

Annex A1 – Terms of Reference

ESTABLISHMENT OF FRAME AGREEMENT FOR the provision of Maintenance, Operation, and Monitoring Service of the Low-voltage network in Azraq Camp

1. Background:

UNHCR maintains the Medium and Low Voltage electrical networks inside the Azraq refugee camp. **Azraq camp consists of four (4) villages** and each village consists of blocks. Blocks consist of plots of 8-12 shelters in addition to one market in each village with several market stalls. For a breakdown of transformers, number of blocks, plots, market stalls, and shelters, refer to page 8/8 of Annex A – Terms of Reference. Almost 9,000 shelters are occupied. All shelters are connected to the low-voltage network, and every shelter contains:

- A consumer unit (MCB distribution panel), and each consumer unit contains 25A RCBO, 16A MCB 1P, and 10A MCB 1P.
- Two gang switches.
- Two double sockets.
- Two lamp holders.

The scope of this ToR is the entire Low Voltage (LV) network excluding transformers, including but not limited to Main Distribution boards and components, feeders, Aerial cables, poles, user cables, street lighting, earthing, shelter internal wiring, and all LV accessories and components. The required activities are described in this ToR.

The contractor is held liable for damages due to poor performance of the activities and slow response and shall report faults adequately and timely. Repair and/or replacement of any damaged components in the Low Voltage and Medium Voltage networks as well as shelters and market stalls which may have resulted from poor performance or slow response or lack of reporting at their own expense.

The contractor shall conduct the following activities:

2. Scope of Work:

The workshop team of the contractor must complete the Provision of all O&M services needed to guarantee the optimal operation of the low voltage network including but not limited to operation and maintenance (corrective, preventive) of network parts, including electrical infrastructure and all connections, testing, staff, vehicles, tools, spare parts, consumable products, security, upgrades or new constructions, specialist repair services, etc. needed to perform the services. Expected frequencies for each item are as follows:

**Worth mentioning that Quantities are subject to change based on the UNHCR site engineer's request, and this will be reported from UNHCR to the workshop team to adjust the plan accordingly and do all the work on time at no extra costs.*

2.1 Routine inspection and corrections:

For the first month, a monthly work plan shall be submitted, and at the end of each month, a monthly work plan for the following month shall be submitted to the UNHCR Engineer for approval. The activities in the approved work plan shall take place. The contractor is not entitled to reimbursement related to any activities

that have not been carried out, or activities not requested in writing by UNHCR Engineer or included in the work plan. Regular inspection and testing shall be done, and respective inspection reports should be produced and submitted to UNHCR. The below tasks and frequencies are estimated to allow bidders to estimate the needed resources and capacity to carry out the works and do not present an obligation by UNHCR to carry out works. Works are carried out as per the approved monthly plan and invoiced per item as listed in the BoQ.

Low Voltage Circuit Breakers (CB) and Main Distribution Boards (MDB)

#	Task	Frequency
1	Tighten/loosen the MDB internal components according to manufacturer torque requirements, per MDB.	Twice per year
2	Grease the motor operator and the MCCB, per MDB.	Upon request
3	Clean the interior of MDB as well as clean the area inside the transformer room, per room.	Upon request
4	Insulate busbars with heat-shrinkable tubing.	Upon request
5	Replace busbars.	Upon request
6	Seal, replace, or correct as needed MDB enclosure locks, paint, hinges, apertures, weatherproofing, and rubber.	Upon request
7	Rust treatment and electrostatic coating RAL 7035, per MDB	Once per year
8	Replace the control wires.	Upon request
9	Replace contactor.	Upon request
10	Replace the timer battery.	Upon request
11	Replace timer.	Upon request
12	Replace the motor operator.	Upon request
13	Replace fuses.	Upon request
14	Replace the Fuse Disconnect Switch.	Upon request
15	Replace the Cable Lug with a certified crimping tool.	Upon request
16	Internal components repositioning or modifying, per MDB.	Upon request
17	Thermal imaging per MDB.	

LV cables excluding user cables and lighting connection.

#	Task	Frequency
1	Replace faulty piercing connectors.	Upon request
2	Replace the mounting cross-arm bracket.	Upon request
3	Replace the tension clamp.	Upon request
4	Replace the cable suspender.	Upon request
5	Replace twisted Al cables (ABC), per meter.	Upon request
6	Sag correction, per sag.	Upon request
7	Pole slope correction, per pole.	Upon request
8	Pole rust treatment and galvanizing, per meter.	Upon request
9	Insulate cable with heat-shrinkable tubing.	Upon request
10	Inspect feeder and twisted cable fixation and entailed non-user piercing connectors per block.	Bimonthly
11	Fix the copper multicore feeder cable to the feeder pole, per block.	Upon request

12	Replace cable stay, threaded rod, plate, and anchor plate.	Upon request
13	Inspect cable terminal insulation and cable lug crimping - all feeders of LV network across the camp..	Annual
14	Insulate cable terminals, per block.	Upon request
15	Replace/reinstall the earth connection between the grid and the pole.	Upon request
16	Network cleaning removes dirt, debris, ..etc, per block.	Upon request
17	Load balancing per block.	Upon request

Streetlights and lighting connection (2x1.5mm CU)

#	Task	Frequency
1	Replace the street light cable.	Upon request
2	Replace piercing connectors of lighting cables.	Upon request
3	Install or replace the lighting unit or cross-arm.	Upon Request
4	Street light repositioning.	Upon Request

user cable 3x4mm

#	Task	Frequency
1	Insulate user cable lines with heat-shrinkable tubing.	Upon request
2	Replace user cables.	Upon request
3	Replace piercing connectors of user cables	Upon request
4	Disconnect and hang the user cable at the top of the pole or store it.	Upon request

Inside shelters

#	Task	Frequency
1	Inspect and test RCBO and MCB functions. - per shelter.	Upon request
2	Inspect the consumer unit, bulb holders, wires, sockets, switch connection and fixation, and function and replace as needed. - per shelter.	Upon request
3	Replace MCB, RCBO, socket, switch, bulb holder, wires, pvc pipes or accessories...etc.	Upon request
4	Reconnect the cut cable or remedy user cable damage with cable joint, heat shrink, and insulation electrical tape.	Upon request
5	Dismantling the electrical materials from vacant / damaged shelters and storing them in the storage area.	Upon request

Transformer room

#	Task	Frequency
1	Repairing and sealing a hole in a concrete brick wall.	Upon request
2	Repairing and sealing a hole in a metal mesh fence.	Upon request
3	Repairing doors, door hinges, lock handles,	Upon request
4	Install razor wire at the top of the room walls.	Upon request

Earth system

#	Task	Frequency
1	Inspect the earth connection inside MDB.	Upon request
2	Inspect the earth connection at the main ground point (clips and rods).	Upon request
3	Inspect the earth connection at the transformer fence.	Upon request
4	Inspect the earth connection at the feeder pole.	Upon request

All the reports shall be signed by UNHCR Senior Engineer Assistant or UNHCR Engineer on a daily basis, and the UNHCR Engineer on a monthly basis.

The contractor shall submit a report indicating faults inside shelters or caravans, a report indicating faults across the aerial network, and a report indicating faults within Main Distribution Boards.

The report shall be validated by the UNHCR Engineer. All repairs shall only take place upon confirmation from the UNHCR Engineer.

2.2 Testing, Measurements:

Regular testing and respective reports should be produced and submitted to UNHCR as per the below frequency.

(a) MDB and feeder tests

#	Task	Frequency
1	Volts: Phase to phase/phase to neutral / earth to neutral.	Upon request
2	Ampere: Each phase individually.	Upon request
3	Insulation Tests for copper feeder cables i.e. megger test.	Upon request
4	CB insulation resistance test i.e., megger.	Upon request

(b) Consumer unit tests

At addresses provided by UNHCR Engineer

#	Task	Frequency
1	Measure phase, neutral and earth voltage, amperes.	Upon request
2	Measure and test the earth resistance at the consumer unit.	Upon request

(c) Earth system tests

#	Task	Frequency
1	Measure and test the earth resistance at shelters.	Weekly
	Measure and test the earth resistance at the poles.	Weekly
	Measure and test the earth resistance at the MDB busbar.	Monthly
	Measure and test the earth resistance at the main ground Point.	Upon request
	Measure and test earth resistance at transformer fences.	Monthly

In case of earth faults, i.e. readings more than 5 ohms, corrective measures shall take place to keep 5- ohm value at all locations by installing 35mm² copper rods, at a depth of 1.2 meters well connected to the earthing network.

All the reports shall be signed by the Senior Engineer Assistant on daily¹ basis, and UNHCR engineer on a monthly basis.

2.3 Reporting

Daily report:

A soft copy of the daily report shall be submitted to UNHCR through email. They shall include any activity carried out on that day (including measurements, maintenance, and repair works).

Monthly report:

The monthly reports shall be submitted on the first day of **each month**. A hard copy is to be submitted to the UNHCR Engineer; the soft copy shall be submitted to UNHCR through email. They shall include in detail any activity carried out during the reporting period.

All measurement, fault, incident, correction, and other reports excluding daily, and monthly reports are mandatory, free of charge, and submitted within 48 hours of occurrence or completing a request by UNHCR. Urgent matters are reported immediately whenever they occur.

“DAY” means working day from Sunday to Thursday (five days a week) from 8 AM until 4 PM.

Sample reports shall be submitted along with the bid. Upon contract award, the contractor shall submit the proposed draft report templates (faults, inspection, daily, and monthly, stockkeep) to be approved by the UNHCR Engineer. Any modifications needed to the report forms after contract award and initiation are permitted but must be approved by the UNHCR Engineer.

2.4 Maintenance and operation work:

The contractor shall provide an emergency response time of 18 hours.

The contractor shall ensure capacity and capability to also carry out the below activities in addition to all tasks mentioned previously, upon request by UNHCR Engineers:

#	Task	Frequency
1	Dismantling electrical materials from vacant or damaged shelters/Caravans, and store them in the bidder Storage Area	Upon request
2	Storage Area stock keep.	Upon request
3	New internal wiring for the new vacant shelters/caravans	Upon request
4	Internal wiring for shelters/caravans	Upon request
5	Stretching new cables	Upon request
6	Connecting new caravans/shelters to the grid	Upon request
7	Installing LV poles	Upon request
8	Installing MDBs	Upon request
9	Load balance – by transferring specified cable connection from one phase to another on the LV network.	Upon request
10	Truck Crane Service for a full day working, upon request from UNHCR engineer.	Upon request

2.5 Supply/ Install of Spare Parts and Corrective Maintenance service:

Upon need, the contractor shall ensure availability of the items listed at the end of this TOR in the section #9 named “**Estimated type of Spare Parts and Corrective Maintenance service for Azraq Camp**” as well as Annex C2 – Financial form – All items shall have supply unit cost stated, while for installation it will be at no extra costs as this will be the job of the workshop team. In case UNHCR does not have the required material in stock, required materials shall be bought from the contractor based on the prices mentioned in Annex C2. Upon request, the contractor shall provide instrument calibration/validation certification service for UNHCR instruments through a third party.

3. Performance Indicators:

Maintenance and repair are critical functions that influence the overall quality of distribution service; thus, the contractor shall ensure and take all measures to comply with the following performance indicators:

- (1) **Response time:** at Azraq Camp and should be less than 4 hours during the normal working hours for issues effecting energy supply, if life effecting immediate action is needed.
- (2) **Service restoration time:** This is the time elapsed from when a disturbance occurs until service is restored to customers. Over a 12-month period, the average service restoration time shall be less than 12 hours per disturbance.

4. Staffing, tools, and vehicles:

The contractor shall provide the below-qualified personnel as a minimum:

- 1 Site Electrical Engineer, present every working day at Azraq camp.
- 1 Foreman electrician, present every working day in the field at Azraq camp.
- 4 Qualified electrical technicians each to be approved by a UNHCR engineer. Employment of such from camp residents is encouraged.
- All staff above must have at least 4 years of experience (3 years min in electrical networks).
- 1 pick-up truck present every working day at Azraq camp.
- Please note that the indicated working days shall match the working days of UNHCR Jordan, for regular working days (Sunday to Thursday) from 8 AM to 4 PM and respond to emergencies when needed during all electricity supply hours.
- 1 certified electric Crane available on demand (with no extra cost), with a response time max 24 hours to be present in the camp.
- All Personal Protection Equipment (PPE), gear, tools, and suits required to fully meet safety requirements as per OSHA 29 CFR standards.
- Certified testing tools to conduct all required tests. Certified to International standards with recent and periodic calibration/validation certificates from the Royal Scientific Society or manufacturer at the expense of the contractor for contractor instruments and tools.
- Certified tools for all corrective and installation activities e.g. torque wrench, electric/hydraulic crimping tool, manual crimping tool... etc.
- The contractor shall be authorized to work in Jordan. It is the full responsibility of the contractor to obtain the needed permissions from the Syrian Refugees Affairs and Directorate (SRAD) to enter the camp.

5. Storage Area / Site in the camp:

In addition, the contractor shall submit a stock keep storage area inventory report 48 hours after receiving the request to do so. UNHCR will identify a site only (plot of land) for the contractor inside the camp to store the vehicles and materials. UNHCR will identify an office space in the base camp for the contractor.

It is understood that Storage Caravan, Security, access to electricity, water, and Wi-Fi are at the charge and responsibility of the contractor.

6. Additional Considerations and the Environment:

- 1. The contractor shall be classified as an Electromechanical contractor by the Jordan Contractors Association (JCA) or a company classified as a distribution company by the Energy and Minerals Regulatory Commission (EMRC).**

2. The workshop team scope must cover all needed preventive and corrective maintenance works needed for the LVM mentioned in this TOR, and even if higher quantities were requested by UNHCR, it must be done on time at no extra costs, as the quantities mentioned above are estimated.
 3. UNHCR owns spare parts for most of the key elements in the system, in case of a shortage of spare parts, the vendor shall procure from the list of potential spare parts within tender documents, and there will be no installation cost as this is already covered through the all-inclusive services of the Workshop team to perform the preventive and corrective maintenance works.
 4. The offer shall be all-inclusive, including shipping, clearance, delivery, and all required items and consumables (e.g. electrical tape) to install in accord with.
 5. The awarded bidder shall follow up on the full process of the needed maintenance including but not limited to the repair and return of the parts, spare parts availability when needed, shipping and customs process, etc.)
 6. If any equipment was damaged due to inadequate maintenance or poor security & safety measures, the contractor shall be responsible for replacing and/or repairing them at their own expense. Also, the contractor shall be responsible for covering the expenses of potential extended damage to equipment due to inadequate maintenance or poor security & safety measures.
 7. In case of any staffing discrepancies that emerge after the contract award, the contractor shall employ personnel to the project with qualifications and experience that meet or exceed those proposed in the bid.
 8. The contractor shall be responsible for repairing and or replacing anything that has been damaged by the contractor within the site. They shall also be responsible for the cleaning of any debris, wastes or other items created during these works.
 9. The awarded bidder shall maintain the warranty of the systems as per the manufacturers' warranty terms and keep all the documentation and reporting.
 10. The awarded bidder shall follow up on the full process of the needed maintenance including but not limited to the repair and return of the parts, spare parts availability when needed, shipping and customs process, etc.)
 11. The Contractor shall detail all personnel requirements, security measures, scheduled equipment replacement, maintenance schedules and operational for each year.
 12. The contractor is encouraged to employ Syrian Refugees in the operation and maintenance of the low voltage network.
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Environmental Considerations and disposal plan:

- 1- All packaging and wastes associated with the installations shall be carefully disposed of in accordance with the laws in Jordan (Environment Protection Law)
- 2- The contractor shall be responsible for ensuring the waste materials, packaging, and any other items associated with these installations, do not get blown or otherwise distributed around the site. They shall also be careful not to create excessive dust or debris in any area. Any costs incurred in cleaning wastes or debris generated by contractor shall be charged to the contractor.

7. Required documents summary to be submitted:

As part of the technical offer, all vendors must provide a proposal plans and templates of the below documents:

Document Needed	Type of Document	Comments
Preventive Maintenance	Plan and sample report daily and Monthly	Full and detailed proposal and plan showing the inspection components, inspection forms, methodology, equipment, staffing and machinery in addition to the list of, forms, test standards, tools.
HSSE Proposal of Health, Safety, Security, and environment	Plan	The contractor shall submit a plan for the HSSE measures will be taken through the O/M works of the site and list of the tools, equipment, methodology and staffing.
Corrective maintenance	Plan and sample report of the daily, Monthly, and incident.	The vendor shall submit a full and detailed proposal and plan showing the inspection components, inspection forms, methodology, equipment, staffing and machinery, submitting a full report for the root cause of faults and list of tests needed and mitigation measures to avoid repeating the same faults.
Proposed list of Tests and templates	List of potential tests and Report templates – when applicable	Please include types of tests, Standard, Optimum Readings, methodology and activities intended.
List of certified tools, machinery, and equipment	List	Please include the specs and quantity.
List of team and CVs	CVs	Please include all CV of staffing will be working for this project.
Daily, Weekly and Monthly reports	Templates	Submit detailed templates of the reports and checklist will be used for O&M.
Inventory report	Template – Monthly report	Submit a detailed templates for the inventory report showing the available spare parts stock, specs.
Loss and damage reports	Templates	Submit a detailed templates will be used any loss and damages inside the plant.
Company profile, Organization chart/management structure	Documents	<p>The bidder shall submit company profile, organization chart/management structure and history of past projects (and proof through Contracts, Purchase Orders, or similar).</p> <p>The bidder shall submit copy of valid registration certificates from Companies Control Department with company purposes including design, supply, installation, operation and maintenance of low voltage systems.</p>
List of references and recommendation letters		Submit Number and relevance of references (incl. experience with UN/NGO agencies) with recommendation letters from each. (The more the higher the score)

8. Estimated type of Spare Parts and Corrective Maintenance service for Azraq Camp (Annually)

Upon need, the contractor shall ensure availability of the below items:

Description	Specification	Unit	Quantity / year
Low voltage pole 10 meters	TUV Certified, Galvanized 82-120 Micron, Yield Strength N/mm2 420-461 , Tensile Strength N/mm2 545-570, Elongation % 32-38	pcs	50
Pole Fasten/Bracket Clamp	3 inches diameter - 2 holes or 3 holes - 9mm screws or larger - Galvanized iron - 4mm or higher thickness	pcs	250
Pole stay steel cable	35 to 50 mm galvanized from 55-70 micro	m	200
Pole stay threaded rod	20mm galvanized from 55-70 micro	pcs	150
Pole stay eye turnbuckle	galvanized from 55-70 micro suitable with rod and cable	pcs	100
Pole stay anchor plate	galvanized from 55-70 micro suitable with rod	pcs	150
Lattice Steel Pole 12 meters	TUV Certified, Galvanized 82-120 Micron, Yield Strength N/mm2 420-461 , Tensile Strength N/mm2 545-570, Elongation % 32-38	pcs	5
Low Voltage Concrete Base	According to Jordanian Civil Engineering Standard	pcs	50
Street light 2000 Lumen	Minimum 2000 lumen, 120-277 Input Voltage, minimum 140 lm/W, CRI ≥70, TuV Certified, Aluminum die cast enclosure, Color 5000-6500 K, 50-60Hz, cast integral heat sink, Surge protection 10kV/5kA, Corrosion resistant powder paint ≥ 2.0 mil thickness (RAL), Maximum weight 6kg, Power Factor minimum 90%, minimum 5 years warranty, Testing in accordance with IES TM-21-11 at 25°C, 3G per ANSI C136.31-2018 Title 47 CFR Part 15 Class A, operating temperature -40°C to 55°C per ANSI C136.2-2018, CE certified, RoHS compliant, IP65 or IP66 or IP67, minimum lifetime 60,000hrs	pcs	250
Street light 6600 Lumen	Minimum 6600 lumen, 120-277 Input Voltage, minimum 140 lm/W, CRI ≥70, TuV Certified, Aluminium die cast enclosure, Color 5000-6500 K, 50-60Hz, cast integral heat sink, Surge protection 10kV/5kA, Corrosion resistant powder paint ≥ 2.0 mil thickness (RAL), Maximum weight 6kg, Power Factor minimum 90%, minimum 5 years warranty, Testing in accordance with IES TM-21-11 at 25°C, 3G per ANSI C136.31-2018 Title 47 CFR Part 15 Class A, operating temperature -40°C to 55°C per	pcs	50

	ANSI C136.2-2018, CE certified, RoHS compliant, IP65 or IP66 or IP67, minimum lifetime 60,000hrs		
Street light 25000 Lumen	Minimum 25000 lumen, 120-277 Input Voltage, minimum 140 lm/W, CRI ≥70, TuV Certified, Aluminum die cast enclosure, Color 5000-6500 K, 50-60Hz, cast integral heat sink, Surge protection 10kV/5kA, Corrosion resistant powder paint ≥ 2.0 mil thickness (RAL), Maximum weight 11kg, +/- 5 degrees of leveling adjustment, Power Factor minimum 90%, minimum 5 years warranty, Testing in accordance with IES TM-21-11 at 25°C, 3G per ANSI C136.31-2018 Title 47 CFR Part 15 Class A, operating temperature -40°C to 55°C per ANSI C136.2-2018, CE certified, RoHS compliant, IP65 or IP66 or IP67, minimum lifetime 60,000hrs,	pcs	150
Cross Arm 2.5m	Galvanized 45-55 Micron same as existing.	pcs	50
Cross Arm 2 m	Galvanized 45-55 Micron same as existing.	pcs	50
LV 1x300mm2	CU/XLPE/SWA/PVC	m	35
LV 1x300mm2	CU/XLPE/PVC	m	100
LV 1x240mm2	CU/XLPE/SWA/PVC	m	35
LV 1x240mm2	CU/XLPE/PVC	m	100
LV 1x120mm2	CU/XLPE/SWA/PVC	m	25
LV 1x120mm2	CU/XLPE/PVC	m	100
LV 2.1.5mm2	CU/XLPE/PVC	m	300
LV 3x4mm	CU/XLPE/SWA/PVC	m	1000
LV 3x4mm	CU/XLPE/PVC	m	200
LV 3x6mm	CU/XLPE/SWA/PVC	m	500
LV 3x6mm	CU/XLPE/PVC	m	200
LV 5x10mm	CU/XLPE/SWA/PVC	m	100
LV 5x10mm	CU/XLPE/PVC	m	200
LV 5x16mm	CU/XLPE/SWA/PVC	m	100
LV 5x16mm	CU/XLPE/PVC	m	200
LV 4x25mm+1x16mm	CU/XLPE/SWA/PVC	m	25
LV 4x25mm+1x16mm	CU/XLPE/PVC	m	100
LV 4x50mm+1x25mm	CU/XLPE/SWA/PVC	m	25
LV 4x50mm+1x25mm	CU/XLPE/PVC	m	100
LV 4x35mm	CU/XLPE/SWA/PVC	m	25
LV 4x35mm	CU/XLPE/PVC	m	100
LV 4x95+50mm	CU/XLPE/SWA/PVC	m	25
LV 4x95+50mm	CU/XLPE/PVC	m	100

LV 4x120+70mm	CU/XLPE/SWA/PVC	m	35
LV 4x120+70mm	CU/XLPE/PVC	m	100
LV 4x240+120mm	CU/XLPE/SWA/PVC	m	25
LV 4x240+120mm	CU/XLPE/PVC	m	100
TWISTED 3AL+AL+AL. (3*150mm)+50mm+95mm	ALLOY/XLPE	m	200
TWISTED 3AL+AL+AL. (3*120mm)+35mm+70mm	ALLOY/XLPE	m	1000
TWISTED 3AL+AL+AL. (3*95mm)+25mm+50mm	ALLOY/XLPE	m	200
TWISTED 3AL+AL+AL. (3*70mm)+25mm+35mm	ALLOY/XLPE	m	200
TWISTED 3AL+AL+AL. (3*50mm)+16mm+25mm	ALLOY/XLPE	m	500
TWISTED 3AL+AL+AL. (3*35mm)+25mm+25mm	ALLOY/XLPE	m	200
TWISTED 3AL+AL+AL. (3*25mm)+25mm+25mm	ALLOY/XLPE	m	200
TWISTED 3AL+AL+AL. (3*16mm)+16mm+16mm	ALLOY/XLPE	m	1000
TWISTED 3AL+AL+AL. (3*50mm)+50mm+50mm	ALLOY/XLPE	m	200
10A MCB	1p, 10A, breaking capacity 6kA to BS EN 60898	pcs	1000
16A MCB	1p, 16A, breaking capacity 6kA to BS EN 60898	pcs	1000
RCBO 25-A	2P, shall be rated for 240Vac, 50Hz with breaking/making capacity of 120A rms, short circuit withstand current lcv of 2kA rms for 1 second, rated short circuit making capacity of 3kA peak and short circuit conditional current of 6A rms	pcs	1000
Consumer unit	Consumer units shall be surface mounted with IP3X-rated insulated housing with DIN rails for mounting of circuit breakers. Each shall be suitable for 230V, 50Hz electrical connections, 16sqmm solid-stranded cable terminations and shall have adequate wiring space and cable entry points. Each consumer unit shall have adequate space to house 1 RCBO and 4 MCBs. Consumer units shall be wall-mounted inside each shelter at a height of 2metres, close to the door. Consumer unit shall contain one copper neutral link 60mm with 7 threaded holes and one copper PE link 60mm with 7 threaded holes	pcs	1000
LED bulb >1500 lumen	E27, CRI 80, 6500 K, minimum A+ efficiency, 25,000 Hours lifespan, minimum 1500 lumen	pcs	1000
LED bulb >550 lumen	E27, CRI 80, 6500 K, minimum A+ efficiency, 25,000 Hours lifespan, minimum 550 lumen	pcs	1000
Bulb holder E27	E27, plastic pendant, color white.	pcs	2000
2 gang PVC switch	10 Amp, 250 V, color white.	pcs	1000

1 gang PVC switch	10 Amp, 250 V, color white.	pcs	200
surface-mounted double-socket	16A, 2p + PE, IP44, color white.	pcs	2000
surface-mounted Single-socket	16A, 2p + PE, IP44, color white.	pcs	100
Insulated wire 2.5sqmm RED	PVC Insulated - Stranded copper	m	10000
Insulated wire 2.5sqmm Black	PVC Insulated - Stranded copper	m	8500
Insulated wire 2.5sqmm Green or Green+Yellow	PVC Insulated - Stranded copper	m	8500
Insulated wire 4sqmm RED	PVC Insulated - Stranded copper	m	1000
Insulated wire 4sqmm Black	PVC Insulated - Stranded copper	m	1000
Insulated wire 4sqmm Green or Green+Yellow	PVC Insulated - Stranded copper	m	1000
pipe 20mm	20mm diameter, PVC, color white,	m	6500
pipe 25mm	25mm diameter, PVC, color white,	m	1000
pipe 32mm	32mm diameter, PVC, color white,	m	300
pipe 40mm	40mm diameter, PVC, color white,	m	300
pipe 50mm	50mm diameter, PVC, color white,	m	300
pvc 1 way box 20mm	PVC, color white	pcs	2000
pvc 2 way box 20mm	PVC, color white	pcs	200
pvc 3 way box 20mm	PVC, color white	pcs	1000
pvc 4 way box 20mm	PVC, color white	pcs	200
pvc 20 mm adapter	Threaded female, color white.	pcs	2250
pvc 25 mm adapter	Threaded female, color white.	pcs	750
pvc 20mm socket	PVC, color white	pcs	2250
pvc 25mm socket	PVC, color white	pcs	100
pvc 20mm U clip	Link lock interlocking, color white.	pcs	5000
pvc 25mm U clip	Link lock interlocking, color white.	pcs	500
pvc 20mm elbow	PVC, color white	pcs	100
pvc 25mm elbow	PVC, color white	pcs	100
junction box	pvc, 100x100x70 with 20-25mm aperture, color white.	pcs	50
junction box	pvc, 140x70x70 with 20-25mm aperture, color white.	pcs	50
junction box	pvc, 200x200x70 with 20-25mm aperture, color white.	pcs	50
Earthing Rods	1 Copper purity is 99.95%., Tensile strength over 600N/mm ² , Lifetime 28 years, Rod Diameter 17.2mm, 1.5 m length.	pcs	100
Earthing rod clamp	Compatible with rod diameter 17.2mm.	pcs	100
MCCB 400A	3Pole 100KA Compatible with existing MDB, busbar and feeder	pcs	20
MCCB 250A	3Pole 50KA Compatible with existing MDB, busbar and feeder	pcs	40
MCCB 200A	3Pole 50KA Compatible with existing MDB, busbar and feeder	pcs	5
MCCB 20A	3Pole 35KA Compatible with existing MDB, busbar and feeder	pcs	25
Contactora	3p, 7.5KW 18A AC.3.	pcs	25

MCCB 160A	3Pole 36KA Compatible with existing MDB, busbar and feeder	pcs	20
MCCB 1000A	3Pole 100KA Compatible with existing MDB, busbar and feeder	pcs	5
MCCB 630A	3Pole 70KA Compatible with existing MDB, busbar and feeder	pcs	5
Straight Shackle Padlock	Master keyed or Keyed alike for all supplied locks during agreement - R6 keys - 12mm thick shackle - internal shackle length 36 mm-50 mm - lock body 90 mm-100 mm, ASTM F883.	pcs	100
Main Distribution Board Enclosure (170*150*50) cm	3-door, width 170cm in (60+60+50) cm sections, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, withstand voltage 600V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 30cm ground clearance with base and covers. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.	pcs	1
Main Distribution Board Enclosure (200*150*50) cm	3-door, width 200cm in (70+80+50) cm sections, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.	pcs	1
Main Distribution Board Enclosure (70*90*30) cm	1-door, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.	pcs	1
Main Distribution Board Enclosure (80*120*40) cm	1-door, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly	pcs	1

	complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.		
Main Distribution Board Enclosure (190*150*50) cm	3-door, width 190cm in (70+70+50) cm sections, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.	pcs	1
Main Distribution Board Enclosure (150*150*50) cm	2-door, width 150cm in (70+80) cm sections, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.	pcs	1
Main Distribution Board Enclosure (210*150*50) cm	3-door, width 210cm in (70+90+50) cm sections, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.	pcs	1
Main Distribution Board Enclosure (100*150*50) cm	1-door, width 100cm, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.	pcs	1

<p>Main Distribution Board Enclosure (80*100*30) cm</p>	<p>1-door, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.</p>	<p>pcs</p>	<p>1</p>
<p>Main Distribution Board Enclosure (190*150*50) cm</p>	<p>3-door, width 200cm in (70+80+50) cm sections, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.</p>	<p>pcs</p>	<p>1</p>
<p>Main Distribution Board Enclosure (80*120*40) cm</p>	<p>1-door, ASTA type tested in accordance with IEC 61439-1 & 2, Rated insulation voltage up to 1000V, Main busbars up to 6300A, Busbar short-circuit 100kA(1 sec) 65KA (3 sec), IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. 2mm steel thickness. Electrostatic Coated RAL 7035. These shall be shall be IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.</p>	<p>pcs</p>	<p>1</p>
<p>Distribution Board Enclosure (77*85*20)cm</p>	<p>pole mounted, 1-door, dimensions: high: 770mm-width: 850mm- depth: 200mm, IP67 rated, ASTA type tested by IEC 61439-1 & 2, 2mm steel thickness, Internal mounting plate 2mm thickness galvanized, Electrostatic Coated RAL 7035, the outer upper surface shall be inclined and slippery, Pvc Nylon Lock Wing Type, shackle padlock comply, six lower holes for 3*6mm cable, one lower hole for 5x16mm cable, 8 way Earth Busbar (6mm), 8 way Neutral Busbar (6mm).</p>	<p>pcs</p>	<p>100</p>
<p>Distribution Board Enclosure (80*85*20)cm</p>	<p>fiberglass, EN 62208, pole mounted, 1-door, dimensions: high: 800mm-width: 850mm- depth: 200mm, internal backplate, IP66 rated, Light grey RAL 7035 color, the outer upper surface shall be inclined and slippery, Pvc Nylon Lock Wing Type, shackle padlock comply, six lower holes for 3*6mm cable, one lower hole for 5x16mm cable, 8 way Earth Busbar (6mm), 8 way Neutral Busbar (6mm).</p>	<p>pcs</p>	<p>50</p>

Main Distribution Board Internal Cover Panel for Sections	2mm steel thickness. Electrostatic Coated RAL 7035, with handles and apertures	sqm	50
Main Distribution Board Door Lock	Swing handle lock - Zinc alloy - Black powder coated - suitable with existing doors - Approx. 20x2.5cm external and 15x2cm internal, one year warranty.	pcs	20
Main Distribution Board Door hinges	suitable with the existing MDBs.	pcs	30
Economy LED Indicator Lights	Operational temperature -25° to 55° C - Cluster type LED illumination. Red, green, blue, amber, white - Life - 60,000hrs plus - 22mm - Insulation resistance > 2 M ohm - IP65	pcs	50
Motor operator for MCCB'S	160A Front motor operator, Plate for mounting and interlocking. Compatible with existing or supplied MCCB	pcs	25
Motor operator for MCCB'S	200A Front motor operator. Plate for mounting and interlocking Compatible with existing or supplied MCCB	pcs	10
Motor operator for MCCB'S	250A Front motor operator. Plate for mounting and interlocking Compatible with existing or supplied MCCB	pcs	50
Motor operator for MCCB'S	400A Front motor operator. Plate for mounting and interlocking Compatible with existing or supplied MCCB	pcs	25
Motor operator for MCCB'S	630A Front motor operator, Plate for mounting and interlocking Compatible with existing or supplied MCCB	pcs	10
Mounting Plate and Rail	Omega shaped plate, DIN, steel, galvanized, chromium-plated, RoHS suitable with fuse disconnect switch and existing cable lugs (based on site visit)	m	25
Standoff Busbar insulator 25mm	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR	pcs	50
Standoff Busbar insulator 30mm	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR	pcs	50
Standoff Busbar insulator 35mm	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR	pcs	50
Standoff Busbar insulator 40mm	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR	pcs	50
Standoff Busbar insulator 51mm	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR	pcs	50
Standoff Busbar insulator 63mm	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR	pcs	50
Standoff Busbar insulator 76mm	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR	pcs	50
Terminals	16mm terminal	pcs	50
Terminals	70mm Terminal - double sided protected	pcs	50
Earthing Terminals	16mm earth terminal - 1 side rail 1 side wire	pcs	50
Slotted Duct	25 x 25mm - Grey color	m	50
Slotted Duct	25 x 40 mm - Grey color	m	50
Slotted Duct	25 x 50 mm - Grey color	m	50
Slotted Duct	40 x 40 mm - Grey color	m	50
Slotted Duct	50 x 50 mm - Grey color	m	50

Relay	1p - 10A - 240Vac - SPDT - DIN rail mounted	pcs	20
Change Over Switches with Centre Off Position IP65	1 pole, 20A panel mount auto-off-manual	pcs	50
NH Extractor	IEC-EN 60269-2, 1000V, RoHS, CE certified	pcs	8
Fuse Disconnect Switch	NH000, 3-pole, DIN rail mounting, rated voltage 690 V, rated max current 160A, rated frequency 50 Hz, Insulation voltage 750V, 80 kA SC, 8kV impulse withstand, 9W max power loss per fuse, uninterrupted rated duty, M8 bolts, busbar 10-40mm, -25C-40C degrees ambient temperature, AC21 and 22 Utilization Categories and needed busbar and cable adapters from original manufacturer, IEC 60947-1:2007 and A1:2010 and A2:2014, IEC 60947-3:2008 and A1:2012, IP minimum 40, copper contacts, up 160A, LV HRC Fuse, manufacturer certificate, test certificates, EAC and CCC approval, mininum 1 year warranty	pcs	50
315 Amp Fuse (Pack of 3 pcs)	NH0 Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 690 V ac 120 KA SC	pack	10
250 Amp Fuse (Pack of 3 pcs)	NH0 Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 690 V ac 65 KA SC	pack	20
200 Amp Fuse (Pack of 3 pcs)	NH0 Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 690 V ac 65 KA SC	pack	10
160 Amp Fuse (Pack of 3 pcs)	NH0 DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 690 V ac 120 KA SC	pack	10
6 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	5
10 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	5

16 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	5
20 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	5
25 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	5
32 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	5
35 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	70
40 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	300
50 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	600
63 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	700
80 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	1000
100 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	500
125 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	200
160 Amp Fuse (Pack of 3 pcs)	NH000, UL 248, DIN 43620, DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636, CE certified, Voltage Rating 500 Vac, 120kA AC breaking capacity,	pack	50
Isolated Piercing Connector	120 - 400 mm ² / 95 - 240 mm ² , EN 50483-4, NFC 33-020, NFC 33-004, watertightness tested, dielectric tested to 6KV	pcs	200
Isolated Piercing Connector	16-150 mm ² / 16-120 mm ² , EN 50483-4, NFC 33-020, NFC 33-004, watertightness tested, dielectric tested to 6KV	pcs	200
Isolated Piercing Connector	16-120 mm ² / 16-185 mm ² , EN 50483-4, NFC 33-020, NFC 33-004, watertightness tested, dielectric tested to 6KV	pcs	200

Isolated Piercing Connector	10 - 120 mm ² / 1.5 - 16 mm ² , EN 50483-4, NFC 33-020, NFC 33-004, water tightness tested, dielectric tested to 6KV	pcs	1000
Raintight Photoelectric Control (switch)	208-277 V, 50/60 Hz, capacity = 3000 VA, power consumption <1W, photocell sensor: LDR photo resist, ambient temp: -5C to +55C.	pcs	50
Suspension clamps	Insulated, ABC 16-95 mm ² , NFC 33-040, EN 50483-3	pcs	500
Tension clamp 25-35mm²	wedge type, NFC33-041 EN 50483-3, casted corrosion resistant aluminum clamp body, high strength stainless steel support, Weather resistant anti-UV wedges	pcs	500
Tension clamp 70-95mm²	wedge type, NFC33-041 EN 50483-3, casted corrosion resistant aluminum clamp body, high strength stainless steel support, Weather resistant anti-UV wedges	pcs	500
Tension clamp 95-150mm²	wedge type, NFC33-041 EN 50483-3, casted corrosion resistant aluminum clamp body, high strength stainless steel support, Weather resistant anti-UV wedges	pcs	500
Cable Rubber Clamp	Rubber clamp - 1/2" - 6mm screws - Stainless Steel Zinc electroplated or added corrosion protection	pcs	1000
Mounting cross arm bracket	12 holes, galvanized, pole mounted, 3",	pcs	200
Anti climb guard for tubular pole	8 spike galvanized, pole mounted, 5", suitable with the existing poles.	pcs	100
Anti climb guard for lattice pole	12 spike galvanized, suitable with the existing poles.	pcs	100
Razor wire	Single Razor Barbed Wire Fence Steel Wire barb Coil with Galvanized Barb, 4mm or 6mm thickness,	m	200
Cable lug	300 mm ²	pcs	100
Cable lug	240 mm ²	pcs	100
Cable lug	185 mm ²	pcs	50
Cable lug	120 mm ²	pcs	100
Cable lug	95 mm ²	pcs	100
Cable lug	70 mm ²	pcs	100
Cable lug	50 mm ²	pcs	100
Cable lug	35 mm ²	pcs	100
Cable lug	25 mm ²	pcs	100
Cable lug	16 mm ²	pcs	200
Cable lug	10 mm ²	pcs	200
Cable lug	6 mm ²	pcs	200
Cable gland	Copper, CW Brass type, suitable for cable size 4x240mm, armor compatibility, BS 6121: part 1: 1989, IEC 62444, EN 62444, IP67, - 60C to + 130C.	pcs	20
Cable gland	Copper, CW Brass type, suitable for cable size 4x120mm, armor compatibility, BS 6121: part 1: 1989, IEC 62444, EN 62444, IP67, - 60C to + 130C.	pcs	20

Cable gland	Copper, CW Brass type, suitable for cable size 4x95mm, armor compatibility, BS 6121: part 1: 1989, IEC 62444, EN 62444, IP67, -60C to + 130C.	pcs	20
Cable gland	Copper, CW Brass type, suitable for cable size 4x35mm, armor compatibility, BS 6121: part 1: 1989, IEC 62444, EN 62444, IP67, -60C to + 130C.	pcs	15
Cable gland	Copper, CW Brass type, suitable for cable size 5x16mm, armor compatibility, BS 6121: part 1: 1989, IEC 62444, EN 62444, IP67, -60C to + 130C.	pcs	20
Cable gland	Nylon, BS 6121: part 1: 2005, EN 50262: 1999, IEC 62444: 2010, IP66, -40C to 120C, suitable for cable size: 5x10mm.	pcs	100
Cable gland	Nylon, BS 6121: part 1: 2005, EN 50262: 1999, IEC 62444: 2010, IP66, -40C to 120C, suitable for cable size: 5x16mm.	pcs	50
Cable gland	Nylon, BS 6121: part 1: 2005, EN 50262: 1999, IEC 62444: 2010, IP66, -40C to 120C, suitable for cable size: 3x4mm.	pcs	350
Cable gland	Nylon, BS 6121: part 1: 2005, EN 50262: 1999, IEC 62444: 2010, IP66, -40C to 120C, suitable for cable size: 3x6mm.	pcs	200
Single wall heat shrinkable tubing for 4mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	5000
Single wall heat shrinkable tubing for 4mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	1000
Single wall heat shrinkable tubing for 4mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	5000
Single wall heat shrinkable tubing for 4mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK	m	5000
Single wall heat shrinkable tubing for 4mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW	m	5000
Single wall heat shrinkable tubing for 6mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	1000
Single wall heat shrinkable tubing for 6mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	1000
Single wall heat shrinkable tubing for 6mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	1000
Single wall heat shrinkable tubing for 6mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK	m	1000
Single wall heat shrinkable tubing for 6mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW	m	1000
Single wall heat shrinkable tubing for 10mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for 10mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for 10mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for 10mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK	m	200

Single wall heat shrinkable tubing for 70mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW	m	200
Single wall heat shrinkable tubing for 95mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for 95mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for 95mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for 95mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK	m	200
Single wall heat shrinkable tubing for 95mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW	m	200
Single wall heat shrinkable tubing for 120mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for 120mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for 120mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for 120mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK	m	200
Single wall heat shrinkable tubing for 120mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW	m	200
Single wall heat shrinkable tubing for 240mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for 240mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for 240mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for 240mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK	m	200
Single wall heat shrinkable tubing for 240mm²	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW	m	200
Single wall heat shrinkable tubing for Busbar 20 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for Busbar 20 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for Busbar 20 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for Busbar 30 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for Busbar 30 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for Busbar 30 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for Busbar 50 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for Busbar 50 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for Busbar 50 x 10	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for Busbar 15 x 8	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200

Single wall heat shrinkable tubing for Busbar 15 x 8	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for Busbar 15 x 8	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for Busbar 20 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for Busbar 20 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for Busbar 20 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing Busbar 15 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing Busbar 15 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing Busbar 15 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
Single wall heat shrinkable tubing for Busbar 10 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED	m	200
Single wall heat shrinkable tubing for Busbar 10 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW	m	200
Single wall heat shrinkable tubing for Busbar 10 x 5	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE	m	200
24-hour timer	12 – 24 V UC, 50 – 60 Hz, DIN rail, 96 switching segments, Switching capacity at 250 V AC, 16A, Manual switch with 3 positions: Continuous ON/AUTO/continuous OFF	pcs	100
Delay timer	5 A / 240 VAC, 50/60 Hz, IP20, DIN rail, Ambient Temperature: -5°C....+50°C, Off – On Delay Operation Selection	pcs	100
Timer battery	Compatible with existing timers	pcs	50
Busbar 20 x 10	Pure Copper (aluminum or copper plated not acceptable), IEC 61439	m	50
Busbar 30 x 10	Pure Copper (aluminum or copper plated not acceptable), IEC 61439	m	50
Busbar 50 x 10	Pure Copper (aluminum or copper plated not acceptable), IEC 61439	m	50
Busbar 15 x 8	Pure Copper (aluminum or copper plated not acceptable), IEC 61439	m	50
Busbar 20 x 5	Pure Copper (aluminum or copper plated not acceptable), IEC 61439	m	50
Busbar 15 x 5	Pure Copper (aluminum or copper plated not acceptable), IEC 61439	m	50
Busbar 10 x 5	Pure Copper (aluminum or copper plated not acceptable), IEC 61439	m	50
Electrical Insulated Rubber Gloves	class 0, <1000V, size: 8"-9"-10"-11", color: Red exterior - beige interior, EN 60903, IEC 60903, RC classification for resistance to acid, oil, o-zone, and low temperatures, arc flash tested to IEC 61482-1-2 Class 2 and ASTM F2675/F2675M.	pcs	10
Safety Gloves	EN ISO 21420:2020/EN 388:2016 + A1:2018/EN 16350:2014, sizes: S-M-L-XL,	pcs	40

Safety Boot	EN ISO 20345:2011, S3 HRO SRC, BS EN IEC 61340-4-3:2018, sizes: 40-41-42-43-44-45,	pcs	15
electric power safety belt/harness	EN 361, 1497, EN 813, EN 358.	pcs	5
Hard Hat/Helmet	Class G, type2, [77 FR 37600, June 22, 2012; 77 FR 42988, July 23, 2012],	pcs	10
AC/DC Clamp Meter with iFlex.	Max volt: 1000V, Accuracy: 2% ± 5 digits (10-100 Hz) 2.5% ± 5 digits (100-500 Hz), Resolution:0.1A, IEC 61010-1, Pollution Degree 2, IEC 61010-2-032: CAT III 1000 V / CAT IV 600 V, IEC 61010-2-033:CAT III 1000 V / CAT IV 600 V, IP rating: IEC 60529: IP30, non-operating, Radio Frequency Certification FCC ID: T68-FBLE IC:6627A-FBLE, Batteries: 2 AA, NEDA 15A, IEC LR6, operating temp: 10C-+50C, Jaw opening: 34mm, probe length:1.8m,	pcs	2
safety vest for electricians	ANSI/ISEA 107-2015 Type R, NFPA 70E, ASTM F1506, CAT 2, CAS Z462, OSHA 1910.269, Class 2, Arc rating: 8.9 cal/cm ² , 6.5 oz. FR Hi-Breathable Modacrylic Blend Twill, sizes: MD-LG-XL-2XL, 5 Pocket Design,	pcs	15
Micro automatic MDB fire extinguisher	500g size, dimensions: height 386mm/cylinder diameter 50mm, mounting bracket, suitable for the electrical distribution boards.	pcs	75
Foam spray	Insulating Foam Sealants, outdoor, size:12oz,	pcs	5
Certified Instrument validation	For multimeters, clamp meters, energy loggers, power analyzers, earth testers,	pcs	6
Certified instrument calibration	For multimeters, clamp meters, energy logger, power analyzers, earth tester.	pcs	6
Single Phase Electricity Meter	IEC 62052-11 and IEC 62053-21, Class1/2, voltage 240V, two wire, DIN rail, current 5(60)A, frequency 50 HZ, type DDS16, dimension 78*36*65mm, working temp -40C to 70C,	pcs	10
3 Phase Electricity Meter	3P+N - up to 1250A 3 phase supply to be measured via suitable CTs - 50 Hz - up to 480 V rated operational voltage - 400 ±20% supply voltage AC - DIN rail mounting - 5A rated current - 300V max operating voltage - 6kV impulse withstand voltage - EN 50470-1 / 3 - IEC 62053-21 / 23 class 1 for active, class 2 reactive and apparent - IEC 61557-12 - IP20 - -25...55 °C ambient operating temperature - 0.6W MAX total power loss and 2VA power consumed, shall have EU declaration of conformity IMQ LNE and/or TUV for meter and CT - Illuminated display - 2 year warranty for meters and CT	pcs	20

9. Transformers and shelters Data

The contractor shall ensure the service in all areas of the Camp.

Below is a breakdown of transformers, blocks, plots, shelters and stalls:

Village	Transformers	Blocks	Plots	Shelters	Market	Stalls
Village 2	630 KVA (4 Trans). 400 KVA (5 Trans).	17 blocks	207 plots	2292	V2 market	95 stalls
Village 3	630 KVA (5 Trans). 250 KVA (2 Trans).	20 blocks	223 plots	2425	V3 market	100 stalls
Village 5	630 KVA (5 Trans). 400 KVA (3 Trans).	20 blocks	261 plots	1729	V5 market	100 stalls
Village 6	630 KVA (4 Trans) 400 KVA (1 Trans) 250 KVA (2 Trans)	16 blocks	205 plots	2171	V6 market	100 stalls
Total	31	72	896	8617	4	395

Location	Transformer	Site details
Base camp area	250 KVA	Offices
Reception area	250 KVA	Refugees' reception and protection Area, offices, and other INGOs offices.
Visitor area	100 KVA	Labor Office and SRAD
Civil defense	100 KVA	Offices
Total	4	