Annex E.I: Technical Design Template

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| **Bidder Reference Name:** | [enter Bidder reference Name] |
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| **Returnable T2: Technical Design Report** | |
| **Site Reference Name:** | UNHCR Pretoria Regional Bureau Office |
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| **Instructions** | |
| Please use the headings provided in this template for your technical design report; this will aid the bid evaluators in scoring your proposed technical design and comparing the bids. Explanatory information on the requested information is provided in blue colour in the blocks below each heading. Where we have provided a heading, but you provide the requested information elsewhere, please indicate under the heading where the information is located for ease of evaluation. | |

## **System Design**

### Description of the system design parameters

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| Please provide a detailed description of the components of system that shows how the different components are integrated. |

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### Description of the integration of the existing generators into the renewable energy system

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| Please provide a detailed logical explanation of which of the existing generators will be integrated in the renewable energy system and how. It is important to describe how the automatic generator(s) start/stop will be achieved and how the required data for the diesel generators (indicated in section 7.10 of ***Annex B, II. Technical Specifications***) will be retrieved |

### Description of the interconnection of the renewable energy system with the existing electrical infrastructure

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| Please provide a detailed explanation and description of how the new renewable energy system will be interconnected with the existing electrical infrastructure and if new switchgear is required for that purpose, always considering the requirements and conditions in ***Annex B, II. Technical Specifications***. |

## **System components**

### Description of the fully automated control and concept of operational redundancy of the system design

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| Please provide a description of the automated control concept in accordance with section 3.2 in ***Annex B, II. Technical Specifications***, and describe how the system will allow black start capability of the backup generator(s) and manual basic controls to override the renewable energy system. |

### Description of the control and monitoring system concept

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| Please provide a description of the control and monitoring concept in accordance with section 7.10 in ***Annex B, II. Technical Specifications***. |

### Description of the PV module shading and losses analysis report provided as returnable T3

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| In accordance with section 1.1 in ***Annex B, II. Technical Specifications***, any PV modules orientation can be used as long it complies with the PV capacity (kW) and energy yield ((kWh) specified in section 1. Please provide a description of the shading and losses that is supported by the report required as returnable T3. |

## **O&M Concept**

### Description of Operations and Maintenance proposed methodology and resources

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| Please provide a description of O&M methodology and resources in accordance with section 11 in ***Annex B, II. Technical Specifications*** and describe how the restoration time will be achieved based on the failure types, as well how the regular O&M tasks will be performed |

## **Additional information**

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| If there is any further information you wish to convey with regards to the chosen system components, input parameters, design assumptions, shading analysis, electrical losses, system layout, or anything else, please use this space to do so. |

## **Key parameters design compliance statement: Zahle Sub-Office**

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| **Instructions** |
| As part of the contractual agreement to be entered, UNHCR requires all bidders to complete the attached Key design parameters Compliance Statement.  This statement serves to ensure that all bidders are meeting the technical specifications and document any instances where there is deviation. If for any reason, there is partial or non-compliance to the functional specifications the bidder is to state the reasoning behind these adjustments in the table below.  Compliance responses to be used:   1. Compliant. (This item will be implemented.) 2. Partial Compliance. (There is deviation from the item requirement. A justification should be made.) 3. Non- compliant. (This item will not be implemented. A justification should be made.) |

We, the undersigned, confirm our submitted proposal for the Engineering, Procurement and Construction, as well the Operations and Maintenance of a hybrid renewable energy system for the **Pretoria UNHCR RB** complies with the key parameters and specifications as set out in the RFP documentation and further demonstrated below.

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| **Key Parameters** | **unit** | **Requirement** | **Compliance** | **Reasoning** |
| Continuous AC power rating available any time (Pnominal) | kW @ 0.8 PF @ 40ºC | 200 kW |  |  |
| Peak power for 15 minutes available any time (Ppeak. 15 minutes) | % of Pnominal | 120% of Pnominal |  |  |
| Peak power for 5 seconds available any time (Ppeak. 5 seconds) | % of Pnominal | 150% of Pnominal |  |  |
| Nominal voltage (Vnominal) | V | 230/400 V |  |  |
| Rated voltage at the supply terminals (Vsupply) | % (Vnominal) | ±5% (Vnominal) |  |  |
| Nominal frequency and tolerance (fnominal) | Hz (± 2 %) | 50 Hz |  |  |
| Available Rooftop space for PV panels installation | m2 | 1350 |  |  |
| PV Generator Capacity | kW @STC conditions | 176 |  |  |
| PV generator energy yield | MWh/year | 318 |  |  |
| Ratio PV inverter vs PV capacity | kW | n/a |  |  |
| Minimal usable storage capacity (Cminimum) | kWh | 200 |  |  |
| Mounting of the photovoltaic modules | - | Rooftop mounted |  |  |
| System type | - | Photovoltaic Renewable Energy System |  |  |
| Number of existing diesel generators integrated to the system | - | 1 |  |  |
| Number of new diesel generators to be supplied and integrated to the system | - | 0 |  |  |
| Responsibility for the distribution of electricity inside the building | - | UNHCR |  |  |
| Daily average demand (Edaily average) | kWh | 1250 |  |  |
| Annual Demand | kWh | 456,250[[1]](#footnote-2) |  |  |
| Minimum autonomy time to run at nominal power on the Battery if it was charged to 90 % before and not re-charged thereafter | hours | TBD by bidder |  |  |
| In case the system is on-grid, sales options of surplus PV generated electricity to the grid operator | - | not relevant |  |  |
| Minimum annual availability (Aannual, minimum) | % | 99.5% |  |  |
| Maximum monthly outage time (Tmonthly outage, maximum) | % | 0.5 |  |  |

We confirm the above to be a true statement of our compliance to the functional specifications and commit to fulfilling the obligations of the above requirements throughout the term of the agreement with UNHCR.

Yours sincerely,

Signed

Full name of signatory

In the capacity of:

Duly authorised to sign the proposal on behalf of the Bidder.

Date:

1. The Annual demand is an estimated non-binding value only for information purposes only [↑](#footnote-ref-2)