

# Solar Photovoltaic System Specification

## Project Information:

- Project Name: Solar photovoltaic (PV) for Greenwood Park Community Centre
- Location: Greenwood Park, Tippendell Lane, Chiswell Green, St Albans, Herts, AL2 3HW.
- Client: St Stephen Parish Council (SSPC)
- Date: November 2023

## 1. Scope of Work:

The scope of work includes the design, supply, installation, testing, and commissioning (including the necessary permissions and costs associated with connection to the local electricity supply grid) of a solar photovoltaic (PV) system on the specified non-domestic property at Greenwood Park, Tippendell Lane, Chiswell Green, St Albans, Herts. AL2 3HW.

<https://ststephen-pc.gov.uk/greenwood-park-community-centre/>



Google Earth 3D Image of the Greenwell Park Community Centre

## 2. System Description:

The solar PV system to be designed, supplied, installed, and commissioned shall consist of the following components:

- Photovoltaic panels - total capacity in kWp (kilowatt-peak) to be proposed based upon the building structure and orientation to maximise benefit to SSPC.
- Mounting structures and framework – designed with reference to DG 489 produced by the BRE National Solar Centre – Wind loads on roof-mounted photovoltaic systems and solar thermal systems.
- Inverters and associated electrical components including battery storage (if appraised to enhance savings in grid electricity use and therefore increase revenue savings).
- All electrical wiring and cabling.

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- Monitoring system for performance tracking.
- **IMPORTANT NOTE:** The PV modules and mounting structure should be designed for straightforward de-commissioning and removal for subsequent reinstallation.

### 3. Design and Engineering:

The design and engineering of the solar PV system shall adhere to the following guidelines:

- The proposed installation should have optimal orientation and tilt angle for maximum energy production.
- Compliance with the local planning authority requirements and latest edition of the Building Regulations.
- A structural integrity assessment to ensure the property can support the added load.
- Safety measures to prevent access to any live electrical components.
- Protection against lightning strikes and electrical surges.
- The solar PV system should be designed with a nominated software package and the supplier should provide the numerical and graphical output from the package upon which the installation design is finalised.
- The design process must utilise the half-hourly metering data provided with this invitation to tender to inform the design particularly with reference to maximum design output (in kWp) and therefore installation size. Half-hourly data for the grid electricity supply has been provided in a separate MS Excel file. The supplier should use this to predict how much of solar PV generation may need to be exported and together with predicted grid electricity costs determine if battery storage is economically viable.
- If by using the design software and the actual electricity use data, battery storage is evaluated to be cost effective in increasing the amount of grid electricity displaced then this should be presented in sample daily profiles for each of the four seasons (winter, spring, summer, and autumn). The daily profile should indicate how the battery storage (measured in kWh) should be used to increase the amount of electricity used by the building (and not exported).
- Design should be summarised by completing Form A included with the invitation to tender (ITT). Completion of the Contractor Form, Tenderer Declaration Form and Form A is mandatory.

### 4. Equipment and Components:

All equipment and components shall meet or exceed relevant UK standards and certifications, including but not limited to MCS (Microgeneration Certification Scheme) and IEC (International Electrotechnical Commission) standards.

- Solar PV modules to be used must be of a type tested and approved by an independent body such as PVEL. See <https://scorecard.pvel.com/top-performers>
- Inverters are to be registered as compliant with the Energy Networks Association Product Type Test Register <https://www.ena-eng.org/gen-ttr/>
- Any battery storage proposed should be compatible with the solar PV modules and inverters proposed.

### 5. Installation:

The installation process shall include:

- Good working practice to ensure that, where possible, the Community Centre can continue operating safely whilst installation work is proceeding.
- Secure mounting of PV panels on the roof of the property with consideration for

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- Proper electrical wiring and connection to the property's electrical system.
- Installation of inverters and associated components including
- Grounding and earthing systems as per regulations.
- System commissioning and performance testing.

### **6. Safety:**

Safety measures shall be implemented throughout the installation process to protect workers, occupants, and the public. This includes appropriate signage, barriers, and protective gear as needed.

All work should be carried out in accordance with the Health and Safety at Work etc. Act 1974 and all relevant Acts, Statutory Instruments and Approved Codes of Practice (ACOPs).

### **7. Testing and Commissioning:**

Before handover, the system shall undergo thorough testing and commissioning to ensure it operates correctly and safely. This includes electrical safety checks and performance testing.

### **8. Documentation:**

Complete documentation shall be provided to the client (SSPC) immediately upon completion, including:

- As-built drawings and plans.
- Electrical diagrams and schematics.
- User manuals for monitoring and maintenance.
- Warranty information for all components.

Note: Non-provision of documentation will be taken as non-completion as far as commercial terms are concerned.

### **9. Maintenance and Monitoring:**

The client (SSPC) shall be responsible for routine maintenance, and a maintenance schedule shall be provided (as required upon handover). Additionally, a monitoring system shall be installed to track system performance and facilitate early detection of issues.

### **10. Warranties:**

All components of the solar PV system shall be covered by manufacturer warranties, and the installation work shall be covered by a workmanship warranty.

It is recognised that although solar PV modules have a typical warranty of 20-25 years, the warranties on the other key components (e.g., inverters and batteries) are generally shorter. The supplier shall determine and present as separately priced items the costs of warranty extension to match module warranty duration.

### **11. Compliance:**

The solar PV installation shall comply with all relevant regulations, including but not limited to:

- Building Regulations (England and Wales) – All relevant parts including Part L
- Health and Safety Regulations – as set out in Section 6 above.
- Electrical Wiring Regulations - IET Wiring Regulations (BS 7671): Also known as the 18th Edition Wiring Regulations

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- Grid Connection Regulations – G99 and all other relevant Codes of Practice of the Energy Networks Association.

### **12. Handover and Training:**

Upon completion, the supplier shall provide training to personnel nominated by SSPC or their representatives on the operation and required maintenance of the solar PV system.

### **13. Environmental Considerations:**

The project shall consider environmental impacts, including waste disposal and recycling of materials. All waste materials resulting from installation of the solar PV system should be cleared from site by the supplier at their cost.

### **14. Project Schedule:**

The supplier shall include a project plan in weeks from commencement. It is assumed that the supplier shall have had discussions with the Distribution Network Operator (DNO) A detailed project schedule shall be developed and agreed upon by all parties involved.

### **15. Payment Terms:**

Payment terms and milestones shall be outlined in a separate agreement between the parties.