits and/or comparison with baseline or string-average values.			
Storage / trending	Store multiple sites/strings and test results with on-instrument or PC/software trending.			
Data transfer	USB, removable memory and/or wireless export; bidder shall state supported methods and supplied software.			
Accessories	Suitable battery probes/clamps, temperature probe where required, charger/power supply and protective carry case.			
Calibration / support	Traceable calibration or verification certificate, operating manual, warranty and South African service/calibration support stated.			

Detailed Compliance Schedule - 8.14 Cable fault pinpointer / surge receiver

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Principle	Acoustic and electromagnetic surge-fault pinpointing.			
Sensor	Ground microphone/sensor suitable for paved and soft surfaces; dual sensor preferred.			
Indication	Visual and headphone/audio indication.			
Controls	Adjustable gain/sensitivity and acoustic filtering.			
Distance/direction	Distance or direction assistance preferred.			
Compatibility	Compatible with Item 8.10 output pulses and other commonly available surge generators.			
Power	Rechargeable battery preferred.			
Accessories	Headphones, sensor(s), charger, cables and hard case.			

ITEM 9 - GENERAL MEASURING AND INSPECTION EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
9.1	Digital lux meter				
9.2	Laser distance meter - minimum 50 m				
9.3	Laser level				
9.4	Digital tachometer				
9.5	Digital vernier caliper - 0 to 150 mm				
9.6	Outside micrometer - 0 to 25 mm				
9.7	Steel tape measure - 30 m				
9.8	Tape measure - 5 m				
9.9	Tape measure - 8 m				
9.10	Spirit level - 300 mm				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
9.11	Spirit level - 600 mm				
9.12	Feeler gauge set - approx. 0.02 to 1.00 mm				
9.13	Precision straight edge - approx. 600 mm				
9.14	Industrial inspection camera / borescope				
9.15	Digital angle / inclination meter				

ITEM 10 - VEHICLE AND FIELD AUXILIARY POWER INVERTERS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
10.1	Pure-sine inverter - 12 V DC / approx. 2 kW				
10.2	Pure-sine inverter - 24 V DC / approx. 2 kW				
10.3	Pure-sine inverter - 24 V DC / approx. 5 kW				
10.4	Pure-sine inverter - 48 V DC / approx. 5 kW				
10.5	Inverter / charger - 12 V / approx. 2 kW				
10.6	Inverter / charger - 24 V / approx. 2 kW				
10.7	Inverter / charger - 24 V / approx. 5 kW				
10.8	Inverter / charger - 48 V / approx. 5 kW				

ITEM 11 - SOLAR-CAPABLE AUXILIARY POWER EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
11.1	Solar inverter / charger - 12 V / approx. 2 kW				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
11.2	Solar inverter / charger - 24 V / approx. 2 kW				
11.3	Solar inverter / charger - 24 V / approx. 5 kW				
11.4	Solar inverter / charger - 48 V / approx. 5 kW				
11.5	MPPT solar charge controller - 20 to 30 A				
11.6	MPPT solar charge controller - 40 to 50 A				
11.7	MPPT solar charge controller - 60 A or greater				
11.8	DC-DC vehicle charger - 12 V system				
11.9	DC-DC vehicle charger - 24 V system				
11.10	DC-DC charger with solar MPPT				

ITEM 12 - AUXILIARY POWER BATTERIES

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
12.1	LiFePO4 battery - 12.8 V 100 Ah				
12.2	LiFePO4 battery - 12.8 V 200 Ah				
12.3	LiFePO4 battery - 25.6 V 100 Ah				
12.4	LiFePO4 battery - 25.6 V 200 Ah				
12.5	LiFePO4 battery - 48/51.2 V approx. 5 kWh				
12.6	LiFePO4 battery - 48/51.2 V approx. 10 kWh				
12.7	AGM / Gel battery - 12 V 100 Ah				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
12.8	AGM / Gel battery - 12 V 200 Ah				

ITEM 13 - SOLAR PV MODULES AND AUXILIARY POWER ACCESSORIES

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
13.1	Monocrystalline PV module - approx. 200 to 250 W				
13.2	Monocrystalline PV module - approx. 400 to 500 W				
13.3	Portable / folding PV module - approx. 200 W				
13.4	Battery box - approx. 100 Ah				
13.5	Battery box - approx. 200 Ah				
13.6	Heavy-duty battery isolator / disconnect				
13.7	Automatic / voltage-sensitive battery isolator				
13.8	Inverter battery cable set - approx. 2 kW				
13.9	DC fuse and fuseholder				
13.10	Solar PV DC cable set				
13.11	Solar PV connector set				
13.12	Vehicle / trailer PV mounting kit				
13.13	Fixed PV mounting kit				

ITEM 14 - WORKSHOP AND FIELD EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
14.1	High-pressure washer - approx. 120 bar				
14.2	Heavy-duty pressure washer - 150 to 200 bar				
14.3	Air compressor with spray- paint accessories				
14.4	Wet / dry industrial vacuum cleaner				
14.5	Portable 230 V LED flood / work light				
14.6	Extension lead - 20 m, 16 A				
14.7	Extension lead - 30 m, 16 A				
14.8	Extension cable reel - minimum 30 m, 16 A				
14.9	Bench vice - approx. 125 to 150 mm				
14.10	Heavy-duty jumper leads - approx. 1,000 A				
14.11	Rechargeable headlamp				
14.12	Rechargeable hand torch				
14.13	Heavy-duty gazebo - 3 m x 3 m				
14.14	Portable workshop / field fan - min. 400 mm				
14.15	Portable air mover / ventilation blower				

ITEM 15 - LADDERS AND ACCESS EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
15.1	Fibreglass extension ladder - approx. 9 m				
15.2	Fibreglass extension ladder - approx. 6 m				
15.3	Fibreglass step ladder - approx. 1.8 m				
15.4	Fibreglass step ladder - approx. 2.4 m				
15.5	Fibreglass platform ladder				
15.6	Ladder stabiliser / stand-off device				
15.7	Ladder safety / securing strap set				
15.8	Vehicle-carried fibreglass combination ladder				

ITEM 16 - SPECIALISED MECHANICAL AND PUMP HAND TOOLS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
16.1	Torque wrench - approx. 10 to 60 Nm				
16.2	Torque wrench - approx. 40 to 200 Nm				
16.3	Torque wrench - approx. 100 to 500 Nm				
16.4	Locking pliers - approx. 250 mm				
16.5	Internal circlip plier set				
16.6	External circlip plier set				
16.7	Club / engineer hammer - approx. 4 lb				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
16.8	Sledge hammer - approx. 4.5 kg / 10 lb				
16.9	Rubber mallet				
16.10	Crowbar / wrecking bar				
16.11	Heavy-duty pry / power bar				

ITEM 17 - PIPEWORK AND PUMP-PIPE MAINTENANCE TOOLS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
17.1	Pipe wrench - approx. 300 mm / 12 inch				
17.2	Pipe wrench - approx. 450 mm / 18 inch				
17.3	Pipe wrench - approx. 600 mm / 24 inch				
17.4	Chain pipe wrench - approx. 450 mm				
17.5	Strap wrench				
17.6	Pipe cutter - up to approx. 50 mm				
17.7	Pipe cutter - up to approx. 100 mm				
17.8	Pipe threading machine - approx. 1/2 to 2 inch				
17.9	Tap and die set - approx. M6 to M24				
17.10	Heavy-duty pipe vice				

ITEM 18 - MOTOR, PUMP, BEARING AND ALIGNMENT TOOLS

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
18.1	Mechanical bearing puller set - approx. 50 to 200 mm				
18.2	Hydraulic puller - up to approx. 10 ton				
18.3	Portable induction bearing heater				
18.4	Laser shaft-alignment system				
18.5	Dial indicator with magnetic base				
18.6	Impeller removal tool / set				
18.7	Pump shaft locking tool / set				
18.8	Mechanical seal installation tool set				
18.9	Bearing installation tool set				
18.10	Manual grease gun				
18.11	Battery-operated grease gun				
18.12	Pneumatic grease gun				
18.13	Manual oil transfer pump				

Detailed Compliance Schedule - 18.3 Portable induction bearing heater

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Supply	230 V AC, 50 Hz.			
Heating method	Induction heating for bearings/couplings.			
Bearing capacity	Suitable for bearings of at least 20 kg; bidder to state maximum mass and bore/diameter.			
Temperature	Controlled heating to at least 150 degrees C.			
Control	Automatic temperature and time modes.			
Probe	Magnetic/contact temperature probe included.			
Demagnetisation	Automatic demagnetisation cycle preferred.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Yokes	Multiple yokes/crossbars for common bearing bores.			
Safety	Over-temperature protection and safe handling arrangement.			
Accessories	Heat-resistant gloves and carry/transport case.			

Detailed Compliance Schedule - 18.4 Laser shaft-alignment system

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Application	Horizontal coupled motor-pump shaft alignment.			
Measurement	Angular and offset misalignment in horizontal and vertical planes.			
Live correction	Real-time/live machine-move guidance.			
Detector/laser	Dual measurement heads or equivalent modern laser system.			
Mounting	Chain fixtures and brackets for common motor/pump shaft diameters; extension rods included.			
Soft foot	Soft-foot measurement function preferred.			
Tolerance	Built-in alignment tolerances or tolerance guidance preferred.			
Reporting	Job/result storage and report generation/export.			
Power	Rechargeable display/measurement heads.			
Ruggedness	Industrial field-use, IP-rated measuring heads preferred.			
Calibration	Traceable calibration/verification certificate.			
Accessories	Hard case and all normal mounting accessories.			
Training	At least one onsite practical training session in Riversdale for up to 10 municipal employees.			

ITEM 19 - LIFTING AND HANDLING EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
19.1	Chain block - 1 ton				
19.2	Chain block - 2 ton				
19.3	Chain block - 3 ton				
19.4	Certified lifting sling - 1 ton				
19.5	Certified lifting sling - 2 ton				
19.6	Certified lifting sling - 3 ton				
19.7	Bow / D shackle - approx. 1 ton				
19.8	Bow / D shackle - approx. 2 ton				
19.9	Bow / D shackle - approx. 3 ton				
19.10	Portable lifting tripod				
19.11	Portable spreader / lifting beam				

Detailed Compliance Schedule - 19.10 Portable lifting tripod

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Application	Portable lifting/lowering of pumps/equipment at chambers and similar sites.			
WLL	At least 500 kg; bidder to state certified WLL.			
Construction	Portable folding/telescopic tripod with corrosion-resistant finish.			
Legs	Adjustable legs with secure locking and anti-slip feet.			
Head	Central certified lifting point/head assembly.			
Compatibility	Suitable for compatible chain block or winch; attachment details stated.			
Height	Bidder to state maximum working height and leg spread.			
Identification	Permanent WLL and unique identification.			
Certification	Current load/proof-test or conformity certificate from competent inspection source.			

Requirement	Minimum Requirement	Comply Yes/No	Offered Specification / Value	Datasheet / Certificate Ref.
Transport	Carry/storage arrangement preferred.			

ITEM 20 - HEAVY-DUTY FASTENING AND IMPACT EQUIPMENT

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
20.1	Pneumatic impact wrench - 1/2 inch drive				
20.2	Pneumatic impact wrench - 3/4 inch drive				
20.3	Impact socket set - 1/2 inch drive				
20.4	Heavy-duty impact socket set - 3/4 inch drive				
20.5	Torque multiplier				

ITEM 21 - TOOLBOXES AND EQUIPMENT STORAGE

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
General	General Requirements				
21.1	Heavy-duty aluminium toolbox - approx. 1,250 mm				
21.2	Heavy-duty aluminium toolbox - approx. 900 to 1,000 mm				
21.3	Portable steel toolbox				
21.4	Heavy-duty composite / plastic toolbox				
21.5	Wheeled workshop tool chest / cabinet				
21.6	Heavy-duty electrician tool bag - empty				
21.7	Electrician tool backpack - empty				

Item	Description	Comply Yes/No	Make & Model Offered	Tenderer Offered Specification / Comments	Datasheet Ref.
21.8	Small parts / consumables organiser case				

Failure to adhere to the above, will result in your tender being declared non-responsive.

DECLARATION,

I, THE UNDERSIGNED (NAME)
 CERTIFY THAT THE INFORMATION FURNISHED ABOVE IS CORRECT. I ACCEPT THAT THE MUNICIPALITY MAY ACT
 AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

AUTHORISED SIGNATURE:

NAME:

CAPACITY: DATE:

Initials of Service Provider's Authority: