

## ANNEXURES

### 1. ANNEXURES

#### 1.1. Annexure 1 – Compulsory Cover Sheet (To be Completed)

1. Company Name:

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2. Main Contact person and contact details

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3. Company experience in PHOTO VOLTAICS (Years)

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4. Number of plants designed and fully installed. Also indicate the Energy Producing Capacity of each completed installation in (Watts i.e. KW, MW).

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5. Single biggest successfully installed PV system (kWp, Name, Value (R); year completed, Reference)

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6. Number of installations greater than >30kWp delivered by the proposed team for this project

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7. Successfully completed Rooftop PV system. (Not Carport or rooftop) (Size kWp, Location, Value R)

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8. Type of Modules proposed (Name, Size, Technology)

Name	
Size (kWp)	
Technology (poly, mono, thin film)	
Is it a Tier 1 panel	

9. Type of inverters proposed (Name, Size)

Name	
Size (kW)	
<b>Minimum Mandatory Certifications (Proof needs to be supplied in returnable)</b>	
	Tick if adhered to
IEC 62109-1/2	
IEC 61727	
NRS 097-2-1 (2017)	
IEEE 1547	
IEEE 1547.1	
IEEE 1547.2	

10. Type of Mounting structure (Is it Rooftop? Name, type of material)

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11. Size of Plant proposed (kWp & kVA AC)

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12. First year yield (P50 MWh and P90 MWh)

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13. Proposed monitoring system

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14. Installation/Project timeline (Calendar weeks including lead times)

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15. Leadtime of Modules

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16. Leadtime of Inverters

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17. Proposed anti-theft fixing measures (spec sheet to be included in returnables)

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18. Proposed solution to reduce the risk of veld fires damaging the PV plant (Small write up)

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19. Is the installation electrician a qualified three phase installation electrician? (Proof to be submitted in returnables)

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20. Electrical contractor must be registered with the CIDB and have a rating of 2EP or better. Please provide rating below. (Proof to be submitted in returnables)

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## Annexure 2 – Compulsory returnables schedule (To be completed)

### STAFF AND COMPANY INFORMATION

Any information not declared below for which reason whatsoever might put the contractor at a disadvantage during adjudication stages

Address of Company		
Number of full time technical staff employed		
Number of full time technical staff to be assigned to the project		
Number of full time <b>South African</b> technical staff to be assigned to the project		
How long has your company been in the PV industry?		
<b>Company's first successfully installed PV system</b>		
Installed PV capacity [kWp]	Project Value	Reference
<b>Five large (&gt;30kWp) installations completed in the last 5 years</b>		
Installed PV capacity [kWp]	Project Value	Reference
<b>Three Rooftop installations completed (Not carports)</b>		
Installed PV capacity [kW]	Project Value	Reference
<b>Team Leader Details</b>		
Name:		

Team leader years' experience in PV	
Team leader number of installations >30kWp	

The project requires a high level of internal project management to interface to the Professional Project Team. Installation team shall be required to attend weekly site meetings.

How do you intend to satisfy this requirement?

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### PROJECT PROGRAM

Please provide estimated start and completion dates for the project. Furthermore, provide a detailed installation programme.

Project milestone dates	
START DATE	
HANDOVER DATE	
DURATION - FROM LETTER OF INTENT TO HANDOVER (CALENDAR WEEKS)	

### INSTALLATION INFORMATION

**Specification sheet to be included.** If it is not included it might put the contractor at a disadvantage during adjudication stages

#### Support structure

Support Structure (Specification sheet to be added)	
STRUCTURAL SHAPE (TUBULAR/ANGULAR STEEL)	
CORROSION PROTECTION AND UV PROTECTION	
WIND STABILITY OR MAXIMUM WIND SPEED (KM/H)	
WEIGHT PER M <sup>2</sup>	
INSTALLATION METHOD (EG: ASSEMBLED ON SITE, PRE-	

ASSEMBLED AND RIGGED INTO POSITION, ETC.)	
MODULAR OR STAND-ALONE SYSTEM (ARE THE SUPPORT STRUCTURES MODULAR, DO THEY CLIP TOGETHER OR IS SUPPORT STRUCTURE CUSTOM MADE, ETC.)	
DURABILITY AND LIFESPAN IN YEARS	
INCLINATION TO THE HORIZONTAL	
DIMENSIONS	
IF HIGHEST PART OF STRUCTURE IS HIGHER THAN 1.8M PLEASE PROVIDE A DESCRIPTION AS TO HOW THESE PANELS WILL BE SERVICED	

### Anti-theft connectors

Anti-theft connectors (Specification sheet to be added)	
DOES THE FIXING INCLUDE THE CLAMP OR IS IT ONLY THE NUT/BOLT FOR FIXING THE PV MODULE TO THE SUBSTRUCTURE	
CORROSION PROTECTION AND UV PROTECTION	
MANUFACTURER	
MATERIAL (STAINLESS STEEL, GALVANISED ETC.)	
WARRANTY/GUARANTEE	

### PV Module

PV Module (Specification sheet to be added)	
PEAK POWER (PMPP)	
OPEN CIRCUIT VOLTAGE (VOC)	
SHORT CIRCUIT CURRENT (ISC)	
MAXIMUM POWER VOLTAGE (VMPP)	
MAXIMUM POWER CURRENT (IMPP)	
MAXIMUM SYSTEM VOLTAGE	
WORKING TEMPERATURE RANGE	
HAILSTONE IMPACT	
<b>MECHANICAL CHARACTERISTICS</b>	
DIMENSION (LENGTH X WIDTH X DEPTH)	

WEIGHT	
CONNECTOR TYPE AND MANUFACTURER	
JUNCTION BOX TYPE AND MANUFACTURER	
CELL (POLY CRYSTALLINE OR MONO CRYSTALLINE) AND SIZE	
NO. OF CELLS AND CONNECTIONS PER PANEL	
<b>TEMPERATURE/COEFFICIENTS</b>	
TEMPERATURE COEFFICIENT VOC	
TEMPERATURE COEFFICIENT ISC	
TEMPERATURE COEFFICIENT PMPP	
<b>QUALITY ASSURANCE</b>	
<b>DUST REDUCTION FACTOR</b>	
IEC/ISO/SABS CERTIFICATION	
PRODUCT WARRANTY/GUARANTEE [PANEL, JUNCTION BOX]	
PERFORMANCE WARRANTY/GUARANTEE [INCLUDE POWER DEPRECIATION GRAPH AS A FUNCTION OF TIME FOR A 25 YEAR PERIOD]	
AFTER SALES SUPPORT AVAILABILITY FOR PANEL	

### Inverter

Inverter (Hybrid) (Specification sheet to be added)	
<b>ELECTRICAL CHARACTERISTICS</b>	
RECOMMENDED POWER FROM PV ARRAY (kWp)	
OUTPUT POWER FROM INVERTER	
AC NOMINAL VOLTAGE	
NOMINAL FREQUENCY	
MAXIMUM LINE CURRENT	
AC CURRENT DISTORTION (% THD)	



OPEN CIRCUIT MAXIMUM VOLTAGE	
INVERTER EFFICIENCY (MAXIMUM)	
<b>MECHANICAL CHARACTERISTICS</b>	
DIMENSION (LENGTH X BREADTH X WIDTH)	
WEIGHT	
IP RATING	
OPERATING TEMPERATURE RANGE	
COOLING SYSTEM	
<b>SAFETY</b>	
IN BUILT PROTECTION FUNCTIONS	
SELF-MONITORING SYSTEM AND ALARMS	
<b>QUALITY ASSURANCE</b>	
IEC/ISO/SABS CERTIFICATION	
PRODUCT WARRANTY/GUARANTEE	
PERFORMANCE WARRANTY/GUARANTEE	

Please provide any particular plant room requirements if the inverter specified needs to be inside. Submission must include details of space requirements and ancillary services needed.

## SCADA

SCADA System (Specification sheet to be added)	
<b>Displayed Parameters</b>	
ARRAY VOLTAGE - VDC (V)	
GRID VOLTAGE - VAC (V)	
ARRAY CURRENT - IDC (A)	
GRID (INJECTED) CURRENT - IAC (A)	
ARRAY POWER - PDC (W)	
GRID (INJECTED) POWER - PAC (W)	

MODULE TEMPERATURE - T <sub>MODULE</sub> (°C)	
AMBIENT TEMPERATURE - T <sub>AMB</sub> (°C)	
SOLAR RADIATION - (W/M <sup>2</sup> )	
WIND SPEED (KM/H)	
ALARMS	
<b>FUNCTIONALITY</b>	
DATA LOGGING CAPABILITY WITH A USER FRIENDLY GUI AND AUTOMATED REPORT GENERATION CAPABILITY.	
COMMUNICATIONS INTERFACE (ETHERNET, INTERNET, DIAL UP ACCESS, GSM)	
SMS ALERTS	

### SURGE PROTECTION

Due to the sensitive nature of Sentech's equipment, only the best lightning protection and surge protection equipment shall be used:

Surge protection (Specification sheet to be added)	
MANUFACTURER NAME	
SURGE PROTECTION CONFORMS TO REQUIREMENTS AS SET OUT IN THE SPECIFICATIONS (Y/N)	
MIN OF TYPE 2 ON DC SIDE OF INVERTER (Y/N)	
COMBINED TYPE 1 & 2 AT THE AC COMBINER (Y/N)	
COMBINED TYPE 1 & 2 AT THE AC POINT OF CONNECTION (Y/N)	

### POST- HANDOVER and SERVICING

#### Post-Hand-over Maintenance and service programme

Upon final completion, the Solar Contractor shall enter into on-going services and maintenance associated with the operation of the solar project. These costs shall be priced for in the BOQ and shall be for duration of 12 months.

During commissioning, the Solar Contractor will also train staff in the routine operation, maintenance and safety of the PV system as well as the SCADA system.

How does the bidder propose to fulfil the above maintenance requirements?

[illegible]

## Summary of the Systems

Summary of the Systems		
1	Power (kWp & kVA AC)	kWp: kVA:
2	Number of PV modules	
3	Wattage per panel	
4	Total area of modules	
5	Tilt of modules (degrees)	
6	Azimuth	
7	Number of inverters	
8	Estimated annual production of energy (P50 and P90)	P50: P90:
9	Producibility (kWh/kWp)	
10	Connection to the grid	Three phase low voltage
11	Voltage supply	400V

## CHECK SHEET

### Check sheet for drawings/schematics to be submitted

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		(Y/N )	Where can this info be found
1	PV panel site layout		
2	Earthing and lightning protection drawing		
3	Antitheft fixing specification sheet		
4	Clearvu or similar specification sheet		N/A
5	PV module specification sheet		
6	Inverter specification sheet		
7	PV support structure drawing/specification sheet		
8	Monthly energy yield simulations		
9	P90 and P50 yield graphs (probability distribution)		
10	Veld fire prevention/control explanation		N/A
11	Monitoring specification sheet		
12	DC schematic		
13	AC schematic		
14	Monitoring schematic (including all items measured from weather station)		
15	Electric fence energizer spec sheet		
16	Project plan/timeline		
17	Proof of Registration with department of labour (As three phase electrician)		
18	Proof of CIDB rating		
19	Surge protection specification sheet		
20	Latest tier 1 PV module list		
21	BBBEE certificate		