

## Annex A1 – Terms of Reference

### ESTABLISHMENT OF FRAME AGREEMENT FOR the provision of

#### Maintenance, Operation and Monitoring Service of the Low voltage network in Zaatari Camp (including Garden Camp)

##### 1. Background:

UNHCR maintains the electrical networks inside Zaatari camp and Garden camp, for Zaatari camp, the camp divided into **12 districts** and each district contains **10 to 24 blocks** and average **80 Households** (shelters) for each block, with total of **16,000 shelters** inside the camp shaped by average total number of **25,000 caravans**, in addition to **1100 shops** located in the main market streets.

Medium voltage network being managed by IDECO (Irbid district electricity company), where the MV network extend all around the camp and between the districts, each district contains **one** transformer with a total of **12 Electrical Transformers** for the shelters and **3 Electrical Transformers** for the shops, in addition to two transformers for the service areas.

The low voltage network which will be managed by the awarded bidder is supplying the needed energy to all shelters by an extended low voltage network shaped by main distribution boards, low voltage poles, MCCBs, and low voltage - consumer cables.

With **100%** of shelters connected to the grid **440 km of 3x10mm<sup>2</sup>** cables were stretched for each shelter for proper electrical network installation and electricity provision, **16,000 RCBOs** (residual current & over-heat breakers) for safety installed for each shelter, and with total of **2200 LED streetlamps** installed, **127 km of 70mm<sup>2</sup> earthing cables** stretched in the camp's electrical network and electrical panels to ensure the camp safety.

For Garden camp located in Ramtha city, where average of **147 shelters**, **7 organizations**, **1 clinic**, **police offices** and a **supermarket** all connected to LV network by number of main distribution boards, LV cables and poles supplied by one transformer and one backup generator.

##### The purpose of the Operation and Maintenance (O&M) for low voltage networks:

- Maintain and operate the low voltage network through develop and carryout preventive maintenance activities and carryout corrective and breakdown maintenance.
- Ensure safe and optimal operation of the network- safety through preventive and corrective maintenance.
- Monitor network status by analyze the loads and incidents to suggest the needed upgrades and recommendations.
- Able to upgrade any part of the low voltage network (new network extension, new distribution bards, etc.)

As a general principle, the O&M management activities seek to guarantee and maximize performance of low voltage network and its safety.

## 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. Minimum aspects are as follows:

### 2.1 Preventive maintenance:

- a. The vendor shall submit a full and detailed proposal showing the inspection forms, methodology, equipment, staffing, machinery.
- b. Preventive Maintenance shall include periodic or upon request checking of the low voltage network components, with the replacement of consumable materials and the correction of those systems whose failure has been statistically predicted, the preventive maintenance activities shall include:
  - o Visual inspection.
  - o Confirmation of operation of all the electrical network devices.
  - o Confirmation of the Electrical condition of all the network components and suggested upgrades.
  - o Recording of the maintenance operations in a maintenance logbook and reports.
  - o To provide and maintain fire extinguishers for each transformer location and main distribution boards, following the standards.

The following table shows the O&M services, regular checks, and possible replacing (subjected to UNHCR Engineer approval) shall be done and respective inspection reports should be produced and submitted to UNCHR as per the below frequency\*:

*\*Quantities are subject to change based on the UNHCR site engineer request, and this will be reported form UNHCR to the workshop team to adjust the plan accordingly and do all the works on time at no extra costs.*

#### - Shelter and consumer cables:

#	Task	Frequency
1	Check the consumer cables and associated accessories, replace when needed	Upon Request
2	Check earth leakage breaker and MCB breakers status and replace or correct the faulty ones	Upon Request

#### - Transformers rooms and Main distribution boards (MDB) Regular Checks:

#	Task	Frequency
1	Check the main circuit breaker status and replace or correct the faulty ones.	3 Transformers per week
2	Check all the LV cables connections located inside the transformer rooms and the associated accessories.	3 Transformers per week
3	Check all second circuits' breakers status and replace or correct the faulty ones	3 Transformers per week

4	Check automated Motors and breakers status and calibration and replace or correct the faulty ones	3 Transformers per week
5	Check timers' status and replace or correct the faulty ones	3 Transformers per week
6	Check (photocell, conductor, and three-position switches) status and replace or correct the faulty ones	3 Transformers per week
7	Check Copper cables lugs status inside the MDB (insulation and fixation) and replace or correct the faulty ones	3 Transformers per week
8	Check the control wires connection and status and replace or correct the faulty ones	3 Transformers per week
9	Check the bus-bars insulation and replace or correct the faulty ones	3 Transformers per week
10	Check load balances and do balancing when needed	3 Transformers per week
11	Check doors (locks, paint, hinges, and rubber) and replace or correct the faulty ones	3 Transformers per week
12	Cleaning of the vegetation, grass as needed of the electrical transformers to minimize fire risk.	3 Transformers per week

## **2.2 Corrective Maintenance and operation work:**

The contractor shall submit an assessment report indicating the fault, the root cause, recommended solutions, and cost for each option, with indicating the timeline for fixing the fault inside low voltage network components and shelters level, the report shall be validated by UNHCR Engineer.

The contractor should fix the fault using UNHCR spare parts and materials. In case UNHCR runs out of stock of these spare parts, it shall be supplied by the Contractor based on the approved prices and make sure of the availability of minimum quantity of spare parts. The contractor shall ensure capacity and capability to also carry out the below activities, upon request by UNHCR Engineers:

*\*Quantities are subject to change based on the UNHCR site engineer request, and this will be reported form UNHCR to the workshop team to adjust the plan accordingly and do all the works on time at no extra service costs.*

#	Task	Frequency
1	Dismantling electrical materials from vacant or damaged shelters/Caravans, and store it in the bidder Storage Area	Upon request
2	Storage Area Inventory Count	Monthly
3	New internal wiring for the new vacant shelters/caravans	Upon request
4	Maintain and repair of the internal wiring of shelters/caravans.	Upon request
5	Installing LV poles	Upon request
6	Installing MDBs	Upon request
7	Disconnecting vacant caravans/shelters	Upon request
8	Provide technical assessment and BoQ	Upon request
9	Installing streetlights units	Upon request
10	Repair and replace any parts/items for the LV network.	Upon Request
11	Any other upgrades/installation requests related to the LV network.	Upon request

12	Tying the earthing cables	Upon request
13	Support in operation of energy hours and rotation between blocks.	Upon request

### **2.3 Testing:**

Regular testing and respective reports should be produced and submitted to UNCHR as per the below:

#### **a. Transformers MDBs level testing:**

#	Task	Frequency
1	Volts: Phase to phase /phase to neutral / phase to earth / earth to neutral for all MDBs in the camp	Once a Month
2	Earth resistance in the MDB and Measure the earth resistance at earth bus bar.	Once a Month
3	Insulation tests for main copper cables	Upon Request
4	Thermal imaging test for MDBs	Upon Request
5	Load Measurement	Upon Request

#### **b. Overall earthing system tests:**

#	Task	Frequency
1	Check the earth resistance in different locations (shelters, poles, MDB and Transformer Room) and conduct necessary actions for corrections	20 samples each Month

In case of earth faults, i.e., faulty readings more than 5 ohms, corrective measures shall take place to keep 5-ohm value at all locations.

### **2.4 Reporting:**

#### **Daily report:**

Soft copy of daily report (template to be agreed on with UNHCR technical team) shall be submitted to UNHCR through email. They shall include any activity carried out on that day (including maintenance and repairing works).

#### **Weekly report:**

The soft copy shall be submitted to UNHCR through email. They shall briefly include any activity carried out during the weekly reporting period.

#### **Monthly report:**

The monthly reports shall be submitted on the first day of **each month** for the two camps (Zaatari and Garden) separately the copy shall be submitted to UNHCR through email. They shall include in detail any activities carried out during the reporting period.

### **2.5 Supply/Install of Spare Parts and doing the needed 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**

**Zaatari and Garden Camps” 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 Zaatari Camp and Garden Camp 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 the camps and a backup Engineer shall be ready in the event of main engineer absences.
- 1 Electrical Foremen and 3 Technicians for Zaatari camp, and 1 Technician for Garden Camp present every working day at the camps.
- All staff above must have at least 4 years experience (3 years min in electrical networks).
- 2 Certified Electrical cranes available on demand (at no extra cost) or when needed to implement the works as per the standards, with respond time max 24 hours to be present in the camp, and available on site during the predicted emergency times.
- 1 Pick-up available on site to support the works during Technicians movement in the camp.
- Team shall receive emergency calls during all electricity supply hours, from different parties including shelters owners, using the hotline number and respond accordingly.
- Personal Protection Equipment PPE (safety shoes, type E helmet, google, electrical gloves, safety belt, isolated ladder, high visibility jacket, VDE tools), for all staff including Syrians if hired, required to fully meet safety requirements as per OSHA 29 CFR standards.
- Certified machines, testing tools according 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.
- The indicated working days shall match the working days of UNHCR Jordan, for regular working days (Sunday to Thursday) from 8AM to 4PM and respond to emergency when need during all electricity supply hours.

### **5. Storage Area / Site in the camp**

UNHCR will identify a site (with caravan) for the contractor inside the camp to store the vehicles and materials. It is understood that Security, access to electricity, water, Wi-Fi are at the charge and responsibility of the contractor. UNHCR will allocate an office desk for the contractor inside the camp.

## **6.Additional Notes:**

- 1- The contractor shall be classified as an Electromechanical contractor (Grade 1, 2 or 3) 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 request by UNHCR, it must be done on time at no extra costs.**
- 3- UNHCR owns spare parts for most of the key elements in the system, in case of 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 the inadequate maintenance or poor security & safety measures.**
- 7- In case of any staffing discrepancies that emerge after 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 which 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 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.**

## **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.

**8.Required documents summary to be submitted:**

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

<b>Document Needed</b>	<b>Type of Document</b>	<b>Comments</b>
Preventive Maintenance	Plan and sample report Weekly 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 Weekly and Monthly	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	The bidder shall submit company profile, organization chart/management structure and history of past projects (and proof through Contracts, Purchase Orders, or similar). 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.
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)

**9. Estimated type of Spare Parts and Corrective Maintenance service for both camps Zaatari + Garden (Annually):**

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

<b>Item</b>	<b>unit</b>	<b>Estimated Quantity per Year</b>	<b>Specifications</b>
<b>Low Voltage Poles 10m with all accessories</b>	pcs	50	TUV Certified Galvanized 82-120 Micron Yield Strength N/mm2 420-461 Tensile Strength N/mm2 545-570 Elongation % 32-38
<b>Low Voltage Poles 9m with all accessories</b>	pcs	50	TUV Certified Galvanized 82-120 Micron Yield Strength N/mm2 420-461 Tensile Strength N/mm2 545-570 Elongation % 32-38
<b>Steel cable stay</b>	pcs	60	With all needed accessories 35 to 50 mm2 galvanized from 55-70 micro
<b>Feeders Poles 12 m with all accessories</b>	pcs	10	TUV Certified Galvanized 82-120 Micron Yield Strength N/mm2 420-461 Tensile Strength N/mm2 545-570 Elongation % 32-38
<b>Low Voltage pole Concrete Base</b>	pcs	50	According to Jordanian Civil Engineering Standard
<b>LED Fixtures for the Plots Street 60W</b>	pcs	100	90-260 Input Voltage 100 elm/W TUV Certified Heat Dissipation 4000 – 6000 K CE certified IP 65 50-60Hz
<b>LED Fixtures for the Plots Street 30 W</b>	pcs	100	90-260 Input Voltage 100 lm/W TUV Certified Heat Dissipation 4000 – 6000 K CE certified IP 65 50-60Hz
<b>LED Fixtures for the Plots Street 90 W</b>	pcs	100	90-260 Input Voltage 100 lm/W TUV Certified Heat Dissipation 4000 – 6000 K CE certified IP 65 50-60Hz
<b>Cross Arm 2 m</b>	pcs	50	Galvanized 45-55 Micron same as existing.
<b>Cross Arm 2.5m with all needed accessories</b>	pcs	50	Galvanized 45-55 Micron
<b>Insulation plastic ring for lighting</b>	pcs	150	For street lighting



<b>Consumer cable 3X10mm<sup>2</sup></b>	m	1000	AL/PVC
<b>Consumer cable 3X6 mm<sup>2</sup></b>	m	1000	CU/PVC
<b>LV 1x 300 mm<sup>2</sup></b>	m	300	CU/XLPE/SWA/PVC
<b>LV 1x 70 mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV 1x 120 mm<sup>2</sup></b>	m	300	CU/XLPE/SWA/PVC
<b>LV 1x 50 mm<sup>2</sup></b>	m	1000	ALLOY/XLPE
<b>LV 1x 120 mm<sup>2</sup></b>	m	1000	ALLOY/XLPE
<b>LV 1x 35 mm<sup>2</sup></b>	m	1000	ALLOY/XLPE
<b>LV 1x 70 mm<sup>2</sup></b>	m	1000	ALLOY/XLPE
<b>LV 4x95+50mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV 1x 185 mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV 4X35mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV 4x120+70mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV 4x240+120mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV 4x300+150mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV4x400+240mm<sup>2</sup></b>	m	100	CU/XLPE/SWA/PVC
<b>LV 4x185+120mm<sup>2</sup></b>	m	300	CU/XLPE/SWA/PVC
<b>LV 4x95+50mm<sup>2</sup></b>	m	100	CU/XLPE/PVC
<b>LV 1x 185 mm<sup>2</sup></b>	m	100	CU/XLPE/PVC
<b>LV 4X35mm<sup>2</sup></b>	m	100	CU/XLPE/PVC
<b>LV 4x120+70mm<sup>2</sup></b>	m	100	CU/XLPE/PVC
<b>LV 4x240+120mm<sup>2</sup></b>	m	100	CU/XLPE/PVC
<b>LV 4x300+150mm<sup>2</sup></b>	m	100	CU/XLPE/PVC

<b>LV4x400+240mm<sup>2</sup></b>	m	100	CU/XLPE/PVC
<b>LV 4x185+120mm<sup>2</sup></b>	m	300	CU/XLPE/PVC
<b>TWISTED 4AL (4X185 mm<sup>2</sup>)</b>	m	400	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*150 mm<sup>2</sup>)+50+95</b>	m	50	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*150 mm<sup>2</sup>)+50+95</b>	m	100	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*120 mm<sup>2</sup>)+35+70</b>	m	500	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*95 mm<sup>2</sup>)+25+50</b>	m	100	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*70 mm<sup>2</sup>)+25+35</b>	m	500	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*50 mm<sup>2</sup>)+16+25</b>	m	100	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*35 mm<sup>2</sup>)+25+25</b>	m	100	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*25 mm<sup>2</sup>)+25+25</b>	m	100	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*10 mm<sup>2</sup>)</b>	m	1000	ALLOY/XLPE
<b>LV 3x4mm<sup>2</sup></b>	m	500	CU/XLPE/SWA/PVC
<b>LV 3x6mm<sup>2</sup></b>	m	200	CU/XLPE/SWA/PVC
<b>LV 3x2.5 mm<sup>2</sup></b>	m	200	CU/XLPE/SWA/PVC
<b>LV 2x2.5 mm<sup>2</sup></b>	m	150	CU/XLPE/SWA/PVC
<b>LV 5x16mm<sup>2</sup> 2</b>	m	150	CU/XLPE/SWA/PVC
<b>LV 4x25mm<sup>2</sup>+1x16mm<sup>2</sup></b>	m	150	CU/XLPE/SWA/PVC
<b>LV 4x50mm<sup>2</sup>+1x25mm<sup>2</sup></b>	m	150	CU/XLPE/SWA/PVC
<b>TWISTED 3AL+AL+AL. (3*16 mm<sup>2</sup>)+16+16</b>	m	100	ALLOY/XLPE
<b>TWISTED 3AL+AL+AL. (3*25 mm<sup>2</sup>)+25+25</b>	m	150	ALLOY/XLPE

<b>TWISTED 3AL+AL+AL. (3*50 mm2)+50+50</b>	m	150	ALLOY/XLPE
<b>10A MCB</b>	pcs	30	
<b>16A MCB</b>	pcs	30	
<b>RCBO</b>	pcs	300	RCBOs 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 MCB's and RCBO's shall be rated for 230V/400V; 50Hz, short circuit capacity Ics/Icn of 6,000A
<b>Consumer Unit</b>	pcs	300	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, 16sqmm2 solid-stranded cable terminations and shall have adequate wiring space and cable entry points. Each consumer unit shall contain, 10A MCB for lighting circuits, 16A MCB for socket circuits and shall have adequate space to house 2 No. additional MCB's. Consumer units shall be wall-mounted inside each shelter at a height of 2metres, close to the door as detailed on the drawings.
<b>18W LED bulb with Holder</b>	pcs	100	E27 CRI 80 6500 K A+ 25,000 Hours
<b>15W LED bulb with Holder</b>	pcs	100	E27 CRI 80 6500 K A+ 25,000 Hours
<b>2 gang PVC switch</b>	pcs	100	10 Amp 250 V
<b>1gang PVC switch</b>	pcs	100	10 Amp 250 V

<b>surface-mounted double-socket</b>	pcs	2000	16A, 2p + PE, IP44, color white.
<b>surface-mounted Single-socket</b>	pcs	100	16A, 2p + PE, IP44, color white.
<b>Insulated wire 2.5sqmm RED</b>	m	10000	PVC Insulated - Stranded copper
<b>Insulated wire 2.5sqmm Black</b>	m	8500	PVC Insulated - Stranded copper
<b>Insulated wire 2.5sqmm Green or Green+Yellow</b>	m	8500	PVC Insulated - Stranded copper
<b>Insulated wire 4sqmm RED</b>	m	1000	PVC Insulated - Stranded copper
<b>Insulated wire 4sqmm Black</b>	m	1000	PVC Insulated - Stranded copper
<b>Insulated wire 4sqmm Green or Green+Yellow</b>	m	1000	PVC Insulated - Stranded copper
<b>pipe 20mm</b>	m	6500	20mm diameter, PVC, color white,
<b>pipe 25mm</b>	m	1000	25mm diameter, PVC, color white,
<b>pipe 32mm</b>	m	300	32mm diameter, PVC, color white,
<b>pipe 40mm</b>	m	300	40mm diameter, PVC, color white,
<b>pipe 50mm</b>	m	300	50mm diameter, PVC, color white,
<b>pvc 1 way box 20mm</b>	pcs	2000	PVC, color white
<b>pvc 2 way box 20mm</b>	pcs	200	PVC, color white
<b>pvc 3 way box 20mm</b>	pcs	1000	PVC, color white
<b>pvc 4 way box 20mm</b>	pcs	200	PVC, color white
<b>pvc 20 mm adapter</b>	pcs	2250	Threaded female, color white.
<b>pvc 25 mm adapter</b>	pcs	750	Threaded female, color white.
<b>pvc 20mm socket</b>	pcs	2250	PVC, color white
<b>pvc 25mm socket</b>	pcs	100	PVC, color white
<b>pvc 20mm U clip</b>	pcs	5000	Link lock interlocking, color white.
<b>pvc 25mm U clip</b>	pcs	500	Link lock interlocking, color white.
<b>pvc 20mm elbow</b>	pcs	100	PVC, color white
<b>pvc 25mm elbow</b>	pcs	100	PVC, color white
<b>junction box</b>	pcs	50	pvc, 100x100x70 with 20-25mm aperture, color white.
<b>junction box</b>	pcs	50	pvc, 140x70x70 with 20-25mm aperture, color white.
<b>junction box</b>	pcs	50	pvc, 200x200x70 with 20-25mm aperture, color white.
<b>Straight Shackle Padlock</b>	pcs	100	Masterkeyed or Keyed alike for all supplied locks during agreement - R6 keys - 12mm thick shackle - internal shackle length 36mm-50mm - lock body 90mm-100mm
<b>Earthing rod clamp</b>	pcs	100	Compatible with rod diameter 17.2mm.
<b>Earthing Rods</b>	pcs	500	1 Copper purity is 99.95%. Tensile strength over 600N/mm <sup>2</sup> Lifetime 28 years Rod Diameter 17.2mm
<b>MCCB 400A</b>	pcs	30	3Pole 100KA, adjustable
<b>MCCB 250A</b>	pcs	30	3Pole 50KA, adjustable

<b>MCCB 200A</b>	pcs	10	3Pole 50KA, adjustable
<b>MCCB 100 A</b>	pcs	20	3Pole, adjustable
<b>MCCB 400A</b>	pcs	30	3Pole 100KA, Fixed
<b>MCCB 250A</b>	Pcs	30	3Pole 50KA, Fixed
<b>MCCB 200A</b>	Pcs	10	3Pole 50KA, Fixed
<b>MCCB 100 A</b>	pcs	10	3Pole, Fixed
<b>MCCB 20A</b>	pcs	10	3Pole 35KA
<b>Contacto</b>	pcs	30	7.5KW 18A AC.3
<b>MCCB 160A</b>	pcs	10	3Pole 36KA, adjustable
<b>MCCB 1000A</b>	pcs	20	3Pole 100KA, adjustable
<b>MCCB 630A</b>	pcs	20	3Pole 70KA, adjustable (compatible with motorized feature)
<b>MCCB 1600A</b>	pcs	15	3Pole, adjustable
<b>Main Distribution Board Enclosure (170*150*50) cm</b>	pcs	2	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.
<b>Main Distribution Board Enclosure (200*150*50) cm</b>	pcs	2	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.
<b>Main Distribution Board Enclosure (70*90*30) cm</b>	pcs	2	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 IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.
<b>Main Distribution Board Enclosure (80*120*40) cm</b>	pcs	2	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 IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.
<b>Main Distribution Board Enclosure (190*150*50) cm</b>	pcs	2	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 IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.
<b>Main Distribution Board Enclosure (150*150*50) cm</b>	pcs	2	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 IP65-rated with key-lockable doors including all necessary supports, structures, glands etc.
<b>Main Distribution Board Enclosure (210*150*50) cm</b>	pcs	2	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.
<b>Main Distribution Board Enclosure (100*150*50) cm</b>	pcs	2	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.
<b>Main Distribution Board Enclosure (80*100*30) cm</b>	pcs	2	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.
<b>Main Distribution Board Enclosure (190*150*50) cm</b>	pcs	2	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.
<b>Main Distribution Board Enclosure (80*120*40) cm</b>	pcs	2	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.
<b>Distribution Board Enclosure (77*85*20)cm</b>	pcs	10	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).
<b>Distribution Board Enclosure (80*85*20)cm</b>	pcs	10	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).
<b>Main Distribution Board Internal Cover Panel for Sections</b>	sqm	50	2mm steel thickness. Electrostatic Coated RAL 7035, with handles and aperatures
<b>Main Distribution Board Door Lock</b>	pcs	20	Swing handle lock - Zinc alloy - Black powder coated - suitable with existing doors - Approx. 20x2.5cm external and 15x2cm internal, one year warranty.
<b>Main Distribution Board Door hinges</b>	pcs	30	suitable with the existing MDBs with one year warranty.
<b>Base for Fuse 630 Ampere</b>	pcs	50	630 A, 690 V, 50 Hz, IEC60269
<b>Base for Fuse 400 Ampere</b>	pcs	50	400 A, 690 V, 50 Hz, IEC60269
<b>Base for Fuse 250 Ampere</b>	pcs	50	250 A, 690 V, 50 Hz, IEC60269
<b>connector isolation piercing</b>	pcs	2000	16-150 mm <sup>2</sup> / 16-120 mm <sup>2</sup>
<b>connector isolation piercing</b>	pcs	500	16-120 mm <sup>2</sup> / 16-185 mm <sup>2</sup>
<b>connector isolation piercing for lighting</b>	pcs	1000	10 - 95 mm <sup>2</sup> / 1.5 - 10 mm <sup>2</sup>



<b>connector isolation piercing for consumers Households</b>	pcs	1000	10 - 95 mm <sup>2</sup> / 1.5 - 10 mm <sup>2</sup>
<b>connector isolation piercing for consumers Households</b>	pcs	1000	4- 95 mm <sup>2</sup> /4 mm-120 mms
<b>Raintight Photoelectric Control</b>	pcs	30	208-277 V, 50/60 Hz, capacity = 3000 VA
<b>AC contactors</b>	pcs	30	110 A, Max fuse= 200A, short circuit= 5kA, NC7-9511, 230 V, 50/60 HZ, IEC/EN 60947-4-1
<b>Suspension clamps and brackets</b>	pcs	200	50 to 120 cables
<b>Tension clamp 25-35mm<sup>2</sup></b>	pcs	500	wedge type, NFC33-041 EN 50483-3, casted corrosion resistant aluminum clamp body, high strength stainless steel support, Weather resistant anti-UV wedges
<b>Tension clamp 70-95mm<sup>2</sup></b>	pcs	500	wedge type, NFC33-041 EN 50483-3, casted corrosion resistant aluminum clamp body, high strength stainless steel support, Weather resistant anti-UV wedges
<b>Tension clamp 95-150mm<sup>2</sup></b>	pcs	500	wedge type, NFC33-041 EN 50483-3, casted corrosion resistant aluminum clamp body, high strength stainless steel support, Weather resistant anti-UV wedges
<b>Cable Rubber Clamp</b>	pcs	1000	Rubber clamp - 1/2" - 6mm screws - Stainless Steel Zinc electroplated or added corrossion protection
<b>Mounting cross arm bracket</b>	pcs	200	12 holes, galvanized
<b>Anti climb guard for tubular pole</b>	pcs	100	8 spike galvanized
<b>Anti climb guard for lattice pole</b>	pcs	100	12 spike galvanized
<b>Cable lug</b>	pcs	100	300 mm <sup>2</sup> for Cu cables
<b>Cable lug</b>	pcs	100	185 mm <sup>2</sup> for Cu cables
<b>Cable lug</b>	pcs	100	120 mm <sup>2</sup> for Cu cables
<b>Cable lug</b>	pcs	100	185 mm <sup>2</sup> for AL cables
<b>Cable lug</b>	pcs	100	120 mm <sup>2</sup> for Al cables
<b>Cable lug</b>	pcs	100	70 mm <sup>2</sup> for Al cables

<b>Cable lug</b>	pcs	100	50 mm <sup>2</sup> for Al cables
<b>Cable lug</b>	pcs	100	35 mm <sup>2</sup> for Cu cables
<b>Cable lug</b>	pcs	100	50 mm <sup>2</sup> for Cu cables
<b>Cable lug</b>	pcs	100	10 mm <sup>2</sup> for Al cables
<b>Cable lug</b>	pcs	100	4 mm <sup>2</sup> for Cu cables
<b>Safety boots</b>	pcs	15	Safety isolation, insulated, steel or safety toe, rubber outsole, anti-static
<b>Safety gloves</b>	pcs	15	Safety isolation of electrical direct and indirect, voltage
<b>Safety Reflective Winter Jackets</b>	pcs	10	Safety Winter reflective jackets
<b>Safety belts</b>	pcs	4	for electrical poles
<b>Safety helmets</b>	pcs	15	With light for electricians.
<b>Hydraulic lug crimping machine</b>	pcs	2	Cables range between 35mm <sup>2</sup> till 300 mm <sup>2</sup>
<b>Vest for electricians</b>	pcs	20	Antifire, water resistant
<b>Voltage Detectors stick</b>	pcs	1	• designed for checking transmission lines, power distribution equipment, down power lines, fuses, and load break connectors
<b>surface-mounted double-socket</b>	pcs	20	TUV Certified 16A 230V IP42-rated 2P+E With Shutters
<b>Single wall heat shrinkable tubing for 4mm<sup>2</sup></b>	m	5000	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 4mm<sup>2</sup></b>	m	1000	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 4mm<sup>2</sup></b>	m	5000	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 4mm<sup>2</sup></b>	m	5000	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 4mm<sup>2</sup></b>	m	5000	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW

<b>Single wall heat shrinkable tubing for 6mm2</b>	m	1000	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 6mm2</b>	m	1000	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 6mm2</b>	m	1000	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 6mm2</b>	m	1000	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 6mm2</b>	m	1000	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 10mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 10mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 10mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 10mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 10mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 16mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 16mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 16mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 16mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 16mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 25mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 25mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 25mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 25mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 25mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 35mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED

<b>Single wall heat shrinkable tubing for 35mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 35mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 35mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 35mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 50mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 50mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 50mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 50mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 50mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 70mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 70mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 70mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 70mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 70mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 95mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 95mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 95mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 95mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 95mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 120mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 120mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW

<b>Single wall heat shrinkable tubing for 120mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 120mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 120mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for 240mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for 240mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for 240mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for 240mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLACK
<b>Single wall heat shrinkable tubing for 240mm2</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, GREEN or GREEN/YELLOW
<b>Single wall heat shrinkable tubing for Busbar 20 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for Busbar 20 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for Busbar 20 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for Busbar 30 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for Busbar 30 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for Busbar 30 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for Busbar 50 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for Busbar 50 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for Busbar 50 x 10</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for Busbar 15 x 8</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for Busbar 15 x 8</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for Busbar 15 x 8</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for Busbar 20 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED

<b>Single wall heat shrinkable tubing for Busbar 20 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for Busbar 20 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing Busbar 15 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing Busbar 15 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing Busbar 15 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>Single wall heat shrinkable tubing for Busbar 10 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, RED
<b>Single wall heat shrinkable tubing for Busbar 10 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, YELLOW
<b>Single wall heat shrinkable tubing for Busbar 10 x 5</b>	m	200	Operating temperature -55C-135C degrees, UL, CSA, MIL, BLUE
<b>surface-mounted Single-socket</b>	pcs	30	TUV Certified 16A 230V IP42-rated 2P+E With Shutters
<b>Full Electrical Distribution boards (MDB)</b>	pcs	4	within the complete electrical installation in accordance with IEC 62271 and IP67-rated. This shall include for all necessary supports, steelworks, concrete etc. to properly complete the installation of these boards and connecting cabling. The board must contain a one Main three phases MCCB 630 A with 6 sub-MCCBs (250-400) according to the needs. With all the needed accessories and busbars.
<b>Motor operator for MCCB'S with all associated accessories</b>	pcs	10	For MCCB 630 A 3 poles, 4X630A Front motor operator Plate for mounting and interlocking
<b>Motor operator for MCCB'S with all accessories</b>		10	For MCCB 1000 A 3 poles, 4X630A Front motor operator Plate for mounting and interlocking
<b>630 Amp Fuse</b>	pcs	10	Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 500 V ac 120 KA SC
<b>500 Amp Fuse</b>	pcs	10	Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating

			500 V ac 120 KA SC
<b>315 Amp Fuse</b>	pcs	10	Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 500 V ac 120 KA SC
<b>250 Amp Fuse</b>	pcs	10	Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 690 V ac 65 KA SC
<b>200 Amp Fuse</b>	pcs	10	Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 690 V ac 65 KA SC
<b>160 Amp Fuse</b>	pcs	10	Fuse Standard DIN 43620-1, DIN 43620-3, IEC 60269, VDE 0636 Voltage Rating 690 V ac 65 KA SC
<b>CABLE 1C X 185 MM2</b>	m	200	CU/XLPE/PVC
<b>CABLE 1C X 300 MM2</b>	m	300	CU/XLPE/PVC
<b>CABLE 4C X 185 MM2</b>	m	200	CU/XLPE/PVC
<b>Bolt with nut</b>	pcs	1000	12 cm, 10 mm2
<b>Clement</b>	pcs	1000	For 10 mm2 AL cables or 4 mm2 Cu cables
<b>Bolt self-drill</b>	pcs	1000	10 cm
<b>Plank wood</b>	pcs	300	2.5 LM, 5cm * 10 cm
<b>Self-drill screws</b>	pcs	1000	3 cm
<b>Steel cables stay welding</b>	pcs	200	
<b>Main MDB Busbar</b>	pcs	10	Compatible case by case related to the MDB connections With all needed accessories

<b>MCCB 630 A iron base with accessories</b>	pcs	10	
<b>Main Busbar for 250A MCCB</b>	m	10	
<b>Main Busbar for 1000 A MCCB</b>	m	10	
<b>Main Busbar for 400A MCCB</b>	m	10	
<b>Main Busbar for 1600A MCCB</b>	m	10	
<b>Main Busbar for 630 MCCB</b>	m	10	
<b>Cable entry busbar 630A with accessories</b>	m	10	
<b>Cable entry busbar 1000 A with accessories</b>	m	10	
<b>Cable entry busbar 1600 A with accessories</b>	m	10	
<b>Cable entry busbar 250 A with accessories</b>	m	10	
<b>Cable entry busbar 400 A with accessories</b>	m	10	
<b>Busbar 20 x 10</b>	m	50	Pure Copper (aluminum or copper plated not acceptable), IEC 61439
<b>Busbar 30 x 10</b>	m	50	Pure Copper (aluminum or copper plated not acceptable), IEC 61439
<b>Busbar 50 x 10</b>	m	50	Pure Copper (aluminum or copper plated not acceptable), IEC 61439
<b>Busbar 15 x 8</b>	m	50	Pure Copper (aluminum or copper plated not acceptable), IEC 61439
<b>Busbar 20 x 5</b>	m	50	Pure Copper (aluminum or copper plated not acceptable), IEC 61439
<b>Busbar 15 x 5</b>	m	50	Pure Copper (aluminum or copper plated not acceptable), IEC 61439
<b>Busbar 10 x 5</b>	m	50	Pure Copper (aluminum or copper plated not acceptable), IEC 61439
<b>Pole Dismantling, welding, and extension</b>	pcs	50	
<b>Earth pit</b>	pcs	20	
<b>Rod to clamp junction</b>	pcs	20	



<b>U Bolt Earth Rod Clamp</b>	pcs	30	
<b>Coupler</b>	pcs	50	For 120 mm <sup>2</sup> cables
<b>Coupler</b>	pcs	50	185 mm <sup>2</sup> cables
<b>Coupler</b>	pcs	50	300 mm <sup>2</sup> cables
<b>Cable Gland 120 mm</b>	pcs	50	
<b>Cable Gland 150 mm</b>	pcs	50	
<b>Bentonite (Kg)</b>	kg	15	
<b>Circuit breaker Bolts</b>	pcs	30	MCCB 630
<b>Circuit breaker Bolts</b>	pcs	30	MCCB 250
<b>Circuit breaker Bolts</b>	pcs	30	MCCB 1000
<b>Circuit breaker Bolts</b>	pcs	30	MCCB 1600
<b>Circuit breaker Bolts</b>	pcs	30	MCCB 400
<b>PVC Pipe 20mm<sup>2</sup> with accessories</b>	pcs	50	3 meters
<b>Pole clamps</b>	pcs	100	10 meters poles
<b>Pole clamps</b>	pcs	100	9 meters poles
<b>Pole clamps</b>	pcs	50	Form MV poles
<b>clamp PVC Pipe</b>	pcs	50	20 mm
<b>Tensions cable clamp</b>	pcs	100	3*10 mm <sup>2</sup> AL cable
<b>Tensions cable clamp</b>	pcs	100	3*4 mm <sup>2</sup> Cu cable
<b>Rubber clamp for cables fixation</b>	pcs	100	3*10 mm <sup>2</sup> AL cable
<b>Rubber clamp for cables fixation</b>	pcs	100	3*4 mm <sup>2</sup> Cu cable

<b>Heat shrinks</b>	m	400	For 185 mm <sup>2</sup> cables, Red/blue/green
<b>Heat shrinks</b>	m	200	For 120 mm <sup>2</sup> cables, Red/blue/green
<b>Heat shrinks</b>	m	200	For 300 mm <sup>2</sup> cables, Red/blue/green
<b>Dead end clamp</b>	pcs	100	
<b>Distribution board</b>	pcs	10	Included all accessories, CB 10A * Qty 5, Isolator 2P 63A IP 65 waterproof
<b>Tensions cable clamp</b>	pcs	100	For 120 mm <sup>2</sup> AL cable
<b>Cable tie</b>	pcs	200	For 120 mm <sup>2</sup> + 10 mm <sup>2</sup> cables
<b>Suspender</b>	pcs	100	
<b>End cap (Plastic)</b>	pcs	100	For Network cables (185mm <sup>2</sup> +120 mm)
<b>End Cable Clamp</b>	pcs	100	
<b>End pole cap (ring) line end</b>	pcs	50	9 meters poles
<b>Current transformer</b>	pcs	20	MCCB 1600
<b>Current transformer</b>	pcs	20	MCCB 1000
<b>Bolt with nut</b>	pcs	1000	6 mm
<b>Current transformer</b>	pcs	20	MCCB 630
<b>Cable joint</b>	pcs	100	185 mm <sup>2</sup> cable AL, 120 mm <sup>2</sup> Cable AL
<b>Room master locks</b>	pcs	30	Master large locks
<b>Electrical tape</b>	pcs	100	Standard, high quality
<b>Isolation tape for electrical cables</b>	pcs	100	High quality
<b>24-hour timer</b>	pcs	10	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

<b>Fire extinguishers for each transformer location and main distribution boards, following the standards.</b>	pcs	20	As per the standards for the electrical fires and MDBs
<b>Electrical Wire</b>	meters	1000	1.5 mm <sup>2</sup> , Cu, single wire
<b>Electrical Wire</b>	meters	1000	2.5 mm <sup>2</sup> , Cu, single wire
<b>Electrical Wire</b>	meters	1000	4 mm <sup>2</sup> , Cu, single wire
<b>Electrical Cable</b>	meters	500	2 X 2.5 mm <sup>2</sup> , CU, PVC
<b>Electrical Cable</b>	meters	500	2 X 4 mm <sup>2</sup> , CU, PVC
<b>LED light</b>	PCs	30	Internal use for offices with tube, 60 cm
<b>LED projector light</b>	PCs	30	100 Watt
<b>Standoff Busbar insulator 25mm</b>	pcs	50	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR
<b>Standoff Busbar insulator 30mm</b>	pcs	50	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR
<b>Standoff Busbar insulator 35mm</b>	pcs	50	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR
<b>Standoff Busbar insulator 40mm</b>	pcs	50	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR
<b>Standoff Busbar insulator 51mm</b>	pcs	50	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR
<b>Standoff Busbar insulator 63mm</b>	pcs	50	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR
<b>Standoff Busbar insulator 76mm</b>	pcs	50	M8 Thread - Nylon - 1000Vac - 15kV - Arc quenching, non-tracking - RED COLOR
<b>Terminals</b>	pcs	50	16mm terminal
<b>Terminals</b>	pcs	50	70mm Terminal - double sided protected
<b>Earthing Terminals</b>	pcs	50	16mm earth terminal - 1 side rail 1 side wire
<b>Slotted Duct</b>	m	50	25 x 25mm - Grey color
<b>Slotted Duct</b>	m	50	25 x 40 mm - Grey color
<b>Slotted Duct</b>	m	50	25 x 50 mm - Grey color

<b>Slotted Duct</b>	m	50	40 x 40 mm - Grey color
<b>Slotted Duct</b>	m	50	50 x 50 mm - Grey color
<b>Relay</b>	pcs	20	1p - 10A - 240Vac - SPDT - DIN rail mounted
<b>Change Over Switches with Centre Off Position IP65</b>	pcs	50	1 pole, 20A panel mount auto-off-manual
<b>Automatic MDB fire extinguisher</b>	pcs	30	Full system inside the MDB with all associated accessories
<b>Timer battery</b>	pcs	50	Compatible with existing timers

### 10. Transformers and Shelters Data

The contractor shall ensure the service in all areas of the Camps:

#### Zaatari & Garden Camp:

<b>District</b>	<b>Transformer</b>
District 1	1000 KVA (Trans 1)
District 2	1000 KVA (Trans 1)
District 3	630 KVA (Trans 1)
District 4	630 KVA (Trans 1)
District 5	630 KVA (Trans 1)
District 6	630 KVA (Trans 1)
District 7	630 KVA (Trans 1)
District 8	630 KVA (Trans 1)
District 9	630 KVA (Trans 1)
District 10	630 KVA (Trans 1)
District 11	1000 KVA (Trans 1)
District 12	630 KVA (Trans 1)
Market 1	630 KVA (Trans 1)
Market 2	630 KVA (Trans 1)
Market 3	630 KVA (Trans 1)
Basecamp area	250 KVA (Trans 1)
Reception and registration area	250 KVA (Trans 1)
Garden camp	630 KVA (Trans 1)
<b>Total</b>	<b>18</b>
	<b>25,000 Caravans</b>