



Noemi Ripert

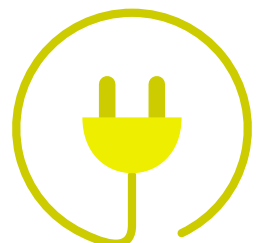
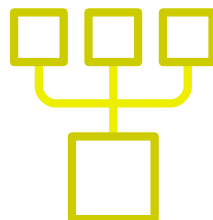
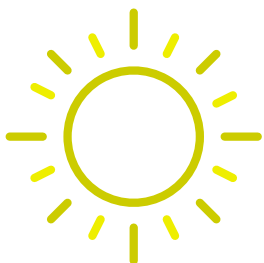
Project Name: Queens Hall, High Street, RH175EL.
Parish Council 50 panels no batteries

Phone: 01444 454 276

Address: Queens Hall, High Street, RH17 5EL

Date Created: 14th March 2024

Designer: Brian Bonner

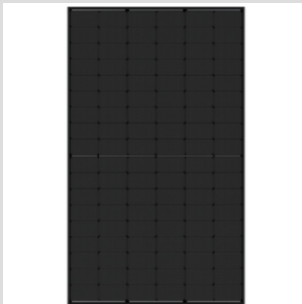
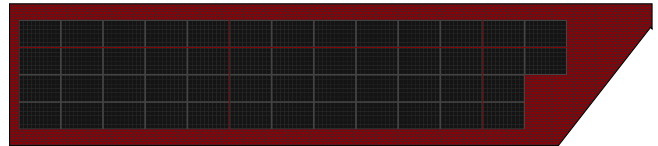


System Overview

Your system comprises **50 Jinko Tiger Neo 440W N-Type All Black Mono solar panels** to collect sunlight and turn it into DC electricity.

The panels will be connected to **1 Growatt 25KTL3-X 3ph inverter**, which converts the DC electricity into mains (AC) electricity.

We include all the isolators, wiring and meters needed to connect the system safely to your electrical system. Your system will be installed and certified by our trained installation team.



Solar Panels: Jinko Tiger Neo 440W N-Type All Black Mono x 50

No description

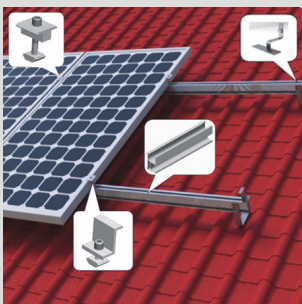
Model	JKM440N-54HL4R-B
Power	440 watts
Dimensions	1134 x 1762mm



Inverter: Growatt 25KTL3-X 3ph

The new Growatt KTL-3 offers an easy to use OLED display, with a sleek new design which is 40% lighter and more compact than the previous model.

AC Power	27700 watts
Trackers	2



Mounting: Fastensol pitched roof mounting system

Fastensol are an excellent value, fully MCS accredited choice for pitched roof mounting systems, suitable for the majority of roof types.

Designed for	Plain Tile roofs
Colour	Not specified

System Performance

We have made an estimate of the annual energy generation of your system. This takes into account the following factors that affect the output of a solar array.

The location of the system

Sunlight is weaker near the poles than near the equator. We use data from a meteorological model of the intensity of sunlight over the course of the year in different locations all over the world.

The orientation of the system

Solar panels that face south receive a little more sunlight than panels that face east or west. However, in diffuse light the orientation of the panels makes little difference, so the effect is less marked than many people imagine.

The degree of shading

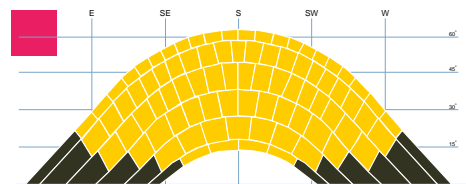
If you have trees, neighbouring buildings or nearby high ground that will shade your PV array, the output of the system will be reduced. We have used a 'sunpath diagram' that estimates how often sunlight will be blocked from reaching the panels.

Roof diagram

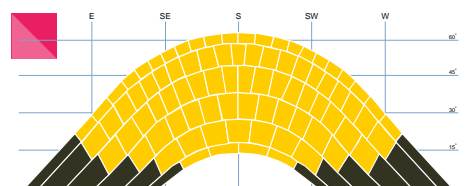


Roof South Orientation: 8° Pitch: 24°

Sunpath diagrams



Shade factor: 1.00 Kk: 1099



Shade factor: 1.00 Kk: 1099

**We expect your system to generate
24,178 kWh per year**

Installation data

Installation capacity of PV system – kWp (stc)	22 kWp
Orientation of the PV system – degrees from South	8°
Inclination of system (pitch) – degrees from horizontal	24°
Postcode region	Zone 2

Performance Calculations

kWh/kWp (Kk)	See sunpath diagrams
Shade Factor (SF)	See sunpath diagrams
Estimated output (kWp x Kk x SF)	24178 kWh

Estimated PV self-consumption

Assumed annual electricity consumption	25000kWh
Expected solar generation consumed in property	8087kWh

Important note: The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of sunlight from location to location and from year to year. This estimate is based upon a model that takes account of meteorological data at your location and makes an allowance for losses due to shading of the panels. This is a complex calculation however, and no model can be 100% accurate. It should not be considered a guarantee of performance.

If shading is present on your system that will reduce its output to the factor stated. This factor was calculated using industry standard shading methodology and we believe that this will yield results within 10% of the actual energy estimate stated for most systems.

Your energy explained

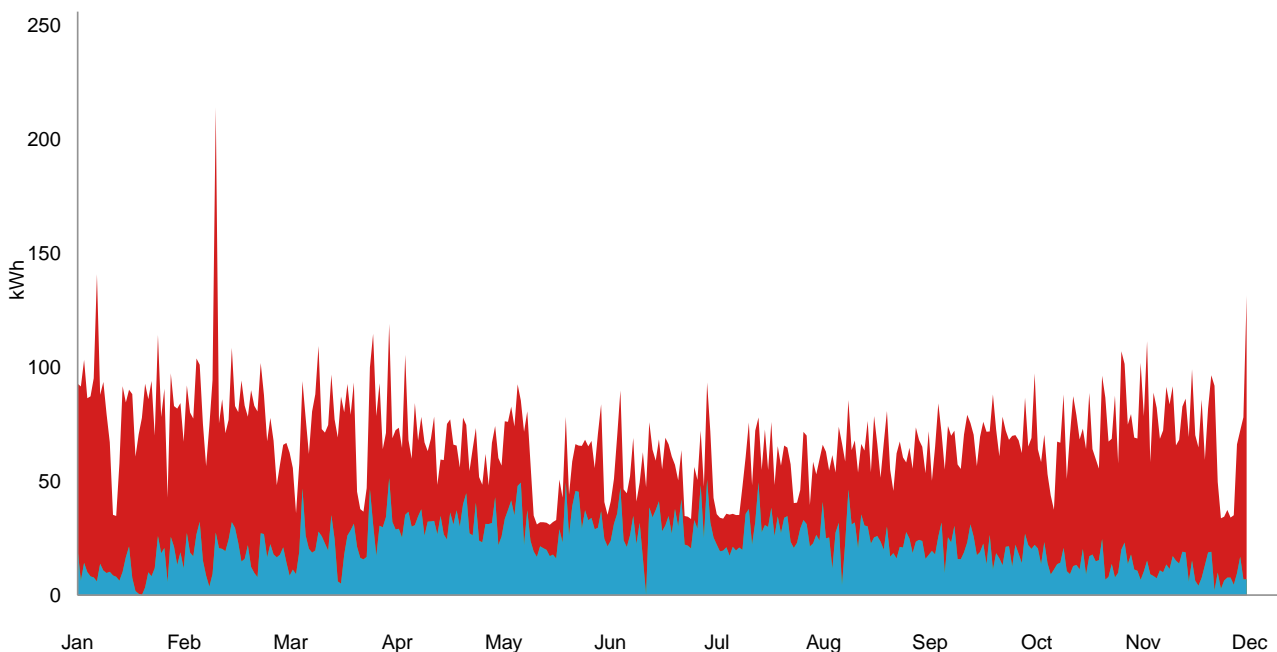
In addition to the MCS calculation of system output we have run a more detailed model of your system to estimate how much of the electricity generated by the system you are likely to use yourself and how much will go to the grid.

Smart Export Guarantee (SEG) information

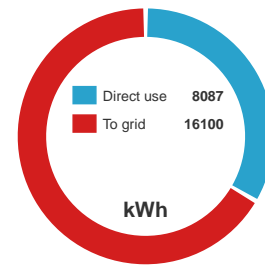
The Smart Export Guarantee (SEG) enables Generators to receive payments from electricity suppliers for the electricity they export back to the National Grid, providing specific criteria are met. Your installation will be MCS accredited, which means that you should be able to apply for SEG payments from your electricity supplier. Further details on the SEG and its eligibility requirements, including how to apply, can be found online at ofgem.gov.uk

Where your electricity will come from in a typical year

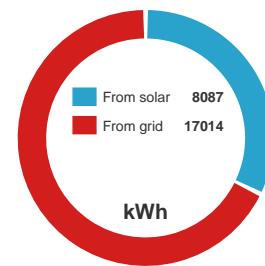
Based on an electricity usage of 25,000 kWh per year, the graph below shows how much electricity used in the property is expected to come directly from the solar panels (blue) and how much is expected to be imported from the grid (red).



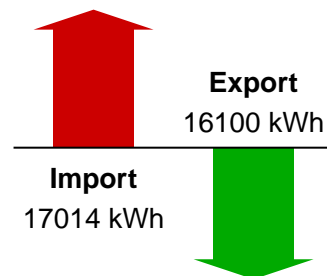
Annual Generation



Annual Consumption



Annual Import/Export



Environmental Benefits

Your new PV system will supply your property with clean, green electricity - and in sunny periods some will also be exported back to the grid.

Overall you'll be making a big contribution to reducing CO₂ not just by lowering the carbon intensity of your own electricity, but by putting low-carbon electricity back in the grid for others to use too.

Your current electricity supply produces

5,308 kg CO₂
each year

32% will be supplied by solar, saving

1,717 kg CO₂
each year

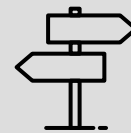
16,091 kWh will be exported, saving

3,417 kg CO₂
each year

Total savings

5,134 kg CO₂
each year

Your yearly CO₂
reduction of 5,134 kg
is equal to...



a car ride of 18,335
miles

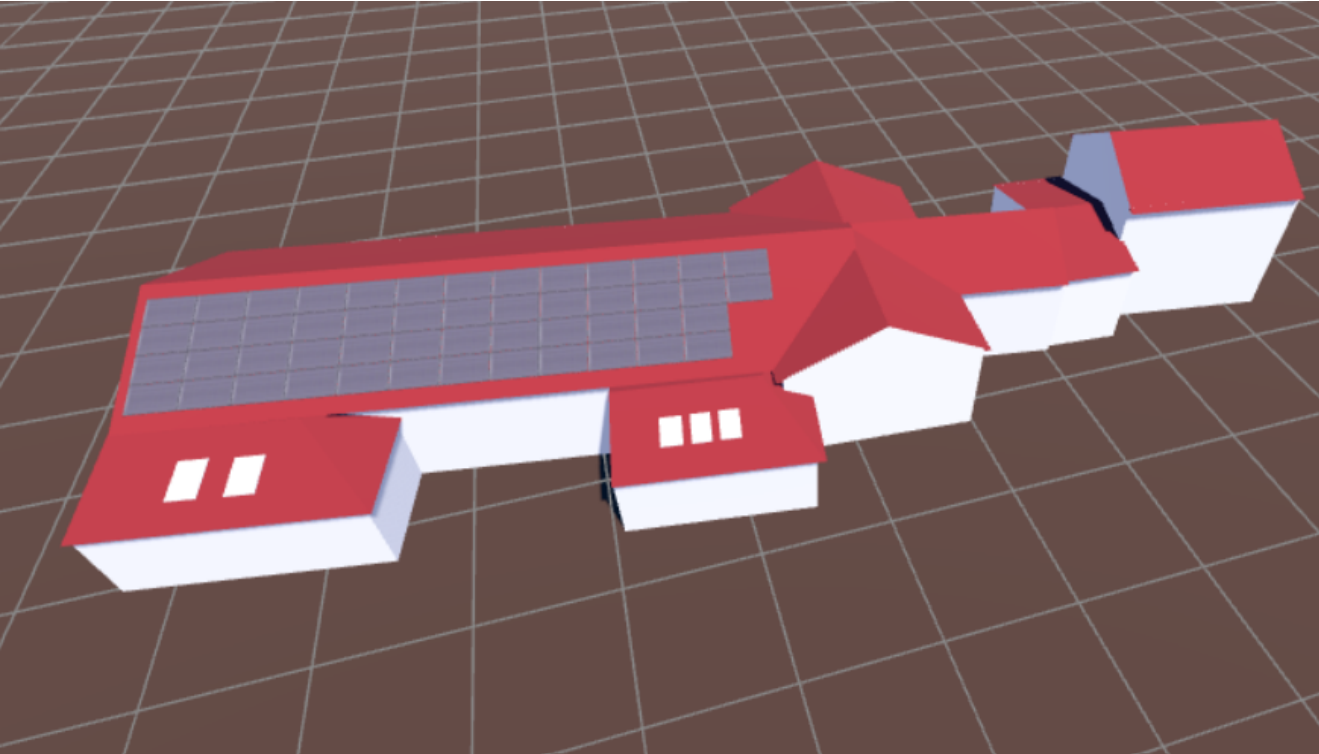
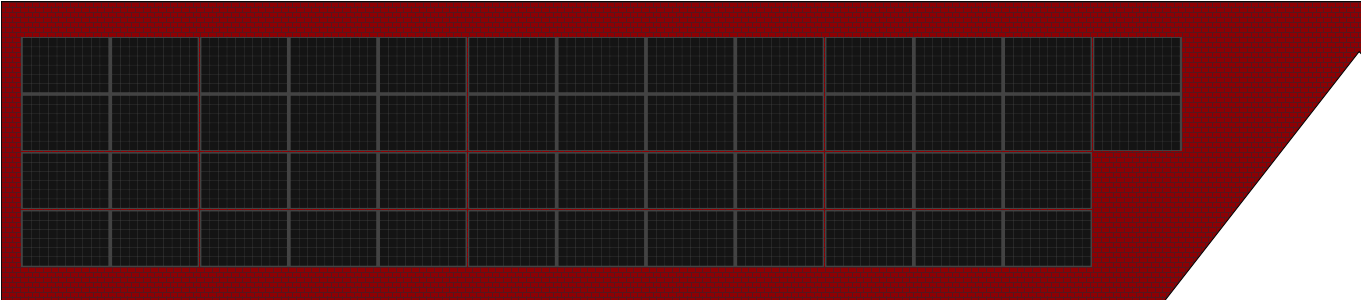


CO₂ absorbed by 235
trees











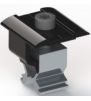
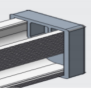


Disclaimer: We calculate and compare the likely annual CO₂ emissions for your home based on your generation and usage with the solar PV system detailed in this document versus estimates for a property like yours using energy from the grid. Your actual CO₂ emissions will depend on lots of factors, like how much energy your solar panels generate, how much of this energy you use directly and how much energy you continue to use from the grid. To calculate what these savings equate to in miles driven, we base this on the CO₂ emissions of an average sized diesel car as outlined in the UK government's 'Greenhouse gas reporting: conversion factors 2022' (<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>). To calculate what these savings equate to as the average amount of CO₂ absorbed by trees, we base this on a rate of 25kg per tree per year. Trees absorb anywhere between 10 and 40kg of CO₂ per year on average, depending on a whole host of factors including the species, location, planting density, and age.

Roof Layout

Roof South



Component list

Item	Quantity
 Jinko Tiger Neo 440W N-Type All Black Mono solar panel	50
 Growatt 25KTL3-X 3ph inverter	1
 Emlite EMP1 3ph Meter	1
 Label sheet	1
 2 x Smoke Alarms	1
 AC isolator - IMO - 63A 4-pole	2
 K&N DC isolator - KGD40-3	2
 MC4 10mm Connector Pair	4
 MC4 16mm Connector Pair	4
 100m reel of 10mm ² solar cable	2
 50m reel of 16mm ² solar cable	4
 Fastensol black universal clamp	108
 Fastensol black end cap	16
 Fastensol portrait flat tile roof hook	160
 Genius flat tile	160



Fastensol rail splice

48



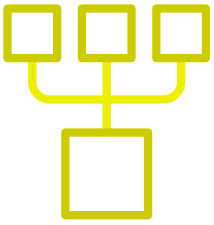
BB200evo Reinforced BirdBlocker (30m)

2

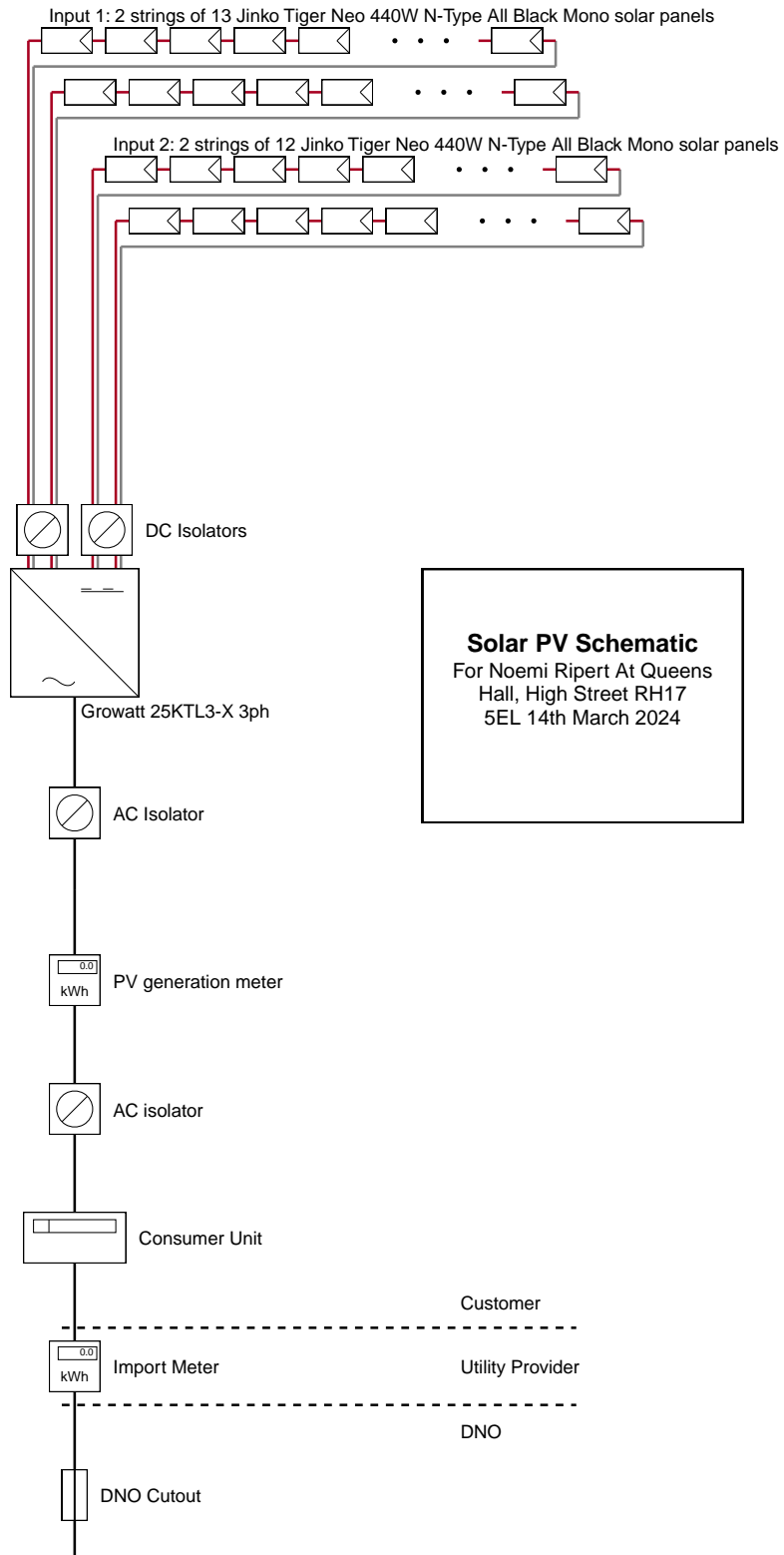


Fastensol silver rail 3550mm

52



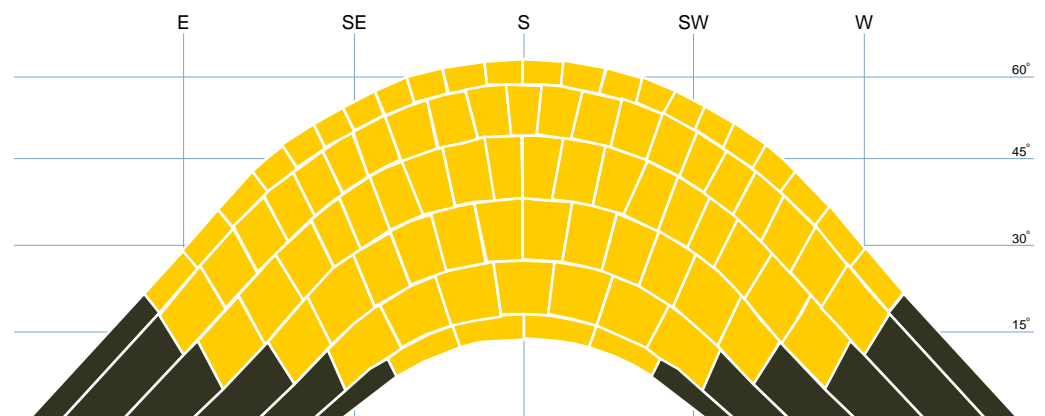
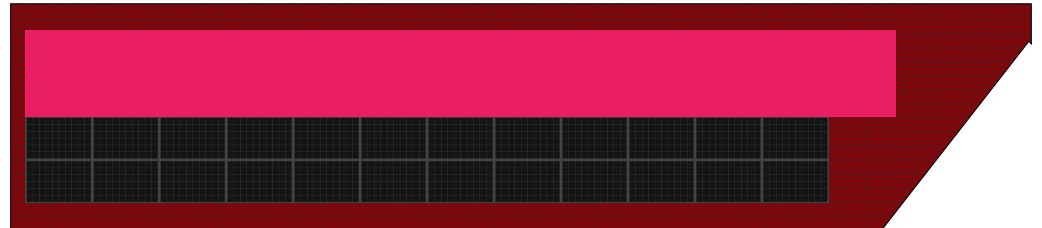
Schematic diagram



Inverter 1

Growatt 25KTL3-X 3ph

Input 1



A. Installation data

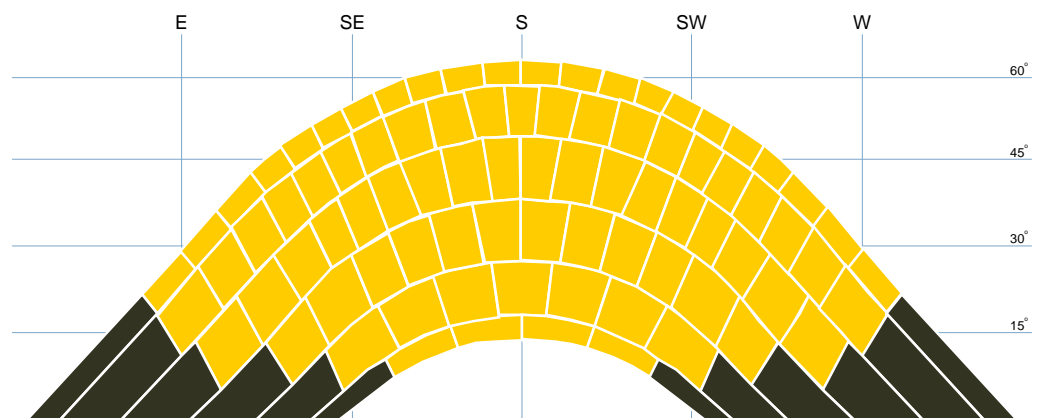
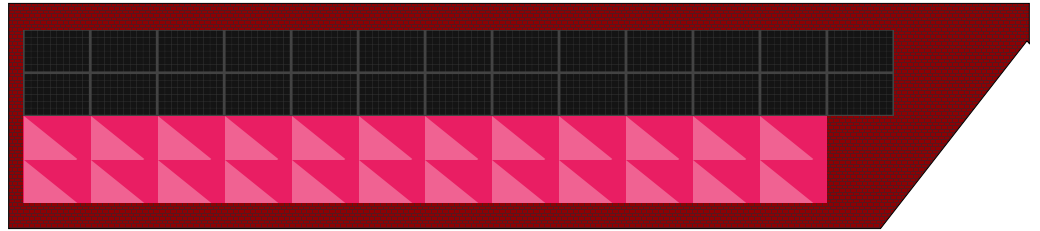
Installed capacity of PV system – kWp (stc)	11.440	kWp
Orientation of the PV system – degrees from South	8	°
Inclination of system – degrees from horizontal	24	°
Postcode region	2	



B. Performance calculations

kWh/kWp (Kk)	1099	kWh/kWp
Shade factor (SF)	1.00	
Estimated output (kWp x Kk x SF)	12573	kWh

Input 2



A. Installation data

Installed capacity of PV system – kWp (stc)	10.560	kWp
Orientation of the PV system – degrees from South	8	°
Inclination of system – degrees from horizontal	24	°
Postcode region	2	



B. Performance calculations

kWh/kWp (Kk)	1099	kWh/kWp
Shade factor (SF)	1.00	
Estimated output (kWp x Kk x SF)	11605	kWh



Financial

Generation

The system is expected to generate 24178 kWh per year initially, decreasing gradually as the solar cells degrade. Over the 25 year term of this financial projection the total generation is expected to be 568112 kWh, of which 568112 kWh will be consumed on site and 0 kWh exported.



Payback

After adjusting projected costs and benefits for inflation, and applying a discount rate of 4%, the initial system cost of £17,439.43 is expected to be recouped after 2 years.



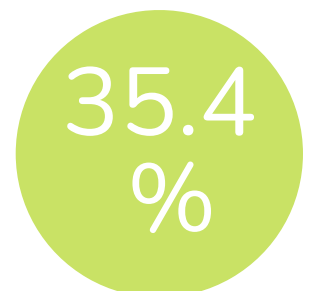
Net Present Value

The total present value of future benefits and costs, using a discount rate of 4% per year, is £133,321.70. The cost of the PV system is £17,439.43. The net present value of the project is therefore £115,882.27. A positive net present value is a good indication that the project is financially worthwhile.



IRR

The Internal Rate of Return is a useful measure for comparing the relative profitability of investments.



Disclaimer

Our financial model calculates the benefits of a solar PV installation (such as savings in electricity, or payments for exported electricity) and costs (the initial purchase cost, and any future maintenance costs if entered), over the projected lifespan of the system. Values are corrected for inflation, system degradation, and discount rate - a measure that accounts for the fact that a promise of a monetary sum in the distant future is usually considered less valuable than the promise of the same sum in the near future.

A model is only as accurate as the assumptions it makes. You should consider whether the values chosen are appropriate for your situation. There are many variables that dictate the financial return of a solar installation and we cannot forecast how they may change in the future. This financial projection shows a likely scenario for future financial returns. Actual returns may vary significantly from this forecast.

Assumptions

Inflation rate	2%
Cost of electricity	£0.3 /kWh <small>increases with inflation</small>
System size	22 kWp <small>degrades at 0.5% per year</small>
Discount rate	4%
Projection length	25 years

Income and savings

The projected income from the system over the project lifetime in payments for generated and exported electricity, along with electricity savings, are shown in the table and graph below.

These figures assume an inflation rate of 2 percent.

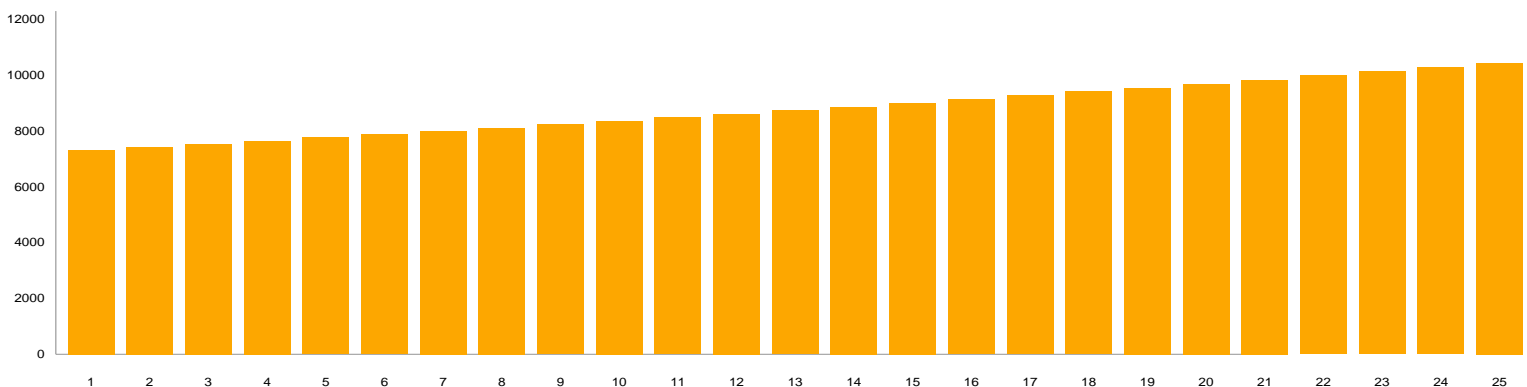
	Export payments	Electricity savings	Total
Year 1	0	7308	7308
Year 2	0	7417	7417
Year 3	0	7527	7527
Year 4	0	7639	7639
Year 5	0	7753	7753
Year 6	0	7869	7869
Year 7	0	7986	7986
Year 8	0	8105	8105
Year 9	0	8225	8225
Year 10	0	8348	8348
Year 11	0	8472	8472
Year 12	0	8599	8599
Year 13	0	8727	8727
Year 14	0	8857	8857
Year 15	0	8989	8989
Year 16	0	9123	9123
Year 17	0	9259	9259
Year 18	0	9397	9397
Year 19	0	9537	9537
Year 20	0	9679	9679
Year 21	0	9823	9823
Year 22	0	9969	9969
Year 23	0	10118	10118
Year 24	0	10269	10269
Year 25	0	10422	10422



Total Export Payments
over 25 years



Electricity savings
over 25 years

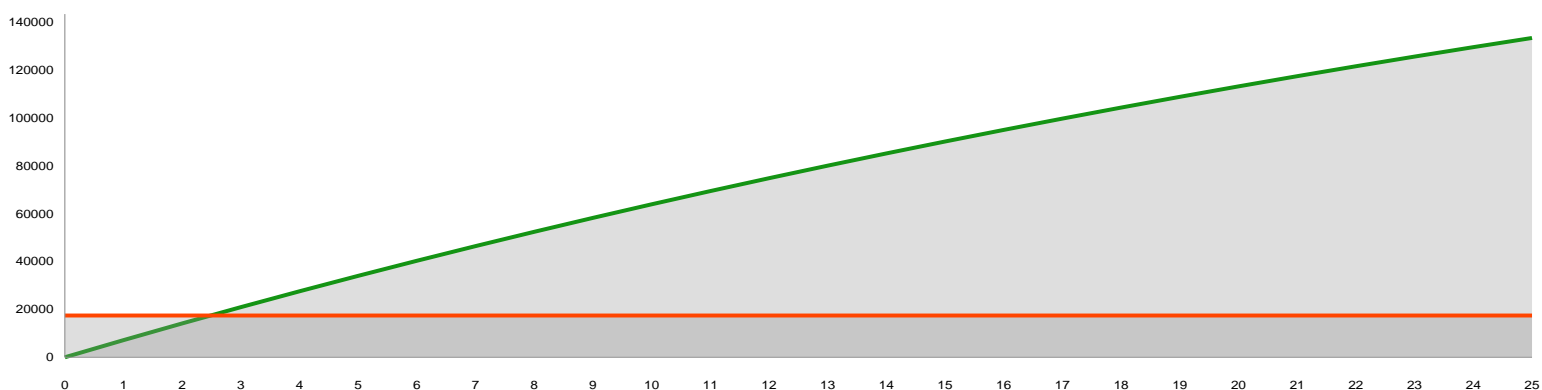


The bottom line

The table and graph below show the discounted costs for the project (including the initial capital required for the installation), against the total discounted benefits from income and savings on electricity bills.

The system pays for itself in 2 years.

	Discounted benefits	Cumulative benefits	Discounted costs	Cumulative costs	Cashflow
Year 1	7161	7161	0	17439	-10278
Year 2	6977	14139	0	17439	-3301
Year 3	6798	20937	0	17439	3498
Year 4	6623	27561	0	17439	10121
Year 5	6453	34014	0	17439	16574
Year 6	6287	40301	0	17439	22862
Year 7	6126	46427	0	17439	28988
Year 8	5968	52396	0	17439	34956
Year 9	5815	58211	0	17439	40771
Year 10	5666	63876	0	17439	46437
Year 11	5520	69397	0	17439	51957
Year 12	5378	74775	0	17439	57335
Year 13	5240	80015	0	17439	62575
Year 14	5105	85120	0	17439	67681
Year 15	4974	90094	0	17439	72655
Year 16	4846	94941	0	17439	77501
Year 17	4722	99663	0	17439	82223
Year 18	4601	104263	0	17439	86824
Year 19	4482	108746	0	17439	91306
Year 20	4367	113113	0	17439	95673
Year 21	4255	117368	0	17439	99928
Year 22	4146	121513	0	17439	104074
Year 23	4039	125552	0	17439	108113
Year 24	3935	129488	0	17439	112048
Year 25	3834	133322	0	17439	115882



Quote



Noemi Ripert
Queens Hall
High Street
RH17 5EL

Quote reference: 809489
Quote date: 14/03/2024
Quote by: Brian Bonner
Quote validity: 30 days

Description of goods and services

Price

Goods

50x Jinko Tiger Neo 440W N-Type All Black Mono solar panel
Growatt 25KTL3-X 3ph inverter
Emlite EMP1 3ph Meter
Label sheet
2 x Smoke Alarms
2x AC isolator - IMO - 63A 4-pole
2x K&N DC isolator - KGD40-3
4x MC4 10mm Connector Pair
4x MC4 16mm Connector Pair
2x 100m reel of 10mm² solar cable
4x 50m reel of 16mm² solar cable
108x Fastensol black universal clamp
16x Fastensol black end cap
160x Fastensol portrait flat tile roof hook
160x Genius flat tile
48x Fastensol rail splice
2x BB200evo Reinforced BirdBlocker (30m)
52x Fastensol silver rail 3550mm

Services

Installation
Scaffolding
10% Community Building Discount

Total before VAT	£17,439.43
VAT at 0%	£0.00

Total including VAT £17,439.43

Order form

To proceed with this order please sign below to acknowledge that you have read and accept the information contained within this quote document and our terms and conditions.

Customer signature

Customer name

Date
