

Date: 24th March 2021

Ref: ZVPL/SPV/COM/2020-21/389.1

To,

The Management – Vidya Prabodhini Porvorim, Goa.

### Subject: Proposal for 35.17 KWp Solar Power Plant

Dear Sir / Madam,

We are pleased to offer you a quote for your Solar Power System. The details for the plant are mentioned below.

I hope the system meets your requirements. In case of any clarifications, please feel free to contact me.

### Key benefits of collaborating with Sun360:

- 1. All **bankable brands** with international and nationally accepted **certifications** will be used for the project. This ensures that the components used are approved for its designed life by **international agencies** & the underlying companies have the financial standing to offer long term warranties.
- 2. Our whole process is technology driven. Right from the stages of designing the plant using complex software to remotely monitoring & controlling systems, we ensure that your plant runs at its peak efficiency.
- 3. We have installed a series of high performing systems over the last 7 years in Goa since inception of our firm Sun360 in 2013. Some of our salient clients are Madurai Kamaraj University (100KWp), Oxford Arcade (55KWp), Surekleen Services Pvt Ltd (67KWp), Cliff Haven (33KW), El Shaddai Charitable Trust (21KWp), Dean D'Cruz (20KWp), Pfizer (72KWp), Vision Hospital (67KWp) and various residences across Goa. Our cumulative installations as of today amount to over 850KWp with around 350KWp of Industrial/Commercial Installations and around 500 KWp of Residential clients.
- Since we are based in Goa, turnaround time on any issue, query or help sought will be minimal.
- We constantly source, innovate and design new add-ons that can improve plant efficiency. This will mean that you will constantly have access to the latest technology thereby ensuring maximum efficiency of the plant.
- We provide a maintenance service at no additional cost for the first year from date of installation.
- 7. As we are registered with the Government of Goa as authorised solar contractor for large projects, we undertake filing and paperwork of all documents and follow through with government officials to obtain grid connectivity approval and subsidy claims for your plant.

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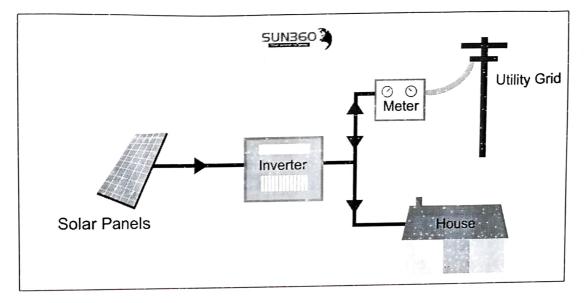
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M/s Anish Sousa Enterprises 10/158/A, Menezes Sousa Building, Near Sanjivani Hospital, Vasco, Goa – 403802 Tel: +91 – 9769977573 GSTIN: 30AVJPM3535A1Z6 <u>System Design:</u>

The proposed system is Grid tie solar power system as depicted in the image below:



The system consists of Solar panels connected to Grid tied Inverter which is connected to the loads and grid supply.

- 1. The Grid Tied inverter will generate power from PV modules and supply to the loads on the site during the sunlight hours. If load demand is more than the supply from the system, extra power required will be drawn from the grid.
- If the power generated is more than the load demand, surplus power will be exported to the grid.
   This power will be utilised to supply the loads during non -sunlight hours.
- During non-sunlight hours the loads on the site will be supplied by power from the grid.
- During non-sample result of the daytime, the solar system shuts down for safety precautions as
   During a power failure during the daytime, the solar system shuts down for safety precautions as
- 4. During a power failure dating the day may have a provide a scheduled maintenance. The system also shuts down back feed of power should not arise during a scheduled maintenance. The system also shuts down when there is voltage fluctuation below 184V over above 265V as the inverter is unable to efficiently synchronise the solar power at such low/high voltages. If severe voltage fluctuation is common phenomenon at your site, we recommend the use of Automatic Voltage Regulators (AVR's) with capability to accept reverse power.
- 5. The solar power plant can continue to operate during a grid outage only if it is integrated with a diesel generator. An existing diesel generator can be integrated along with the solar system which will reduce the loading on the generator and hence the fuel consumption. This integration can be recommended by SUN360 after studying the capacity and loading patterns of the generator.

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M/s Anish Sousa Enterprises 10/158/A, Menezes Sousa Building, Near Sanjivani Hospital, Vasco, Goa – 403802 Tel: +91 – 9769977573 GSTIN: 30AVJPM3535A126 <u>Consumption analysis:</u>

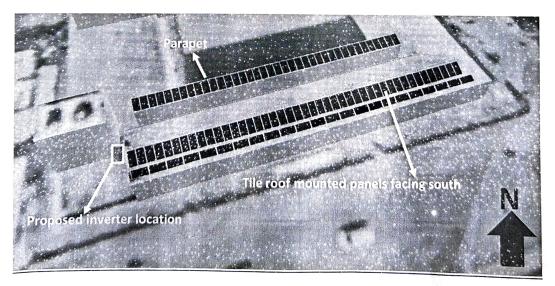
According to the bills shared with us, following data has been tabulated:

| Customer name &<br>Location                   | Sanctioned<br>Load | Billing<br>period<br>(days) | Total number<br>of electricity<br>units<br>consumed | Average<br>number of<br>units<br>consumed per<br>day | Solar<br>Capacity<br>required to<br>offset on<br>each meter |
|---|--------------------|-----------------------------|---|--|---|
| Prabodhan<br>educational society,<br>Porvorim | 18.24 kW           | 33                          | 50518 KWH   | 75.45  | 19 KWp  |
| The principal,<br>Porvorim                    | 38 kW              | 31                          | 1533 KWH  | 25.83  | 7 КWр   |
| Prabodhan<br>vidhalaya, Porvorim              | 18 kW              | 33                          | 1210 KWH  | 36.6   | 9 KWp   |

Solar capacity needed to offset 100% energy consumption on above mentioned meters is 35kWp. The proposed solar power project will be connected to a primary meter namely "The Principal" due to higher sanctioned load. Via Group net metering, the excess units so generated shall be used to offset the consumption on other 2 meters; i.e. First the primary meter will be offset completely and then units generated by the solar plant will be used to offset on 2<sup>nd</sup> meter (Prabhodhan Education society) and then 3<sup>rd</sup> meter (Prabhodhan Vidyalaya).

It is necessary to have all 3 meters in the same name for group net metering to be applicable.

### Site Assessment:



### Panel layout



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The above image shows the panel layout for **35.17kWp** with 335Wp panels placed on south facing tiled roof. The proposed inverter location has been shown for reference in the panel layout above. Sufficient space is kept between the solar panel arrays for easier maintenance and access.

The panels will be mounted on a fabricated frame onto the parapet. Walking space is left between the parapet and tiled roof for ease of maintenance.

We use custom designed Z clamp structure to mount the panels onto a tiled roof. Once the clamp is in position, the tiles are put back in their original position so as to lock with the clamp. These precautions ensure that we minimise the risk of any waterproofing issues. Mounting structure has been depicted below for your reference.





Reference image of RCC base tiled roof mounted solar system in Goa



| Component                      | Type/Model<br>No             | Specification   | Qty              | Make               |
|--------------------------------|------------------------------|---|------------------|--------------------|
| Solar modules                  | Poly<br>crystalline<br>335Wp | Open Circuit Voltage (Voc) = 46.8V<br>Short circuit current (Isc) = 9.3A<br>Voltage at maximum power (Vmp) = 38.1V<br>Current at maximum power (Imp) = 8.8A<br>Efficiency = <b>17.26%</b><br>Weight = 22.5 kg<br>Dimensions in mm= 1960 X 990 X 40 (L X W X<br>T)<br>10 years Limited Product Warranty<br><b>25 years</b> Limited Power Output Warranty   | 105<br>NOS       | Waaree /<br>Vikram |
| Inverter                       | GoodWe 36<br>KS MT           | Output power (continuous) at 25°C = 36 KW<br>Output frequency = 50Hz<br>Output voltage = 400VAC<br>AC connections = Three phase<br>Nominal voltage = 620 VDC<br>Optimal operating temperature range = -25°<br>to 60°C<br>Ingress protection rating = IP65<br>Weight = 40 Kg<br>Dimensions in mm: 590 x 480 x 230 (L X W X<br>H)<br><b>Warranty: 5 years</b><br>1. Ingress Protection-60529(IP-65)<br>2. Utility Interface-61727<br>3. Anti-Islanding Protection-62116<br>4. Safety-62109-1&2<br>5. Efficiency Measurements-61683<br>6. Environmental-60068-2(1,2,14,30) | 1 NO5            | GoodWe             |
| D.C.D.B.                       | GEESYS                       | DC side distribution box with SPD, DC fuses<br>and DC MCB   | 1 Nos.           | GEESYS             |
| A.C.D.B.                       | GEESYS                       | AC side distribution box with SPD and 4 pole MCB  | 1 Nos            | GEESYS             |
| Remote<br>Monitoring<br>System | GoodWe                       | Remote Monitoring over Ethernet or WIFI<br>Communications (INVERTER INBUILT)  | Inbuilt          | GoodWe             |
| Cables                         | Solar DC                     | 4 sq mm UV resistant cable  | As per<br>design | Polycab            |
| Cables                         | Conventional<br>AC cables    | 16 sq mm 1 core Copper PVC insulated cable  | As per<br>design | Polycab            |
| Cables                         | AC cables                    | 16 sq mm 1 core Cu cable  | As per<br>design | Polycab            |

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| Structure  |                | Lightweight; Anti-corrosive Aluminium Panel                | As per | Reputed  |
|------------|----------------|--|--------|----------|
|            |                | Mounting Structure   | design | make     |
|            |                | a. Tiled roof mounting structure for                       |        |          |
|            |                | -  |        |          |
|            |                | South roof   |        |          |
|            |                | <ul> <li>b. Solar angles for parapet fabricated</li> </ul> |        |          |
|            |                | structure  |        |          |
| Meter      | Bi directional | Bi-directional meter                                       | 2 Nos  | Secure / |
|            | meter          | DLMS Complaint   |        | L&T      |
|            |                | AMR Compatible   |        |          |
|            |                | Class 0.5s   |        |          |
|            |                | MRT Tested and Compliant                                   |        |          |
| Automatic  |                | Automatic 4 pole contactor (80 A) + 3 pole,6A              | 1 Nos  | L&T      |
| isolator   |                | МСВ  |        | GIC      |
| mechanism  |                | Phase relay with phase loss, phase asymmetry               |        |          |
|            |                | and phase sequence error handling capability               |        |          |
| Manual     |                | 4 pole 80 A MCB  | 1 Nos  | L&T      |
| isolator   |                |  |        |          |
| mechanism  |                |  |        |          |
| Additional |                | Lightning arrestor – 10 Nos                                | As per | Reputed  |
| Items      |                | Chemical Earthing Pits – 2 Nos                             | Design | make     |
|            |                | Copper earth cabling                                       |        |          |
|            |                | Government Connectivity & Subsidy                          |        |          |
|            |                | Paperwork  |        |          |

# Price Schedule:

| Sr.<br>No. | Product Description Qty. Price (Rs.)   |       |              | TOTAL (Rs.)    |  |
|------------|--|-------|--------------|----------------|--|
| 1.<br>2.   | Supply, installation, testing and<br>commissioning of <b>35.17 KW</b> solar power<br>system comprising of all components as<br>mentioned in the Bill of Materials<br>Government Connectivity & Subsidy | 1 NOS | 14,12,075-00 | 14,12,075-00   |  |
|            | Paperwork  |       |              |                |  |
| 3.         | 3. AMC for Year 1<br>Maximum Operating Price (MOP)   |       |              |                |  |
|            |  |       |              | 14,12,075-00   |  |
|            | Total GST<br>Grand Total   |       |              | 1,26,472-00    |  |
|            |  |       |              | ₹ 15,37,750-00 |  |

We are keen to work with Prabhodhan Education Society. As a token of our gratitude and goodwill, we are happy to offer the Society a **discount of Rs. 9,750** on original amount of Rs. 15,47,500.



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Annual Maintenance Plan will be applicable from the second year onwards and will include quarterly panel cleaning, electrical checks, warranty administration, customer support, remote monitoring of the plant and report generation.

### Client's Scope:

- 1. Area should be made available to install Inverter, ACDB and DCDB completely protected from rain with good ventilation.
- 2. Electricity and water should be provided on site.
- 3. Structural clearances/ approvals if any should be arranged before installation.
- 4. Any other items not included in the SOW of Sun360.

### Exclusions:

- 1. Our current proposal contains all the items required by GED to get connectivity at the time of making this quote. However, if there is any additional component required due to any change in guidelines by GED at the time of finalisation, the same will have to be borne by the customer.
- 2. Standard Solar panel mounting structure is considered in the above quote. However, if a raised structure is required to mount the panels, the cost for the additional fabrication is not considered.
- 3. Scaffolding if required will be charged as per actuals.
- 4. AC earthing is connected to existing earthing pit of the customer. In case the existing value is out of specification, the cost of the new earthing pit will be charged as per actuals to the customer.

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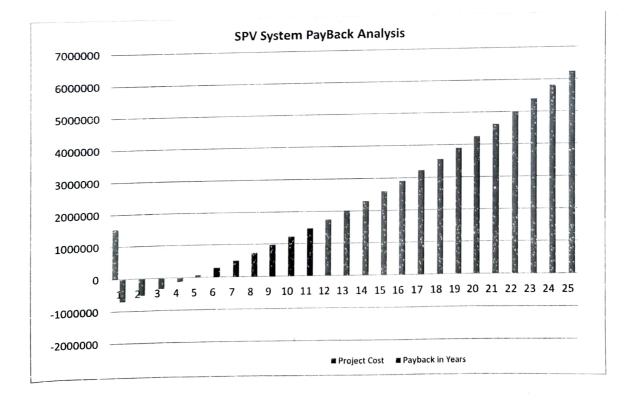
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M/s Anish Sousa Enterprises 10/158/A, Menezes Sousa Building, Near Sanjivani Hospital, Vasco, Goa – 403802 Tel: +91 – 9769977573 GSTIN: 30AVJPM3535A126 <u>Benefits:</u>

| NET INVESTMENT  | Rs. 15.37 Lacs   |
|---|--|
| Annual Generation<br>KWH                                    | 51,355 kWH   |
| Annual Electrical Bill saving<br>@ Rs <b>4</b> .05 per unit | Rs. 2.07 Lakh (1 <sup>st</sup> year)<br>Rs. 3.44 Lakh (avg for 25 years) |
| Warranty  | 5 Years on Inverters<br>25 Years on Panels                               |
| Government Subsidy  | Rs. 6.68 Lakhs   |
| Safety & Monitoring   | Anti-islanding protection<br>Remote monitoring data                      |
| Payback   | 4 Years 8 months   |
| NET BENEFIT<br>(END OF 25 YEARS)                            | Rs. 62.66 Lakhs  |



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## Payback graph

The payback graph shows the Return of Investment (ROI) of the solar power system over the duration of its operations i.e. 25 years.

- The initial column in blue under year zero indicates the capital investment for the SPV project. In year 1 to 5, the return on investment is negative but Government subsidy on the project (6.68 Lakhs) decrease the break-even period within 4 years 8 months.
- In addition, the savings from electricity bills for the facility are **2.07 Lakhs** for the first year itself thereby already making a positive impact on your cash flows.
- Over the next 20 years of operations, the solar power system will be net positive investment for you, giving you freedom from electricity tariff increases and high electricity bills with an average bill savings of **3.44** lakhs over the operation of the plant.
- Overall, the net benefits of the system at the end of 25 years are 62.47 Lakhs making it a safe investment with good returns.

| Terms and Conditions: | Terms | and | <b>Conditions:</b> |
|-----------------------|-------|-----|--------------------|
|-----------------------|-------|-----|--------------------|

| SR No | Applicable Heads                    | Terms   |
|-------|-------------------------------------|---|
| 1     | sow                                 | Sun360 ("Contractor") scope is restricted to design, engineering,<br>manufacture, supply, packing, forwarding, erection, testing and<br>commissioning of Equipment's as per agreed scope, technical offer<br>and specifications. This scope is for agreed timelines and in<br>accordance with other provisions and obligations of each Party.<br>Unless specifically agreed by us in writing, no other supply or services<br>shall be considered as part of our scope/ deliverable /obligation. |
| 2     | Price Basis                         | At actual. Validity of quote for 30 days.   |
| 3     | Taxes & Duties                      | Quoted price is exclusive of all Taxes & Duties on Supply as per GST rates for each component. 5% GST on Material and 18% on Labour. Any change in taxes/duties due to statutory variation shall be to the purchaser's account.   |
| 4     | Freight & Insurance                 | Included.   |
| 5     | Terms of Payment                    | Permissions & Paperwork- 5%<br>Material Procurement- 70%<br>Delivery- 20%<br>Installation- 5%.  |
| 6     | Interest on Overdue<br>Payment      | In case Owner fails to make the due payment within the agreed stipulated timeframe, the Contractor shall be eligible to charge an interest @ of 18% per annum on all overdue payments until the duration the payments are received.   |
| 7     | Assumptions for<br>Foreign Exchange | The Prices are quoted in INR taking into consideration the current US dollar value at INR 75, (hereinafter referred to as base rate). In the  |

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|    |                                 | event there is change in this rate beyond 2% at the time of order and<br>advance receipt, the price shall be deemed to be escalated to that<br>extent (hereinafter referred to as "Revised Value"). The Revised Value<br>shall be also applicable at the time Of making payment to Sun360."  |
| 8  | Delivery / completion<br>Period | <ul> <li>Dispatch of Initial Goods: 4 Weeks on receipt of PO &amp; advance payment.</li> <li>Installation of Initial Material: within 4 weeks of receipt of goods on site.</li> <li>Completion time shall be reasonably extended if <ul> <li>Advance amount is not received within 7 days after issuance of PO.</li> <li>Technical or commercial data required by us to execute the order is not made available in time or if subsequent changes, which delay the delivery are made by the purchaser.</li> <li>If approval of design &amp; drawing is delayed by customer beyond 7 days from date of submission by Sun360.</li> <li>Delay in handing over site by purchaser required clearance/approval not obtain by concern authorities which are required for start of work.</li> </ul> </li> </ul> |
| 9  | Packing                         | Packing will be done as per Sun360 Standards. Included in price  |
| 10 | Deemed<br>Commissioning         | If the grid is not made available by owner to Sun360 within 15 days of<br>the solar power plant being ready for grid connectivity because of<br>which Sun360 cannot conduct the final performance tests, it shall be<br>construed as "Deemed Commissioning."   |
| 11 | Warranty                        | <ul> <li>Solar modules: 10 years on manufacturing defect, Power:<br/>90% end of 10th year, 80% end of 25th year</li> <li>Inverter: 5 years from the date of readiness of materials for<br/>dispatch at works as per the equipment chosen</li> <li>BOS: The equipment/ Products under Sun360 scope of supply<br/>are warranted against any defects due to bad material, faulty<br/>design or poor workmanship and such warranty is valid for a<br/>period of 12 months starting from the date of commissioning<br/>charged / put in service, whichever is earlier, of the<br/>equipment/ Products.</li> </ul>   |
|    | vesitanty                       | <ul> <li>The warranty will not cover any and/or all the failures caused due to the following reasons and shall become null and void on occurrence thereof:</li> <li>Damage or defect caused by movement of equipment post installation by unauthorised personnel, accident, misuse, lack of maintenance, improper usage or negligence on the part of owner;</li> <li>Wilful damage or negligence, normal wear and tear;</li> <li>Abuse or misuse of equipment/product;</li> <li>Damage or defect caused by Force Majeure including fire, earthquake, flood or other similar natural disasters;</li> <li>Damage or defect caused by alteration, modification,</li> </ul>  |



| JSTIN: 50 | AVJPM3535A1Z6                              |   |
|-----------|--|---|
|           |  | <ul> <li>conversion not authorized by Contractor in writing;</li> <li>Repairs carried out by personnel other than Contractor's authorized service providers;</li> <li>Defects or damages due to any other external means or causes.</li> <li>Product damage not attributable or caused by Sun360 Product /solutions.</li> </ul>                         |
| 13        | Approvals                                  | All approvals by Government/third party are included from this offer. Any delay in projects due to delay in granting approvals by external agencies will not be responsibility of Sun360.   |
| 14        | Inspections                                | Any type of <b>paid</b> inspection/ fees to be paid to the Government time<br>party is excluded from this offer. All the cost for this inspection will<br>be borne by client. At the moment, there are no such payments to<br>be made   |
| 15        | Force Majeure                              | Sun360 shall not be liable for any failure of or delay in the<br>performance of this agreement/proposal for the period that such<br>failure or delay is due to causes beyond its reasonable control,<br>including but not limited to acts of God, war, strikes or labour<br>disputes, embargoes, government orders or any other force majeure<br>event. |
| 16        | Confidentiality / Do<br>Not Disclose (DND) | All the information exchanged between the Parties, either oral or<br>written, in connection with this Offer/ Contract, shall be maintained<br>strictly confidential, except to the extent necessary to carry out<br>obligations under it or to comply with applicable Laws.   |
| 17        | Change in Standard<br>Consideration (s)    | Any change in standard consideration/considerations for technical designing of the system & scope of work will affect the design of the system as well as quoted price & increased price will be given by client.   |
| 18        | Right & Lien of<br>Property                | Sun360 shall retain the right on equipment, materials or parts<br>supplied by us under this quotation until full value thereof as per our<br>invoice has been fully paid to us.   |
| 19        | Acceptance                                 | All supplies of material or service works executed by Contractor shall<br>be certified by Owner within 3 days of submission of its documents<br>or measurement sheets or invoices. Upon completion of the Scope<br>of work, the Owner shall issue a Final acceptance Certificate to the<br>Contractor.  |
| 20        | АМС  | <ul> <li>AMC includes:</li> <li>Panel cleaning – 4 times per year</li> <li>Module, Inverter, structure and electrical inspection – 4 times per year</li> <li>Warranty administration</li> </ul>   |

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|    |         | 4. Customer support   |
|----|---------|---|
| 21 | Subsidy | Subsidy will be directly transferred to the beneficiary (customers) |
|    |         | account as per rules and regulations imposed by GEDA.               |

We look forward to working with you.

Yours sincerely,

Anish Sousa

Founder – Sun360

Email: anishsousa@sun360.co.in

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