Scope of Work (SoW)

Supply, Installation, Commissioning and Operation of Hybrid Mini-Grid Project of Solar System at UNDP CO in Sana’a, Yemen
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SECTION 1 - INTRODUCTION

1.1. Background

As part of UNDP Automation, Digitalization and Green Renewable Energy platform transition, UNDP Yemen has successfully implemented a solar system to cover all critical load in the country office. UNDP Yemen Management is planning to rely on solar system for the entire country office to be 100% on Solar and clean energy.

Accordingly, it is planned to transfer the entire non-Critical Load of electricity in the UNDP country Office from diesel generators to the solar energy system to achieve the major global sustainable goals of UNDP.

Solar System is planned after completion of design of the required solar system in UNDP parking area with a total capacity of solar panels not less than 458.15kWp. In this regard, UNDP Yemen is required from qualified firms to perform the supply, installation, test and commission of the new solar system in UNDP Parking Area in Sana’a, Yemen as specified in the technical documents.

1.2. Objective

The aim of this Scope of work (SoW) is to define the nature and minimum quality standards for the provision and installation of the solar system.

The purpose of this project is to provide sufficient electricity for Country office in Sana’a with a total capacity of solar panels not less than 458.15 kWp with total PV inverters capacity not less than 350 kW and total Battery bank storage 576 kWh.

The objective of the solar system upgrade is to
- maintain reliable power
- maximize solar power production
- minimize fuel consumption through optimized power management
- protect the diesel generators from being operated at harmful low load levels and working with diesel off mode.

1.3. Location and Site Description

The project site is located at CO parking area in Al-Khorashi Building Opposite Awqaf Housing Complex, Sharaa Al-Siteen, Sana’a Yemen.

1.4. Duration of Contract

The timeframe for supply, installation, testing and commissioning of the solar systemis maximum one hundred twenty (120) calendar days from the issuance of PO/Contract.

1.5. Scope of Works

All works shall be based on the approved design and executed under the direct supervision of the Contractor’s Project Manager/Site Engineer in agreement with the UNDP Engineer.

All works are all-inclusive of site preparation, supply and installation and site cleaning.

Main activities include:
- Commissioning and connecting of new solar PV modules on parking shade to the PV inverters.
- Supply and installation and connection of DC and AC cables on in the Parking.
• Supply and installation and connection of new PV inverters, AC combiner box, AC Totalizer Box (Multi-cluster Box), battery banks, battery inverters, and cables in the Battery Room (control room)
• Supply and installation of equipotential bonding devices and earthing system for all metallic parts in the system.
• The selected bidder should submit the Product/type test reports from accredited laboratories for proposed products. Product/type test reports should be submitted for main components.
• The bidder must also provide a detailed description, datasheets, catalogues, drawing, performance international certificates and valid warranty certificates for all proposed components and goods with detailed specifications.
• The bidder should install and provide full protection system against lightning strike to ensure that all system’s components are fully grounded all time, any equipment fails or whole system damage due to lightning strike will be replaced and fixed by the supplier under warranty service with no cost.
• Ensure each piece of electrical equipment & apparatus will be connected to the main earth busbar by means of branch/main connection of earth conductors.
• Ensure materials and products are appropriately marked with quality certificates. The Contractor shall select materials & products with regard to standardization and availability of spare parts and for ease of maintenance.
• Not use plant and equipment prior to Handover other than for testing, commissioning, and demonstration.
• Employ only operatives who are skilled and responsible craftsmen, fully experienced in their respective trades and who have gained qualifications appropriate for the work being carried out.
• Take all necessary steps to safeguard the Works during installation to ensure that damage or deterioration has not occurred.
• Ensure that sensitive plant and equipment items are not exposed to dirt or dust at any time, to maintain manufacturers’ warranties and long-term reliability.
• Inspect, test, commission and execute a performance test of the Works on site to demonstrate compliance with the Contract documents and within the manufacturer recommendations.
• Provide any instruments or other equipment for the Client's Representatives to review the accuracy, quality and performance of the Works. Provide any assistance required by the Client's Representative in the use of instruments and measuring equipment.
• Provision of operational and maintenance documentation
• Technical and safety training to the office technical staff

1.6. COVID-19 Protocol

As a precautionary measure against the spread of the COVID-19 virus, all personnel are requested to adhere to strict hygiene protocols, including but not limited to the following:
• Wear appropriate facemask and limit contact
• Maintain minimum 2 m distance from others
• Wash hands and/or use hand-sanitizers frequently
• Avoid touching face, eyes, nose and mouth
• Do not report for work if feeling unwell, instead self-isolate and call medic for guidance

SECTION 2 - TECHNICAL REQUIREMENTS

2.1. Applicable standards
The Contractor must ensure that the engineering, procurement, construction, testing, commissioning, operation and maintenance of the solar system and its components, including all auxiliary facilities and systems, are according to internationally recognized standards and codes in their latest edition. It is the responsibility of the Contractor to check and comply with all regulations which apply to any part of the contract. The latest editions of the Standards, Codes and Recommendations issued by the following organizations must apply for the engineering, construction, testing and commissioning of the System.

International Standards (Highest precedence)
- ISO International Standardization Organization.
- National Standards.
- BSI British Standards Institution.
- Eurocodes and Standards.

2.2. APPLICABLE CODES, RULES, REGULATIONS

The Contractor is responsible for identifying and complying with all current laws, codes, ordinances and regulations applicable to the performance of the services and the requirements of this contract.

All materials and labor provided by the Contractor shall be in full compliance with applicable international and national laws, codes, rules, regulations, ordinances, and standards.

Other internationally recognized standards are accepted if the requirements specified under this contract are met.

The Contractor shall clearly indicate in the technical documentation with which codes and standards his provisions comply.

2.3. Quality of materials

All components, equipment and materials shall be new and shall comply with all relevant codes. The Contractor shall only supply and deliver equipment and materials that are suitable for the intended use in consideration of the applicable operational and weather conditions.

All materials and equipment shall be of a robust design and of a proven technology, i.e. same type of equipment shall be in use successfully for more than one year at 3 different locations, without major breakdowns on similar duties and conditions. Unproven or prototype equipment or components are not acceptable.

SECTION 3  -  TECHNICAL SPECIFICATIONS

3.1. PV inverters

- On-grid PV inverters shall be rated at 50Kw, with at least two MPPTs trackers.
- Maximum PV array power: not less than 70000 Wp
- The minimum ‘European Efficiency’ of the inverter shall be a minimum of 97.5%.
- Earth connection of the inverter to the equipotential bonding conductor and to the protective conductor of the AC side.
- PV specific surge arrester shall be provided on the DC side.
- AC Type surge arrester shall be provided on the AC side.
- Remote monitoring capability.
- Inverters shall be suitable for the climatic conditions and with proven track record for similar projects.
- Other Protections: DC reverse polarity, input-side disconnection point, AC short-circuit current. Overcurrent, ground fault and All-pole sensitive residual-current monitoring unit.
- Suitable consideration of inverter ventilation to avoid potential capacity de-rating.
- The quoted inverter capacity shall be suitable for local ambient temperature.
- Monitoring System – The inverters shall be able to be integrated in one Plant monitoring and control system.
- Product warranty shall be 5 years.
- CE certified as a minimum and UL marking.

3.2. Battery inverter

- Single-phase, pure sine wave, 230 V, 50 Hz, and rated power 6 Kw at 25°C with PF = 1.
- AC power at 25 °C: 8000 W for 30 min.
- Total harmonic distortion shall be less than 1.5%.
- Maximum European weighted efficiency shall be not less than 94 % at full load.
- CE certified as a minimum and UL marking
- The device shall be integrated with LED indicators and display.
- It shall allow adjustment of battery voltage and charging current.
- The device shall allow connection to grid and/or backup generator(s).
- The charging function of the inverter/charger shall include battery charging functionality and the inverter shall be wired in ways that make use of the inverter’s battery charging functionality if the installation includes either mains power or a diesel generator.
- Protections required: AC overload and load short circuit, overvoltage, overheating and battery reverse polarity.
- The inverter shall allow internet connection for remote monitoring.
- Product warranty shall be 10 years.

3.3. AC Totalizer box (Multi-cluster box)

The Box is a stationary switching device combination (AC main distributor) used to establish stand-alone grid with several battery inverters, PV inverters, and generator to the AC load. The box shall be able to communicate with battery inverters to protect batteries and be able to start and stop the generator remotely, connect or disconnect PV inverters and AC loads.

Battery inverter rating: Not less than 216 kW and 36 inverters, L-N 230 V, L-L 400 V

PV inverter rating: Not less than 350 kW

Generator rating: Not less than 300 kW

Load rating: Not less than 55 kW

3.4. AC combiner box

The AC combiner box shall be waterproof IP 65 metallic enclosure with all required accessories.
- AC combiner box should allow flexibility to connect switch disconnections, MCCB, RCBO, SPD or direct cable.
- Internal connection should be through bus bars not less than 800A.
- three phase, 400 V, 50Hz.
- Ingress protection must be at least IP65.
- Enclosure material should be galvanized steel sheets.
- Fault level: at least 25 kA.
- Minimum Number of ways as per drawing
- Bidders are advised to use high quality breakers;
- Warranty: at least 1 year.

3.5. Battery banks with racks
- Each battery bank capacity is not less than 48Kwh, voltage shall be 48 volts.
- Designed to be coupled to the utility grid or off-grid.
- Battery cyclic life shall be at least 8000 cycles at 80% depth of discharge (DOD), third party test reports shall be provided indicating the battery lifecycle.
- The operating temperature for the battery shall be -20°C to +55 °C.
- Wires connected to batteries shall utilize appropriately sized and rated lugs or terminals and proper hardware, battery shall be installed in a secured, well-ventilated powerhouse, or in an outdoor rated enclosure.
- One brand of battery shall be used for the entire installation.
- Product shall have 2-years warranty with certificates provided by the manufacturer.
- Battery rack with built-in busbars should be configured for 48 VDC, powder coated with a corrosion resistant acid proof powder, the battery rack busbars shall be covered.

3.6. DC protection box "fuse box"
- DC fuse box with (6) 200A DC NH fuses, and 48 V nominal DC voltage
  - (3) fuses for positive poles and (3) fuses for negative poles
  - Input (battery bank connection): (Two) 2 x 95 sqr.mm cables for each polarity
  - Output (battery inverters connection): (Three) 3 x 95 sqr.mm cables for each polarity

3.7. DC and AC cables
- All cables and connectors used for the installation of the solar array must be of solar grade, robust and durable in harsh environmental conditions including high temperatures, UV radiation, rain, humidity and dirt as per IEC standards.
- Supply all DC cables, connections, fixings and cable trays between PV Inverters and cable trenches, and all AC connections and cables between the inverters and their respective MDBs.
- DC Cables: Outer sheath of cables shall be electron beam cross-linked XLPE type, or equivalent. Cable jacket should also be electron beam cross-linked XLPE, flame retardant, UV resistant. 10mm²,95mm² cables can be used.
- Cable terminations shall be made with suitable cable lugs & sockets etc., properly crimped and passed through brass compression type cable glands at the entry & exit point of enclosures, or equivalent.
- All cables/wires shall be provided with UV resistant printed ferrules for both DC and AC sides. The marking on tags shall be done with good quality letter and number ferrules of proper sizes so that the cables can be identified easily.
- Cable trays and racks shall also be provided of hot dip galvanized steel.
- AC cable trays shall have a spare area of 50% of the whole section, a minimum distance equivalent to one diameter of the AC cables is to be left between cables on the cable trays.
- DC cables can be bundled on cable trays
- Cables with different voltage level shall be separated by use of different ladders or trays. Particular attention should be given to separating power lines from control cables.
- Cable trays shall be protected by use of a cover.
For underground cables in trenches: Excavated in a depth of min. 60 cm. The bottom of the trench shall be smooth, compacted and free of stones, roots and pipes. The bottom of the trenches shall be covered with a 15-cm layer of riddled, stone-less sand. After laying of the electric conduits, they shall be covered with a further layer of the same sand, depth 15 cm. a second layer of conduits for control cables is then laid in place, covered with a third layer of 10cm sand then warning tape. Remaining volume can be backfilled from excavated material. A warning tape and a bare copper cable shall be installed as detailed in the

3.8. Earthing System (Wallis or equivalent)

The system and all items shall be in accordance with BS 7430, and ANSI IEEE Std 80 to obtain required earth resistance not less than (5Ω) for the rest. System shall be in accordance with the most stringent codes of practice and highest prevailing engineering standards.

- Copper rods of 2.4m length, 14.2mm diameter, to be installed in earth pits, casted in concrete, tap-clamps, bare cables, (Y/G earthing cables, and all system accessories).
- (3) Earth bus bars.
- All related civil works, incl. excavation, backfill and compaction etc.
- Each array structure of the PV modules shall be grounded properly. Suitable accessories for bonding between copper and metallic structures to be used, to avoid potential difference induced corrosion.
- All metal casing/shielding of the system and its components should be thoroughly grounded.
- Earth resistance shall be tested by calibrated earth tester, the earth resistance shall not be more than 5 Ohm.

3.9. Control and monitoring

3.9.a Data Manager

Data Manager for monitoring and controlling solution include all required Switches/ Hubs, fittings, accessories, connections and configurations. All measurements are to be logged locally, and available from a remote location through an internet connection. The Data Manager shall support PV inverters, battery inverters, energy meters, I/O systems, sensor modules, weather stations, charging stations up to the maximum nominal system power Data. The monitoring shall cover all devices status, PV power (current, historical), and battery power values and energy values as well as state of charge of the battery.

3.9.b Control Cables

The control cables will connect the system devises with the data manager include conduits, fittings, boxes and all accessories. The control cables shall meet inverters and controller manufacturer requirement and specification.

SECTION 4 - CONTRACTOR RESPONSIBILITIES

4.1. COMPLIANCE WITH LAWS AND REGULATIONS

The Contractor shall be a legally registered company as per applicable laws. The Contractor’s personnel shall be legally employed in compliance with labor laws and regulations and shall undergo regular medical clearance. It is the Contractor’s responsibility to be compliant with applicable international, national and local laws and regulations for the provision of services under this contract and the use of suitable
and environmentally friendly products and equipment. UNDP is indemnified against all penalties and liabilities of every kind for breach of applicable laws, i.e. labor, business registry or other.

4.2. QUALIFICATIONS

It is the Contractor’s responsibility to ensure that all his/her staff/operators are trained and experienced to execute the installation.

Upon contract signature, the Contractor shall submit the following documents:
- Name of the Contractor’s Safety Representative
- A list of specific equipment and vehicles to be used on site.

4.3. SITE CLEANING

At the end of each workday, all debris and packaging shall be removed from the site and disposed of in an authorized disposal site. All areas must be left clean and safe.

4.4. DELIVERABLES

i. **Product Data:** Prior to procurement and delivery of the products and equipment to the base, the Contractor shall submit manufacturer’s data, publication compliance, and manufacturer’s certificates. Partial submittals will not be acceptable and will be returned without review. Submittals shall include product type and use, manufacturer’s name, and the specific technical paragraph reference for each item, applicable international or European Standard, industry and technical society publication references, and other information necessary to establish compliance with terms of the contract. Submittals for each manufactured item shall be manufacturer’s descriptive literature of products indicating product characteristics, performance criteria, limitations, dilution and application instructions.

ii. **Shop drawings:** Prior to manufacturing and installation, the Contractor shall submit shop drawings for approval by the UNDP Engineer. Make Indicate dimensions and applicable codes. Submit shop drawings for:
   - PV panels strings
   - Control Room
   - Battery racks
   - Earthing
   - Cable routs

iii. **As-built drawings including electrical diagram**

iv. **Certificates of all tested systems, including but not limited to earthing, electrical system and solar system.**

v. **Maintenance manual:** The Contractor shall provide manufacturer’s maintenance manuals for solar and electrical systems. Manuals shall include maintenance plans with frequency of required services for regular maintenance. For each system the Contractor shall provide a list of spare parts, consumables, accessories and replaceable parts subject to wear as per manufacturer’s recommendation.

vi. **Sustainability profile:** Data on product, end-user sustainability, packaging and waste recycled after use.

vii. **Format and Presentation**

Unless otherwise noted, all submittals shall be in pdf.

4.5. DELIVERY AND STORAGE
The Contractor shall be responsible to arrange for the timely transportation and storage, including loading and unloading of all materials and equipment. Products and equipment must be delivered properly packaged and labelled and must be stored and handled in strict compliance with manufacturer’s recommendations. They shall be delivered to the designated area as coordinated and approved with the UNDP Representative.

Arrival of special equipment must be notified to and coordinated with the UNDP Representative.

UNDP will accept no liability or claim for loss or damage to the Contractor’s equipment or supplies, or personal property of the Contractor’s employees.

4.6. CONTRACTOR ROLES AND RESPONSIBILITIES

4.6.1. Personnel

The Contractor and his/her staff shall maintain the highest standards of professionalism, including conduct, cleanliness and appearance. The Contractor shall take all necessary precautions to prevent any unlawful or disorderly conduct by his/her employees. Compliance with and the enforcement of UN Supplier Code of Conduct is mandatory for all categories of UN personnel, including Contractor’s staff. UNDP reserves the right at its sole discretion, to direct the Contractor to remove or replace any employee, at the Contractor’s own cost for failure to comply with the mentioned Code of Conduct. Contractor employees shall not loiter in other areas not being serviced and after shift is complete. Upon completion of their assigned shift, employees shall immediately take leave from UNDP facilities. All staff engaged by the Contractor for the performance of the contract shall at no time be deemed or considered UNDP employees or as an agent or partner of the UN regardless of any operational or administrative responsibilities. All Contractor staff at the management and supervisory level shall be able to communicate fluently in English. At least one such person shall be available on call.

Furthermore, the Contractor shall assign a permanent workforce to the Contract, in adequate numbers and qualifications required to provide the services.

In case of staff absences, whatever its cause (illness, accident, vacation, etc.), the Contractor shall plan, organize and communicate, substitutions to ensure full continuation without detriment to the installation.

The Contractor will be responsible for the workforce, being in charge of the labor duties as determined by the laws in force, training, Health and Safety, equipment and protective clothing required by the law in force, etc.

4.6.2. Logistics

The Contractor is responsible for all activities related to providing the services under this contract. These include, but are not limited to the following:
- Delivery and storage of products
- Scheduling and planning
- Coordinating with UNDP Engineer
- Equipment (i.e. man lift, ladders, connection to utilities, fencing, signage, etc.)
- Tools
- Vehicles
- Qualified personnel including supervision
- Emergency medical treatment for its personnel

4.6.3. Safety
The Contractor shall at all times and at all stages of the contract ensure the Contractor’s staff adhere to applicable occupational health and safety standards.

- The Contractor shall as a minimum provide to his/her personnel:
  - Clearly stated and readily available safe working instructions
  - Training for correct and safe operations
- UNDP will undertake periodic inspections at the workplace to ensure proper working procedures are implemented in order to avoid any possible hazard for the health and safety of the staff.
- Contractor shall assume full responsibility for the protection and safekeeping of UN property on the premises.
- The Contractor shall comply with recognized health and safety standards and codes and perform all services with respect to occupational safety and health requirements set forth in applicable international and UN regulations.
- The Contractor shall provide personal protective equipment (PPE) as per specific task in accordance with Yemeni/international labor law.
- Appropriate warning signs and signals shall be placed visibly to avoid any incidents.
- Any incident involving personnel or equipment shall be immediately communicated to the UNDP Engineer.
- The Contractor is required to have a first aid kit on-site, unavailability of which during inspection will result in an immediate halt of service provision. All costs and time delays resulting from any such halt will be borne by the Contractor.
- All ladders and equipment shall be removed and/or secured daily in order to prevent accidental injury to staff. The Contractor shall leave the facilities in a clean and orderly condition at the end of each workday.
- The Contractor shall prepare its own health and safety plan for its personnel.

4.6.4. Incident Report

The Contractor shall deliver an incident report to the UNDP Engineer, identifying an incident, accident or event resulting in damage or injury to any person(s), UNDP premises, equipment, assets or property, within twenty-four (24) hours of the incident.

SECTION 5 - PROJECT MANAGEMENT

5.1. KICK-OFF MEETING

Upon contract award, a kick-off meeting will be held to establish the lines of communication among all contract participants. The participants will be:
- UNDP
- Contractor
- Consultant

5.2. WEEKLY MEETINGS

The Contractor shall be required to attend weekly meetings with the UNDP Engineer. The meeting agenda will cover the Contractor’s performance and any other contractual matter. Minutes will be taken, reviewed and signed by the UNDP Representative and the Contractor. If the Contractor does not concur with the minutes, the Contractor shall state areas of "non-concurrence" in writing to the UNDP Representative within three working days of receipt of the minutes. Minutes will be signed by both parties (UNDP Engineer and Contractor).
5.3. BUSINESS HOURS

5.3.1. Business Hours

Regular UNDP working hours are: Sunday – Thursday: 08:00-16:00

For the contractor, Saturday – Thursday 07:00 – 18:00
Extra Official and Nighttime Working Hours: Services outside business hours, can be requested for UNDP approval.

5.4. SECURITY

All personnel engaged by the Contractor for performing the contract are subject to security clearance by the UNDP Security. The Contractor shall submit names and photo IDs of their personnel to the UNDP Security Section for approval and clearance by local police authorities prior the commencement of services.
UNDP will provide the Contractor’s personnel with identification cards, to be returned to UNDP immediately upon request.
A briefing by the UNDP Security will be scheduled prior to beginning activities. Contractor’s personnel shall not loiter during working hours.
The Contractor’s personnel shall be expected to strictly observe security policies, plans, instructions and procedures. The Contractor shall develop a security plan in consultation with UNDP, to cover the safety and security of Personnel, including their evacuation, the safeguarding of all equipment, materials and supplies in the custody of the Contractor or Personnel, (“Security Plan”).

5.5. ACCESS

Access to the UNDP facilities is from the main entrance, unless otherwise authorized by UNDP. All Contractor vehicles and trucks must be declared, and their description provided in the list of vehicles and machinery. Vehicles from suppliers must be cleared at the entrance and therefore announced with anticipation. Every component of the Contractor’s workforce must carry with him/her the ID (badge) in a visible place.

5.6. RESTRICTIONS

The Contractor shall comply with all restrictions in the premises.
UNDP communication systems, computers, printers, etc. are off-limits to the Contractor and his/her staff.
No smoking is allowed inside UNDP buildings.

5.7. WATER & POWER

Requirements for water and power shall be coordinated with the UNDP Representative.

5.8. Key Performance Indicators

UNDP will monitor the performance of the contract and will use Key Performance Indicators (KPI’s) to facilitate this process. These KPI’s will be incorporated into the resulting contract and will include, but may not be limited to:

- Deliverables
- Quality assurance
- Reporting
- Adherence to schedule
- Assurance of continuity
- Environmental impact
- Safety

The Contractor shall fully document performance based on each of the KPIs for this project.

At the end of delivery or completed service, the Contractor will be assessed with a Final Performance Evaluation based on the contractual KPIs. Failure to meet the required KPIs may result in the application of liquidated damages, as outlined in the contract.

5.9. PRECAUTIONS

5.9.1. Hazardous Materials

All hazardous materials either found in place or brought to be used during execution, if any, shall be documented and the documentation shall be generated and completed by the Contractor in compliance with relevant international laws or regulations. Use of any materials containing hazardous materials is strictly prohibited. The Contractor must immediately notify the UNDP Representative in case materials considered hazardous are found.

5.9.2. Protection of facilities

The Contractor shall pay special attention and take care to protect the facilities.

5.9.3. In Case of Damage

The Contractor shall be held liable for any damage caused by his/her personnel/equipment to the facilities, including lines, fittings or fixtures, and shall assume responsibility to promptly repair and completely restore the damaged item to its original condition at no cost to the Organization and to the complete satisfaction of UNDP.

5.10. Correspondence

All correspondence must be in English, and between the Contractor and the designated UNDP Representative. The Contractor shall promptly respond to emails and telephone calls made by UNDP. When information is requested by UNDP, the Contractor must send acknowledged receipt and reply immediately, and work to provide the requested information within 24 hours.

5.11. Change Orders

UNDP can issue change order at any time, if needed. The Contractor shall submit the invoice according to revised BoQ in case of change in quantity and/or specification.

In case of change in specifications, the Contractor shall justify and prepare all the change orders, including documentation of products and actual construction time. The Contractor shall submit any change order to the UNDP Representative for approval.

5.12. Handover

The process of Handover of the completed project will be as follows:

a. Testing and Commissioning
   The Contractor shall, on completion of the works, carry out detailed testing and commissioning of the completed works.
The Contractor shall ensure that all the completed works are well executed and in accordance with this document.

b. Pre-inspection/Final inspection
After completing the testing phase, the Contractor shall inform and invite UNDP Representative in writing ten (10) days prior to the time of hand-over to UNDP.

The Contractor shall use all reasonable care and diligence and exercise its best efforts to ensure that works are satisfactorily completed.

The Contractor shall use all reasonable care and diligence in exercising its best efforts to see that all discrepancies and deficiencies pointed out by the UNDP Representative are completed prior to inviting the UNDP Representative for the Final Inspection. The final inspection shall be held one (1) week prior to hand-over.

5.13. INVOICING

Invoices must reflect the actual services rendered and products. The invoice shall be submitted to the UNDP Representative for verification.

SECTION 6 - ENVIRONMENTAL AND WASTE MANAGEMENT
All services performed under the Contract shall be in accordance with the UN Environmental Policy and Guidelines and with applicable international, national and local laws. To the extent possible, the Contractor will exercise environmental sensitivity, which includes, but is not limited to rational use of water resources.

The Contractor shall use products and methods that are in accordance with best energy conservation practices, minimizing waste and avoiding dispersion of waste into the environment, and ensuring proper disposal of waste at authorized disposal sites.

Furthermore, the Contractor shall take all necessary measures to protect the environment. In particular:

- Dust Control - The Contractor shall employ all appropriate methods to reduce dust arising from the services.
- Noise Control - The Contractor shall optimize noise control, employing the quietest makes and models of equipment.
- Ground Contamination - The ground contamination by spillage of chemicals shall be avoided and immediately cleaned or rectified.
- Waste resulting from cleaning services - i.e. packaging must be handled in compliance with local and/or international practices, transported and disposed of by the Contractor at an authorized site.
- Liquid waste disposal - The Contractor shall take adequate measures to avoid ground water contamination.
- Protection of vegetation – When performing services, the Contractor shall take all necessary precautions to avoid damage to plant life.