Myco

Project Name: 3825Wp PV

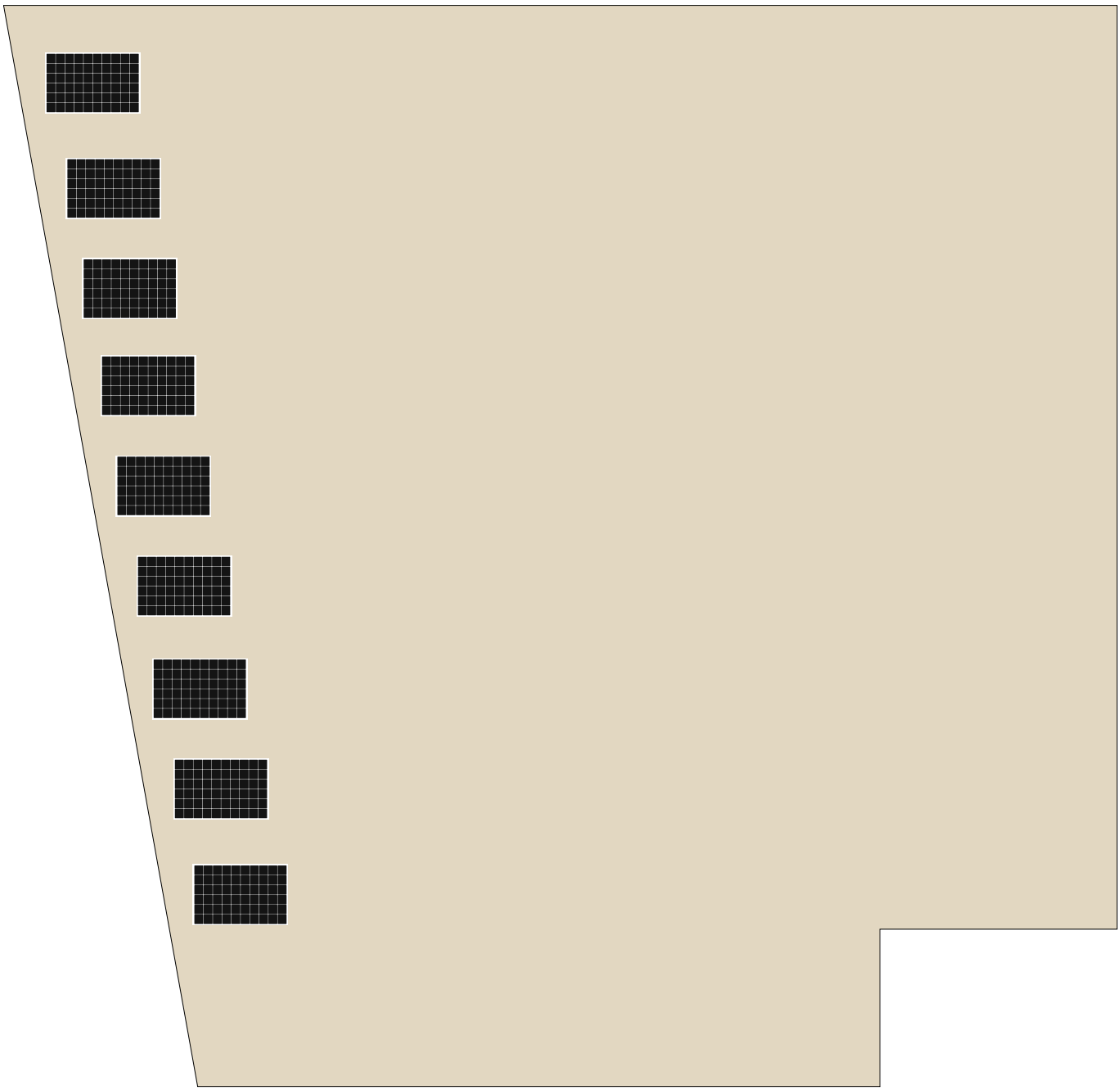
Address: Acorn House, Grays oinn road, WC1X 8DP

Date Created: 9th April 2024

Designer: Terry Warman

Roof Layout

Roof 1



Component list

Item	Quantity
 Trina Vertex S 425W Black Framed Mono (White Backsheet) solar panel	9
 SolaX X1-3.6T 1ph inverter	1
 Emlite ECA2 1ph Meter (Extended Cover)	1
 Label sheet	1
 AC isolator - IMO - 20A 4-pole	2
 MC4 4mm Connector Pair	4
 50m reel of 4mm2 solar cable	2
 Renusol console	9
 Console mounting bar	18
 Console mounting clips - pack of 4	9
 Console elongation bar - set of 2	18

Inverter checks

SolaX X1-3.6T 1ph

Panels			
PV power	**3825**	Rated AC output	**3680**

Input 1: 4 Trina Vertex S 425W Black Framed Mono (White Backsheet) solar panels in 1 strings

Panels		Inverter	
PV power	**1700 W**		
Open circuit voltage at -10° C	**218 V**	Max DC voltage	**600 V**
V_{mpp} at 40° C	**160 V**	V_{mpp} lower limit	**70 V**
V_{mpp} at -10° C	**181 V**	V_{mpp} upper limit	**580 V**
I_{mpp} at 40° C	**10 A**	Max DC input current	**16 A**

Max voltage

The open circuit voltage of the solar panels never exceeds the voltage limit of the inverter.

✓

Max power point range

The maximum power point voltage of the solar panels is always above the lower limit of the inverter MPPT tracker. The maximum power point voltage of the solar panels is always below the upper limit of the inverter MPPT tracker.

✓

Max Current

The maximum power point current of the solar panels is always below the maximum current for the inverter MPPT tracker.

Input 2: 5 Trina Vertex S 425W Black Framed Mono (White Backsheet) solar panels in 1 strings

Panels		**Inverter**	
PV power	**2125 W**		
Open circuit voltage at -10° C	**272 V**	Max DC voltage	**600 V**
V_{mpp} at 40° C	**200 V**	V_{mpp} lower limit	**70 V**
V_{mpp} at -10° C	**226 V**	V_{mpp} upper limit	**580 V**
I_{mpp} at 40° C	**10 A**	Max DC input current	**16 A**

Max voltage

The open circuit voltage of the solar panels never exceeds the voltage limit of the inverter.

Max power point range

The maximum power point voltage of the solar panels is always above the lower limit of the inverter MPPT tracker. The maximum power point voltage of the solar panels is always below the upper limit of the inverter MPPT tracker.

Max Current

The maximum power point current of the solar panels is always below the maximum current for the inverter MPPT tracker.

Electrical

SolaX X1-3.6T 1ph

AC Isolator

A AC isolator - IMO - 20A 4-pole has been specified for this input

Current

The rated isolator current (20A) is greater than the rated inverter current (17.6A)

Phases

The isolator is suitable for use on a single phase inverter.

Input 1

DC Isolator

Integrated isolator

This inverter contains an integrated DC Isolator.

Cable

18m of 4mm2 solar cable has been specified

Voltage drop

Voltage drop at maximum power point at 40°C will be around **1.53 V (0.96 percent)**

Input 2

DC Isolator

Integrated isolator

This inverter contains an integrated DC Isolator.

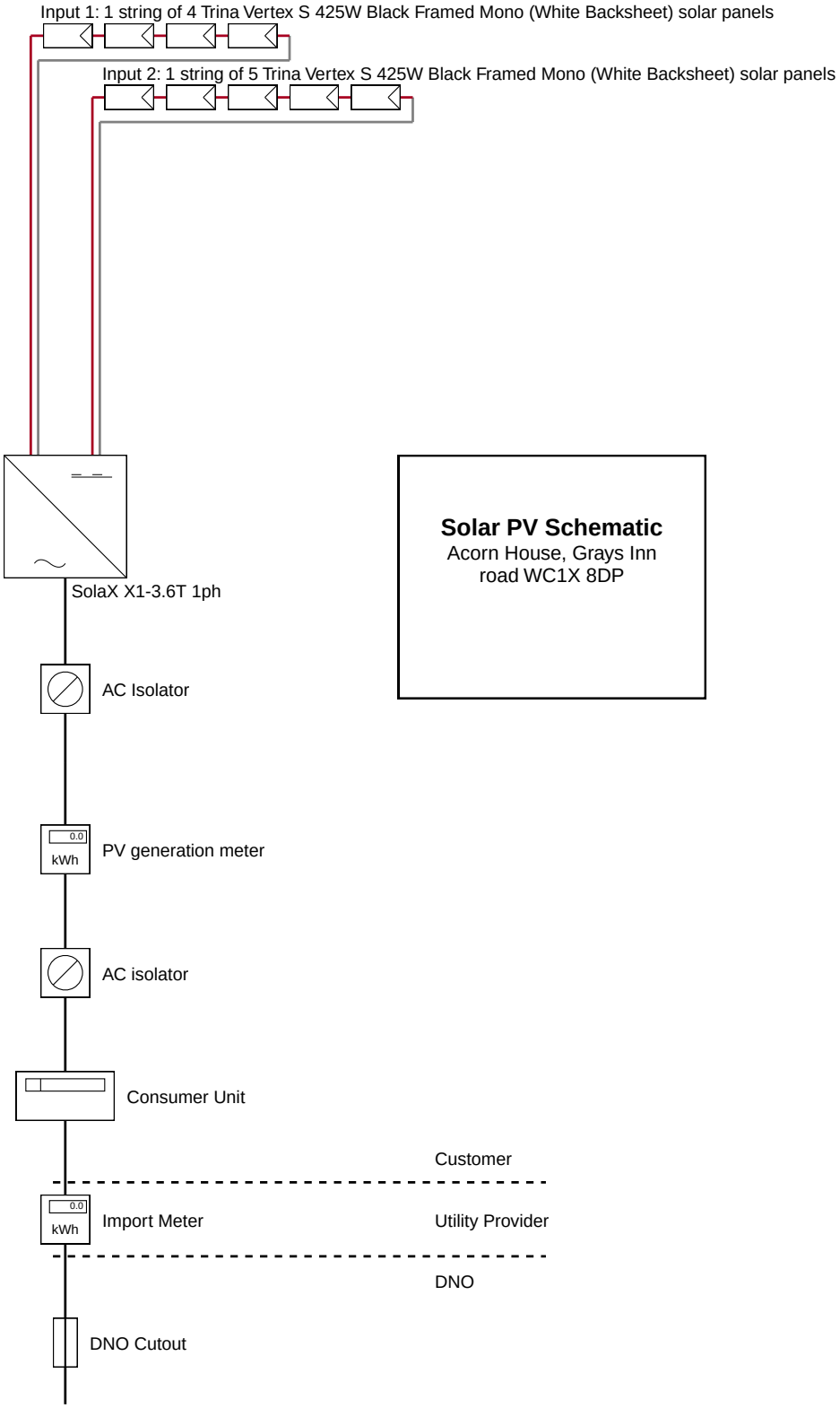
Cable

20m of 4mm2 solar cable has been specified

Voltage drop

Voltage drop at maximum power point at 40°C will be around **1.70 V (0.85 percent)**

Schematic diagram



Structural calculations

Weight loading calculations

For a traditional cut roof with rafters and purlins we recommend also using our rafter calculator to check the load-bearing capacity of the rafters. Even if the increase in loading is more than 15% the rafters may well be able to take the additional weight.

Please note that this method does not calculate the strength of the roof, and if a roof was badly constructed, does not meet existing building regulations, or is in poor condition then it may still not be appropriate to install an array.

Roof 1

Dead load from roof covering	0.49 kN/m^2
Imposed load	0.75 kN/m^2
Total loading without solar array	**1.24 kN/m^2**
Weight of solar panels and mounting	269 kg
Area covered by solar array	25.1 m^2
Loading imposed by solar array	0.11 kN/m^2
Total loading with solar array	**1.4 kN/m^2**

Increase in loading due to solar array: 8.9%

An increase of less than 15% in the load imposed on a roof is not considered to be a significant change (The Building Regulations 2010, Approved Document A).

Performance Estimate

Site details

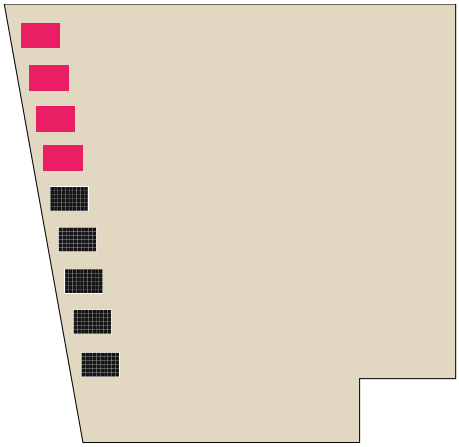
Client	Myco
Address	Acorn House, Grays oinn road

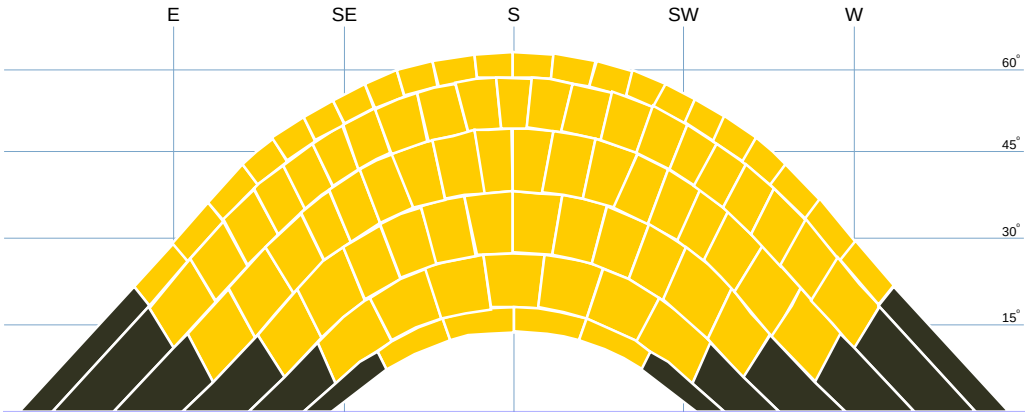
The sunpath diagram shows the arcs of the sky that the sun passes through at different times of the day and year as yellow blocks. The shaded area indicates the horizon as seen from the location of the solar array. Where objects on the horizon are within 10m of the array, an added semi-circle is drawn to represent the increased shading. Blocks of the sky that are shaded by objects on the horizon are coloured red, and a shading factor is calculated from the number of red blocks. The performance of the solar array is calculated by multiplying the size of the array (kWp) by the shading factor (sf) and a site correction factor (kk), taken from tables which take account of the geographical location, orientation and inclination of the array.

Inverter 1

SolaX X1-3.6T 1ph

Input 1

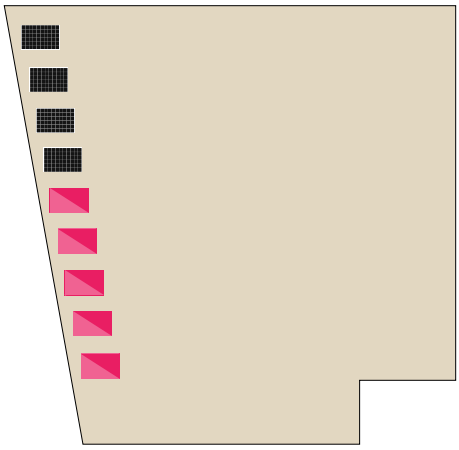


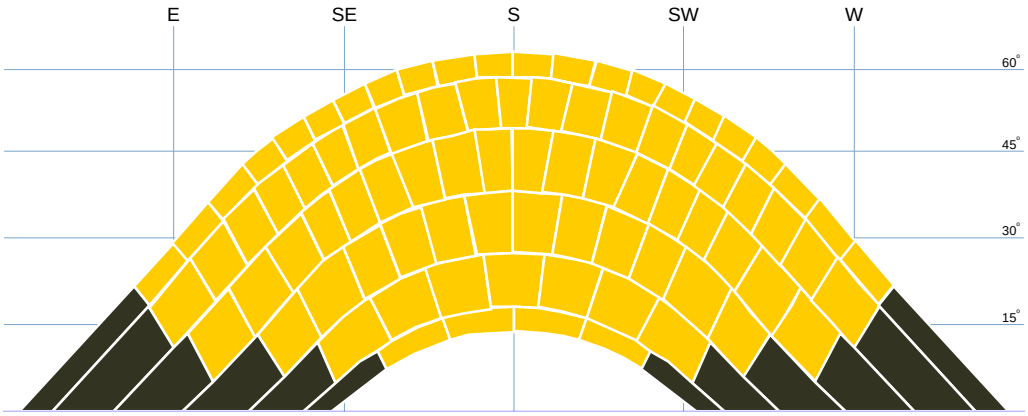


A. Installation data		
Installed capacity of PV system – kWp (stc)	**1.700**	kWp
Orientation of the PV system – degrees from South	**-18**	°
Inclination of system – degrees from horizontal	**5**	°
Postcode region	**1**	

B. Performance calculations		
kWh/kWp (Kk)	**862**	kWh/kWp
Shade factor (SF)	**1.00**	
Estimated output (kWp x Kk x SF)	**1465**	kWh

Input 2





A. Installation data		
Installed capacity of PV system – kWp (stc)	**2.125**	kWp
Orientation of the PV system – degrees from South	**-18**	°
Inclination of system – degrees from horizontal	**5**	°
Postcode region	**1**	

B. Performance calculations		
kWh/kWp (Kk)	**862**	kWh/kWp
Shade factor (SF)	**1.00**	
Estimated output (kWp x Kk x SF)	**1832**	kWh

Performance Summary

A. Installation data		
Installed capacity of PV system – kWp (stc)	**3.825**	kWp
Orientation of the PV system – degrees from South	**See individual inputs**	
Inclination of system – degrees from horizontal	**See individual inputs**	
Postcode region	**1**	
B. Performance calculations		
kWh/kWp (Kk)	**See individual inputs**	
Shade factor (SF)	**See individual inputs**	
Estimated output (kWp x Kk x SF)	**3297**	kWh

Important Note: The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. This estimate is based upon the standard MCS procedure is given as guidence only for the first year of generation. It should not be considered as a guarantee of performance.

This system performance calculation has been undertaken using estimated values for array orientation, inclination or shading. Actual performance may be significantly lower or higher if the characteristics of the installed system vary from the estimated values.