

# Marsh Farm Futures PV Installation

Performance specification

JBC/TGK/2139/PVrev 1

## TENDER

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Issue Sheet

Rev No.	Comments	Date
1	Tender	10.09.2024

Document reference:  
2139/PV.01

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# 1 Introduction

This performance specification is provided to enable quotations to cover the work required to install Photovoltaic system to serve Marsh Farm Futures Building.

Provide solar panels to provide 50kW peak of generation located on the existing brown roof area..

The installer shall undertake a due diligence survey to confirm structurally the proposals can be installed in the proposed locations.

TPN inverters should be used.

The ballasted mounting solution shall have a 10° elevation angle and come with unobstructed roof drainage in accordance with DIN 1986-100.

The chosen installer shall be responsible for G99 DNO application.

Note: The existing roof has been chosen to obviate any incidences of shadows that would potentially be encountered by using the extension.

Installing contractors shall be MCS accredited.

The objective of the works is to achieve carbon and energy savings leading to reduced electricity bills to enable funds to be used for service delivery..

Work shall be undertaken as a single phase.

The works comprise:

1. Review of records to confirm electrical wiring source
2. Provision of Risk Assessments and Method Statements
3. Provision of access/safety equipment
4. Installation of new destratification fans and controls
5. Fixed wiring testing of modified circuits

## 2 Existing Installations

The installer shall provide a complete system including Inverters and connections to existing distribution boards.

Inverters and controls shall be accommodated within the existing electrical distribution plantroom.

The contractor is to check record drawings and wiring schedules, prior to starting work, in distribution boards to establish the circuitry and to check loads on each circuit remain within capacity of the protective devices.



### 3 Works Descriptions

The installer shall provide a complete system including solar panels, mounting structures, Inverters, wiring and monitoring system including connections to existing distribution boards.

#### 3.1 Solar Panels

Solar modules should come with a black frame and be at least 21% efficient and must be certified by TUV Rheinland through their "Quality Controlled PV" initiative.

Modules shall be mounted on the area indicated

Fans shall be mounted at the height recommended by the supplier/manufacturer.

Power shall be extended from the existing distribution board within the store within the Fun Factory area.

The destratification fans shall be provided with an approved method of isolation adjacent to each fan.

The contractor shall produce risk assessments and method statements in order that the impact of the work upon building users can be confirmed.

#### 3.2 Standards of materials and workmanship

The Installation(s) shall comply with the standards of good practice and workmanship generally acknowledged in the relevant industry and only labour qualified by trade test or of accepted grade for the particular works shall be employed.

The intent of the work is to re-use existing conduit systems only.

The whole of the work shall be executed in accordance with the seventeenth edition of the Regulations for the Electrical Equipment of Buildings BS 7671: 2008 and any amendments issued by the Institution of Electrical Engineers. The following regulations shall also apply where relevant, for all materials to be supplied and all work carried out:

- a) British Standards and British Standard Code of Practice issued by the British Standards Institution.
- b) The Electricity Supply Regulations.
- c) CIBSE Code of Practice for Interior and Exterior Lighting
- d) Electricity at Works Act.
- e) Construction Design Management Regulations
- f) The requirements of the Local Fire Prevention Officer and Building Control.
- g) The requirements of the Regional Electricity Company.
- h) Building Regulations.
- i) Health and Safety at Work Act, 1974 (1989).
- j) National Inspection Council for Installation Contractors Standards for Installation.
- k) The Electromagnetic Compatibility Regulations.
- l) All European Commission Directives and Acts of Parliament. DDA, Building Regulations Approved Document Part M and BS8300

#### *RCDs*

Residual Current Devices shall be in accordance with BSEN 61008 and IEC 1008 with a sensitivity of 30mA unless specified alternatively in the Particular Specification.



In general, the combined RCB/MCB to BSEN 61009 and IEC 1009 are preferred

#### *Contactors*

Contactors shall comply with BS5424, Part 1 and have a rating in accordance with 'uninterrupted duty' and 'Utilisation Category AC1' unless otherwise specified in the Particular Performance Specification.

Contactors shall be:

- 1) Totally enclosed in metal cases with hinged and or bolted covers and be complete with earthing terminals externally and internally.
- 2) Modular DIN rail mounting type with ventilation single way inserts between each contactor.
- 3) Modular enclosure to be mounted as part of associated distribution board where applicable.

Contactors shall be of the air break type of uninterrupted rating and sized suitably for inductive circuits.

All contactors shall be fitted with arc shields and magnetic blowouts. Contacts shall be of the self-cleaning type and easily removable and be designed such as to prevent welding in.

All operating coils of contactors shall be designed to operate on AC current and coils circuits shall be protected by a suitable MCB or integral fuse.

Means of isolation shall be provided to isolate all primary supplies and secondary circuits to contactors.

Relays shall be interchangeable and of the plug-in type with equal numbers of normally open and normally closed contacts of rating adequate for their operating duties.

#### *Cables*

All cables shall be low smoke zero halogen.

For any final sub-circuit and controls circuitry, no cable having a cross sectional area of less than 1.5mm<sup>2</sup> shall be used.

In the absence of any specific cable rating in the Schedules, the current rating of any cable shall not be less than that of the fuse or circuit breaker protecting the cable. In determining the compliance with above requirement the contractor will take into account all factors that would have a de-rating factor on the cable.

Polyvinylchloride Insulated (PVC Insulated):-

Insulated cables shall normally be drawn into conduit or trunking. Particular care shall be taken to ensure that the operating conditions are such that they are not installed in positions of ambient temperature greater than those laid down in the current edition of the IET Regulations. No single stranded conductors shall be used.

Cables shall be coloured in accordance with the current IET Regulations.

#### *Flexible cables*

Flexible cables and cords shall be rated in accordance with the current IEE Regulations and shall be of the types to suit the temperature conditions and for portable appliances shall be circular formation waterproofed sheathed overall.

All apparatus having flexible cables entering via entries shall be fitted with Strain Relief Grips of appropriate sizes to prevent undue strain being put upon conductors.

### 3.3 Installation of wiring



The work includes the installation of power supply from the ground level distribution board within the Fun Factory area AND the installation of smart speed control including high level and low-level temperature sensors.

Wiring shall be carried out strictly in accordance with IEE Regulations and include suitable containment secured to the building fabric where existing containment cannot be used.

### 3.4 Removal of redundant materials

All materials made redundant by the works shall be removed from site at the cost of the contractor appointed to undertake the work including all licenses necessary for disposal of any waste.

### 3.5 Commissioning

The contractor shall bring the Solar PV system into operation at the end of the installation.

The contractor shall arrange for the client's engineer to attend to have demonstrated to them the fixed wiring test results.



## 4 Tender breakdown

The tenderer is to complete the breakdown table as laid out below.

Item	Work description	Cost
1	Preliminaries including RAMS	
2	Circuit testing prior to work	
3	Access Equipment	
4	PV system installations	
5	Removal of all redundant materials	
6	Demonstrations to client's engineers	
	Sub-Total	
a	Contingency sum	500.00
	Total	

VAT to be excluded from above sums

