



Funded by
UK Government

Tender

The Company below are seeking quotations for the project detailed in this document. Please ensure that proposals address every detail of the specification and general requirements in order for them to be considered. The company requesting the submission is not required to consider any quotations that do not meet all of the criteria outlined in this document

The Contractor shall include for out of hours working as part of the contract. All works listed below shall be carried out outside of regular opening hours:

- Any Internal works.
- Roof penetrations for cabling.
- Alterations to the electrical supply (installation and connection of inverter).

BEST description

BEST is an energy efficiency improvement project, funded by the UK Government through the UK Shared Prosperity Fund with the North East Combined Authority and Gateshead Council as the lead authorities. Delivered by local Councils, BEST aims to reduce energy use and costs in small and medium-sized businesses (SMEs) and Voluntary, Community and Social Enterprises (VCSEs) in Newcastle, North Tyneside, Northumberland and Gateshead.

Details of the opportunity

The SME listed below is seeking quotations from suitably qualified and experienced contractors to supply and install solar PV at their premises by March 2025.

- **Company requesting quotation:** The Whitehouse Centre Ltd, North Whitehouse Farm, Morpeth Northumberland NE61 6AW
- **Contact Details:** Dean Hogarty, Mobile 07796 008 051, email, deanhogarty@gmail.com

Quotations should be submitted to the contact listed in this section. A site survey can be arranged in advance with the contact.

Quotations are now sought for the following works

Specification

Proposed Solar PV Arrangement

The Whitehouse Centre is a large family run farm attraction over 40 acres South of Morpeth. It also has some 13no small business units, rental accommodation and houses on the site.

The petting barn (building 4) has 111no, 270watt PV panels installed on the east and west facing roof. The system will generate 29.97kWp and 27,182 kWh per year. The solar PV system was installed in 2019.

The second Solar PV on a separate Gym and Workshop building on the entrance to the main site has 370no 270watt roof mounted panels, with a 99.9kWp system that will generate 84,514kWh.

All the current Solar generation is used on site.



Funded by
UK Government

It is proposed to put PV panels on the roof of building 3 in the highlighted area as indicated on the mark-up below. Two alternative options are proposed:

Option 1 (up to 180 No 470 Watt panels)

It is estimated that it may be possible to install up to 180 No 470 Watt solar PV panels across the East 90 no panels and West 90 no panels facing roof. Alternative configurations may be possible.

Option 2 (up to 106 No 470 Watt Panels)

Installation of up to 106 No 470 Watt solar PV panels across the East and West facing roofs.

Please submit proposal for both options in accordance with the specification detailed below.

Each Option will be assessed separately in accordance with the assessment criteria stated at the end of this document.



Scope of Works

The services include the design, supply, delivery, off-loading, installation and services co-ordination, controls cabling and wiring, testing, commissioning, handing over on completion in a satisfactory working order and replacement of all faulty parts during the defects liability period of all systems, items, parts and apparatus specified in this document.

All installed equipment shall be suitable for its application and have a manufacturers declaration of conformity for the appropriate standard.

The Contractor shall employ or be a member of the Microgeneration Certification Scheme approved specialist to design, supply, install, test, commission and certify a roof mounted photovoltaic system.

The contractor shall employ or be a registered and listed on the current NICEIC roll of approved contractors and/or ECA registered, certified and approved for all electrical services installation works



**Funded by
UK Government**

The PV installation shall comply in all respects with the Standards stated elsewhere in this specification but in particular; the IET Regulations, MCS Requirements and BS EN 62446.

The Contractor shall be fully responsible to order, pay for, liaise, negotiate, program, site manage and co-ordinate with a Microgeneration Certification Scheme Approved Specialist to present a co-ordinated fully operational PV infrastructure on and within the building.

The Contractor shall produce a Solar PV design using approved specialist software to demonstrate that their design will meet or exceed the outline criteria.

The Contractor shall include for all works and materials allied and incidental, which are not explicitly specified, but which are necessary to complete the installation as a working whole. All work shall conform to the best principles of modern practice and shall be carried out by competent tradesmen of the appropriate grades.

By acceptance of the contract, the successful Contractor shall accept full responsibility for the successful operation of all the works specified herein. Inclusion shall be made for transport of all materials, plant and equipment to site, for all necessary off-loading unpacking, storage and assembly. The Contractor shall pay for all associated charges for labour, freightage and demurrage.

The Contractor shall, wherever necessary, pay all fees to manufacturers, suppliers, inspectors etc for attendance installation, commissioning and testing of any part of the mechanical and electrical plant and / or items of equipment, included in this contract.

Study the building Asbestos report and ensure all site operatives are fully aware of its contents as detailed in the specification.

Site survey, development and production of fully detailed installation and working drawings, schedules, risk assessments, method statements, programmes etc. necessary to fully describe and implement the proposed installations.

The proposal must include the supply and installation of all PV modules, framing and fixing systems, and all associated cabling. The system must be designed to meet current industry best practices. The contractor will be responsible for creating and completing all necessary connections for the PV connection to the 400amp 3phase TN-C-S earthing arrangement.

The provision of "As Installed" drawings and Operational and Maintenance manuals, CDM and Health and Safety documentation for and associated with the above contract works including all associated system and building log books.

Handover procedures and employer/end user training and instruction.

The Contractor shall provide all necessary attendance and services requirements associated with all other trades, Sub-Contractors and System Specialists requiring electrical supplies, containment services, interfacing, integration and builder's work.

Any tasks or items required for the system to be fully operational that have not been allowed for, must be clearly stated within the proposal.

Electrical Infrastructure



The main electrical distribution point for Buildings 1 to 4 is on the North end of building 1.

There is various isolator, switch fuse and a distribution board on the back wall,

- MEM Excel 100ampswitch fuse, 'main switch',
- MEM excel 63amp switch fuse,
- 100amp MEM 600mm busbar chamber,
- 100amp EFEN switch labelled 'Feed to switch fuse in soft play cupboard. Feeds soft play, petting barn and Café'.
- Wyle NHSF 63amp
- 8way TP&N Wyle distribution board.

In Building 3, Hungry pigs café, in South end of the building, back of the kitchen is a 18way TP&N MCB distribution board. There is a 3phase C40amp MCB labelled 'Solar DB supply' for the existing Solar PV installation in Building 4, via catenary wire and armoured cable between the buildings.

Due to the size of the proposed Solar PV system on Building 3, it is proposed that a new 3phase, 4pole 125amp switch fuse disconnecter unit, metal clad shall be installed in Building 1. The switch fuse disconnecter unit shall be connected off the 100amp MEM bus bar chamber.

A new sub main cable shall be design, supplied and installed from Building 1 to Building 3 solar PV installation, terminating in a suitable 4 pole isolation switch adjacent the new inverter and meter arrangement. A new sub main cable shall be installed from building 1 to building 3 via a suitable catenary wire between the buildings.

The contractor shall design, supply and install the proposed new electrical distribution system to suit the proposed Solar PV installation on Building 3. The Contractor shall allow for the investigation into the main existing electrical installation in Building 1, to determine the best point of connection for the new Solar PV system.

For the Solar PV installation, where three phase items of equipment are to be supplied, this shall generally be via multi copper XLPE/SWA/LSZH cables, manufactured to BS6724. The cable shall consist of stranded plain annealed copper conductors, XLPE insulated, low smoke and zero halogen (LSZH) extruded bedding, galvanised steel wire armour, low smoke and zero halogen (LSZH) outer sheath. Black. 600/1000 volts grade to BS6724. Acid gas emission to BS EN 50267 (IEC 60754-1), smoke emission to BS EN 50268 (IEC 61034) and flame propagation to IEC 60332-1, IEC 60332-3, BS EN50265, Category C; BS EN 50266, low smoke and zero halogen (LSZH).

The Contractor shall ensure all works are carried out in a safe manner by a competent, and suitability qualified electrician.

Any electrical isolation shall be coordinated with the facilities manager of the building. The main electrical connection shall be completed outside of regular opening hours

Roof Loads

The four main operational buildings have a wood frame construction with a 300mm outer brick layer and 1000mm internal block (cavity) walls with wood timbers cladding on the outside of the walls and small insulation layer between internal plasterboards. The building has a central, single pitch style roof with an incline estimated 45degree the orientation is East West.



Funded by
UK Government

Building 4 has an existing Solar PV system installed on the corrugated metal roof. It shall be the responsibility of the Contractor to undertake full structural survey and carry out calculations to ensure their proposed system loadings shall be admissible by the structural framework of the proposed building 3. The Contractor shall consider the loadings of:

- Solar Photovoltaic Modules
- Solar array framework
- System weightings to secure the full installation

The Contractor shall be responsible for the system design, ensuring that the proposed system is compatible with the existing roof covering, and that the roof structure can accommodate the mass snow, and wind loading expected from the installed PV equipment.

Planning

The Contractor shall be responsible for making a pre-app planning application for the proposed Solar PV scheme. It is anticipated that the Solar PV will be accepted under permitted development. The following planning conditions shall form part of the proposed Solar PV design and installation. Below are the links to the planning portal for non domestic buildings:

<https://www.planningportal.co.uk/permission/common-projects/solar-panels-non-domestic/planning-permission-solar-panels-mounted-on-a-non-domestic-building>

[Planning Permission - Solar panels - Planning Portal](#)

Key summary of Planning Permission: Solar panels mounted on a non-domestic building.

All the following conditions must be observed:

- Equipment should be sited, so far as is practicable, to minimise the effect on the external appearance of the building and the amenity of the area.
- When no longer needed the equipment should be removed as soon as reasonably practicable.

All the following limits must be met:

- Solar panels installed on a wall or a pitched roof should project no more than 200mm from the wall surface or roof slope.
- Where panels are installed on a flat roof the highest part of the equipment should not be more than one metre above the highest part of the roof (excluding the chimney).
- Equipment mounted on a roof must not be within one metre of the external edge of that roof.
- Equipment mounted on a wall must not be within one metre of a junction of that wall with another wall or with the roof of the building.
- The panels must not be installed on a listed building or on a building that is within the grounds of a listed building, or on a site designated as a scheduled monument.
- If the building is on Article 2(3) designated land* the equipment must not be installed on a wall or a roof slope which fronts a highway.
- If the equipment is on the roof of the building the capacity for generation of electricity across the whole of the site cannot exceed 1 megawatt.



Funded by
UK Government

- Other than microgeneration solar thermal equipment or microgeneration solar PV equipment, if there is to be any other solar PV equipment installed on the roof of a building then the Prior Approval (56 days) of the Local Planning Authority is required. This will assess the design and external appearance of the development, particularly in respect of the impact of glare on occupiers of neighbouring land.

Generation

The Contractor's proposals should provide details of their system design. System performance should be detailed in relation to estimated total and monthly generation, self-consumption and export.

Generation and Export Metering

The Contractor shall design, supply and install a generation and export MID approved meter for the Solar PV arrays to allow the business to measure accurately the consumption and generated energy.

The Contractor shall allow for liaising with user to coordinate and support the MCS solar PV application with their current electrical supplier to ensure that the Solar PV installation is approved and accepted for the Smart Export Guarantee (SEG). This will ensure the business is compensated for any excess electricity exported back to the grid. Under the scheme, each energy supplier will set the price they are prepared to pay for excess electricity.

G99 Application

The Contractor must comply with the requirements of the local Distribution Network Operator (Northern Powergrid) G99 Grid Connection requirements and other relevant national and international standards. The Contractor shall be responsible for making the G99 applications with Northern Powergrid and make regular contact with Northern Powergrid engineer on the application progress. The G99 application shall be submitted at the start of the project commission.

Site Delivery

The Contractor shall allow for all deliveries of their PV systems and equipment in a controlled and managed sequence of work. All deliveries shall be programmed with at least 3weeks notice.

As the site and buildings are 'live' active site, it is important that all deliveries of equipment have accompanying Method statement and risk assessments submitted and an agreement in place.

Solar PV Panels

The following elements of the solar PV system shall be designed, supplied, installed and configured by the Contractor to produce a fully working and complete system.

Option 1 The Contractor shall design, supply and install a minimum of 180no, 470watt, solar panel to achieve 84.6 KWp, and a minimum of 66,834kWh per annum.

Option 2: The contractor shall design supply and install a maximum of 106 no 470watt Solar panel to achieve 49.82 kWp and a minimum generation of 39358 kWh per annum.



Funded by
UK Government

Solar PV dimensions are 17282mm x 1205mm x 30mm at a weight 22.7kg.

The solar PV modular shall comply with the following

- IEC 61215, IEC 61730, UL 61215, UL 61730
- ISO 9001: 2015 quality management system
- ISO 14001:2015 environmental management systems

The solar PV modular junction box shall be rated to IP68, 3 diodes, capable of terminating 4mm² cable.

Electrical Parameters at STC

- Rated maximum Power (P_{max}) 470w
- Open circuit voltage (V_{oc}) 65.6v
- Maximum Power Voltage (V_{mp}) 41.8v
- Short circuit current (I_{sc}) 8.95a
- Operating temperature -40C to 85C
- Safety Class – Class II
- Fire performance UL Type 1

The solar PV shall be complete with minimum 12years product warranty and 25years linear power output warranty.

Fixings

The Contractor shall design, supply and install fixings and clamps suitable for the proposed solar PV array to be mounted directly on the pitched metal corrugated section of the roof, east and west facing roofs. The fixings shall be of the same manufacturer for the PV panels and they shall be suitable for the pitched roof.

The panel clamps shall be complete with stainless steel plate for electrical bonding. The mounting system shall be designed in accordance to the latest Building Regulations.

Inverter

The Contractor shall design, supply and install a 3phase solar PV inverter to match (kWp) and work in conjunction with the Solar PV system outlined in the section above. The inverter shall be three phase and, shall have integrated Type 2 DC surge protection to withstand lightning and arc fault protection with option rapid shutdown.

The inverter shall be wall mounted at a working height within a mutually agreed location in building 3. The Contractor shall survey the site and agree the location for operational and maintenance.

The inverter shall have remote control and monitoring, to allow the system to be reviewed via smartphone app or web portal. The Contractor shall include to set up and fully demonstrate of the APP operation and controls to the end user. The inverter shall come with a 20-year warranty.

From the new AC isolator to the inverter, a SWA cable shall be installed and adequately supported before termination into the new three-phase inverter. Outgoing from the new inverter to the DC



**Funded by
UK Government**

Isolator shall be a correctly sized solar photovoltaic cable. With the final outgoing cables of the DC isolator to the PV modules and array, being external quality photovoltaic solar cable.

Inverter connections

The inverter system shall be complete with a suitable App/ software via a Wi-Fi or 5G connection on a Smartphone.

The App/ software shall have the following characteristics

- Username and passwords
- My sites, daily yield, month yield and total yield (kWh)
- Status – normal, alarm or offline
- Power graph, output power, feed in power and load power
- Energy flow diagram
- State of Charge graph of the battery over of 24hr period.

The Contractor shall include to set up and full demonstrate of the App/ software operation and controls to the end user.

Photovoltaic Solar Cable

The photovoltaic cable shall be to the updated harmonised (H1Z2Z2-K) European standard solar cable intended for the interconnection within photovoltaic systems such as solar panel arrays. The solar PV cable shall be suitable for fixed installations, internal and external, within conduit or systems. With impact tested - Suitable for direct burial. Also, for installations where fire, smoke emissions and toxic fumes create a potential risk to life and equipment.

Cable Construction

- Conductor Class 5 flexible tinned copper conductor
- Insulation Halogen-free cross-linked compound
- Sheath Halogen-free cross-linked, flame retardant compound
- Sheath Colour Black

Cable Standards

- EN 50618, TÜV 2 PFG 1169/08.2007, EN 50288-3-7,
- EN 60068-2-78, EN 50395
- Flame retardant to IEC/EN 60332-1-2
- Low Smoke Zero Halogen to IEC/EN 60754-1/2,
- IEC/EN 61034-1/2, EN 50267-2-2
- Ozone and UV Resistant to EN 60811-403, EN 50396,
- EN ISO 4892-1/3,
- Water Resistant to AD8

Containment Systems



**Funded by
UK Government**

The Contractor shall design, supply and install cable containment and support systems for all new AC, DC cables, and sub main cables for the proposed solar PV systems. The contractor shall allow for any unistrut framing system to mount the inverter unit and a suitably sized, fire rated 18mm marine plywood back board.

The proposed cable containment systems are generally intended to provide containment for cabling of all types, throughout their lengths. The Contractor shall install main cable containment routes and additional subsidiary routes so that all cables are contained/secured from their point of supply to their point of use.

All containment systems installed shall be continuous, installed to the manufacturers recommendations and shall include for all of the required component elements (including metallic compartmental segregation where necessary) in order to present a completed installation. This shall include for all separation and compartmental segregation of different services, particularly between mains power, fire alarms and SELV/data/communications cabling.

The following list defines the cable containment types proposed, their installation and general usage:

- Galvanised steel tray/ trunking for sub-main.
- Catenary wire between buildings for sub mains cable
- Galvanised steel tray/ trunking for DC PV Cabling.

The Contractor shall ensure that the installation of all containment systems proposed ensures adequate separation of cabling having differing classification bands, with particular attention paid to separating data/communications from power services. The Contractor shall ensure that separation distances are compliant with the distances recommended in the relevant British Standards.

The Contractor shall supply and install suitable fire-resistant material where containment systems pass through walls and/or fire compartments.

Earthing

The earthing system shall satisfy BS7671: Requirements for Electrical Installations IET Wiring Regulations 18th Edition, including amendments, BS7430 and in line with the local private and DNO network.

Labelling

All AC and DC isolator, inverters, switches, distribution boards, etc., and all items of electrical equipment on the Solar PV system shall be identified in accordance with Section 514 of BS 7671 and shall have securely fitted externally.

Distribution board charts shall be supplemented with copies of NICEIC test results applicable to each distribution board within a sealed plastic wallet within the distribution board lid.

All final connections shall be identified to enable phases, neutral and CPC conductors to be quickly located and identified. This shall be carried out by the installation of Critchley "Z" type tags for individual circuits, i.e. phase, neutral and CPC to be identified.



**Funded by
UK Government**

Upon completion of the installation the Contractor shall test and record the Prospective Short Circuit current and Earth Fault Loop Impedance at LV switchboard. A traffolyte label showing the designated reference, prospective short circuit current and earth loop impedance measured at the LV switchboard together with the supply cable and associated CPC sizes shall be affixed to the front cover.

Builders Work

It shall be the responsibility of the Contractor to identify ALL builders works and incorporation of associated costs into submitted quotation. No additional costs shall be permitted nor accepted for non-conformance with this requirement. The Contractor shall be responsible for all cutting away of holes and chases in brickwork, concrete or other building materials and making good with relevant fabric/ building material to match area.

The Contractor shall obtain the permission of his Structural Engineer before drilling any holes/apertures/changes in structural steelwork or structural beams, columns or decks etc.

All holes through building fabric/walls, etc. shall be cut as carefully as possible and made up solid after completion.

Scaffold

The Contractor shall include for scaffold support during the installation for the Solar PV panels and framing system onto the various roofs.

The Contractor will assess the requirement for access and working platforms and ensure its correct use. The equipment may include: scaffolding; mobile towers; chimney scaffolds; MEWPs; ladders; temporary stairways, Youngman boards; roof ladders, edge protection for flat roofs, etc.

Exclusion zones should be created below the roof and suitable warning notices should be displayed. Suitable protection zones should be provided where necessary for persons accessing premises below scaffold platforms.

The Contractor shall survey of all work areas to ensure the ground is suitable for the access equipment to be used.

Any physical barriers and covers should be maintained to prevent falls through fragile surfaces. Security should be maintained to avoid unauthorised access to the work areas and to height.

Collective fall protection methods should be considered before fall arrest equipment for all work at height, when reasonably practicable. Collective fall protection may include:

Working platforms (crash decks); safety nets; air bags, etc. Safety harnesses and lanyards are to be the last resort.

Roofing Penetration

For the pitched roof, the contractor shall run the DC Solar cables from the roof into the building via the building gable end, or via a roof kit or equivalent suitable for the pitched roof. The outlet kit shall provide full protection from wind and rain from entering the roof/ ceiling voids with an elastic EPDM sealing collar, and with low structural height.



The Contractor shall allow for all roof penetrations shall be completed outside of regular working hours.

Fire Stopping

BS7671:2018 Regulation 527.2 sets out the requirement for the sealing of wiring system penetrations through elements of a building construction. The Contractor shall appoint a specialist third-party accredited installer to carry out fire stopping works.

Maintenance and Operating Instructions

For the electrical installation, system, and individual equipment forming part of the Works, the O&M instructions shall include:

- A description of the extent and manner of operation.
- A copy of any certificates of compliance with relevant standards or schemes as required.
- Comprehensive instructions for the switching on, operation, switching off and isolation of circuits/systems and for dealing with emergency conditions.
- Instructions for any precautionary measures necessary.
- Instructions for servicing, including frequency and materials to be used, to maintain the equipment in good and safe condition.
- The names and addresses of suppliers of all major components together with the type and model reference, serial number, duty rating and the order number and date.

Example Manufacturers

Galvanised and PVC Trunking, Tray and Conduit

Marshall Tufflex
MK
Legrand

Solar PV module

The Contractor shall look to procure one of the following solar PV manufacturers and product ranges for the proposed Solar PV system.

Solar manufacturer	Module model / range	PV Panel country of manufacture/assembly
REC Group	N- Peak Alpha Pure Do not use TwinPeak range	Singapore
Meyer Berger Technology	All ranges	Germany
Maxon /	Maxon 3/5/6 Module	Malaysia, Mexico, Philippines



SunPower	Sunpower X-/A-M-Series SunPower Performance Series	
----------	---	--

Inverter examples

Solis three phase
SolarEdge
Fox ESS

Interested parties must include the following in their quotation:

- Clearly identify the legal entity quoting name (ie name of limited company) on letterhead
- Refer to this tender document
- A minimum 30day validity period
- All elements of the specification must be addressed, or explain how an alternative solution would be more appropriate
- The manufacturer and model number (s) being specified, and the quantity and proposed onsite locations of each product.
- Manufacturer datasheets for products and the exact number of each specific product to be installed
- Warranty period for the proposed equipment and workmanship
- Demonstrate full compliance with all Health and Safety requirements.
- The total cost including and excluding VAT

Submissions will be evaluated against the following criteria, with the procurement decision made by the SME requesting the quotation.

Quality

Quality Scoring Weighting	Scoring	Weighting
Degree to which the proposal meets the specification and requirements outlined	/5	40%
Qualifications and level of relevant experience of the supplier/installer	/5	20%
Added value (eg. aftersales support, enhanced warranty, performance tracking)	/5	10%



Funded by
UK Government

Cost

Cost	Scoring	Weighting
Total cost per kWp installed	Lowest tendered £/kWp	30%
	Other bidder £/kWp	

Deadline

This opportunity was published on 20/11/24 and the deadline for responses is 23:59 on 3/12/24.