APPENDIX A

QUOTE A.

Recommended System Option

10.8 kW	£1,621	£18,950	£18,950
System Size	Estimated Annual Electricity Bill Savings	Total System Price excluding VAT	Net System Price excluding VAT

Your Solution

FoxESS ECS Series

10.881 kWh of Usable Capacity
Fox ESS
1 x ECS4100-H3

BIRD BLOCKER (PER PANEL)

Standard bird blocker
24 x BIRD BLOCKER (PER PANEL)

Solar Panels

Hengdian Group DMEGC Magnetics
10.800 kW Total Solar Power
24 x 450 Watt Panels (DM450M10RT-B54HBB [450Wp Glass/Glass All-Black])
6,882 kWh per year

FoxESS K Series Hybrid Inverter

8kW of Inverter Power
Fox ESS 1 x KH8

Design Guide

The council offices consume around 6,000 kWh annually in electricity. Most of this usage is attributed to general daytime office use. There is very little activity in the evenings except for occasional meetings which occur once or twice a month. This places less of a requirement for battery storage as there is a minimal benefit for storing solar energy to use in the evenings.

However, due to the topography of the land, the council offices are surrounded by tall trees and hills. This will cause significant shading on the roofs from mid-autumn to early-spring. During these winter months there will be little activity from solar energy, however the offices could benefit from charging a battery at night utilising an energy tariff with a low-cost off-peak rate. The battery would then be able to supply the offices for most of the day instead of importing electricity at the higher peak rate.

In the peak of winter it is estimated that the offices will use around 25kWh of electricity per day, however it is not economical to fully cover this usage with battery storage as during the summer months the large battery capacity is mostly redundant. As a battery sizing guide, a capacity that is between 50% to 80% of the average daily usage of a building that is occupied 7 days a week tends to yield the most efficient return on investment. Therefore, the target capacity is between 10kWh and 15kWh of battery storage.

There are two main roof areas to consider: the sheet metal roofs of the workshop and the tiled roof of the office building. Both have east and west-facing aspects, which, when utilised, will allow the solar panels to generate electricity more consistently throughout the day; east-facing panels capturing morning sun, and west-facing panels benefiting from the afternoon sun. As the office building's roof is higher and less affected by shading, it is the preferred location for the panels. Additionally, placing the panels at the front of the offices could serve as a visible demonstration of the council's commitment to sustainability, promoting this initiative to the wider community.

Recommended Solution:

24 x 450Wp dual-glass all-black panels (8 east, 16 west) fitted on office building roof with bird guard. Including an 8kW inverter with 10.9kWh of usable battery storage mounted in the workshop.

QUOTE B.

Quote

Chepping Wycombe parish Council
Chepping Wycombe parish Council
Cock Lane
Penn
High Wycombe

Quote reference: 1046701
Quote date: 06/12/2024
Quote by:
Quote validity: 30 days

Description of goods and services	Price

Goods

36 x Jinko Tiger Neo 440W N-Type All Black Mono solar panel
80 x Metasole flat channel (portrait)
112 x Renusol end clamp (black)
16 x Renusol mid clamp (black)
6 x Renusol Metasole+ screw (box of 100)
48 x Metasole flat channel (landscape)
Growatt MOD 12000 TL3-X 3ph inverter
Tesla Powerwall 3 + Gateway inverter
2 x AC isolator - IMO - 20A 4-pole
IMO 55A DC Isolator 2-pole 1-string
IMO 32A DC Isolator 2-pole 1-string
4 x MC4 4mm Connector Pair
2 x AC isolator - IMO - 63A 4-pole
100m reel of 4mm2 solar cable
Emlite EMP1 3ph Meter
2 x Label sheet
GivEnergy GEM630CT 3ph Modbus Energy Meter
Growatt TPM Three Phase Smart Meter for Growatt 3ph Inverters
Growatt ShineWiFi-X
Battery Hazard Warning Label Pack

Services
Mechanical installation
Scaffold
Electrical Installation
Structural Assessment

Total goods and services	£20,863.66
System cost	£20,863.66
Total before VAT	£20,863.66
VAT at 0%	£0.00
Total including VAT	**£20,863.66**

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**

Your Solar Proposal

[illegible] to provide a design for a solar PV system at Chepping Wycombe parish Council, Cock Lane, Penn, High Wycombe, Buckinghamshire. We're delighted to supply the attached proposal for a 15.84 kW solar array.

We expect your system to generate 10,547 kWh of clean electricity every year, and save 2,184 kg CO_2 of carbon.

There are full details on the following pages. We hope you enjoy the read!

Kind regards,

This proposal is for:

Chepping Wycombe parish Council

Chepping Wycombe parish Council
Cock Lane
Penn
High Wycombe
Buckinghamshire
HP10 8DS

Prepared	6 December 2024
Valid for	30 days

15.84 kW PV System

£20,863 inc VAT: Expected payback 13 years. Estimated first year savings £1,072

10,547 kWh/yr: Annual CO_2 savings of 2,184 kg

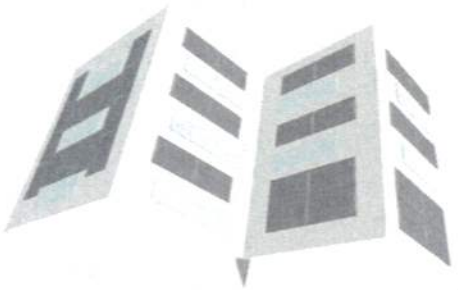
System Overview

Your system comprises **36 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 MOD 12000 TL3-X 3ph inverter and 1 Tesla Powerwall 3 + Gateway inverter**, which convert the DC electricity into mains (AC) electricity.

A Tesla Powerwall 3 battery storage system will allow you to store excess energy from sunny days, so that you can use your generated electricity at night too.

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 36

Jinko's latest N-Type modules are loaded with features and technologies that deliver a high power performance and guarantee reliability and safety ove...

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

Inverter

Growatt MOD 12000 TL3-X 3ph

The Growatt MOD 3ph has an ultra-low start-up and wide working voltages which enable wider power generation windows, meaning more energy from your arr...

Tesla Powerwall 3 + Gateway

Tesla Powerwall 3 + Gateway

System Components

Battery: Tesla Powerwall 3

Tesla Powerwall 3

Capacity	13.500 kWh
Quantity	1

Mounting: Renusol Metasole mounting system

Renusol Metasol mounting system for sheet metal roofs comes with short, non-continuous rails to provide flexibility and save material along the way.

Designed for	Trapezoidal Sheet Metal 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.

We expect your system to generate

10,547 kWh per year

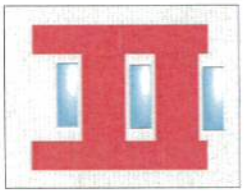
Installation data

Installation capacity of PV system – kWp (stc)	16 kWp
Orientation of the PV system – degrees from South	See roof diagrams
Inclination of system (pitch) – degrees from horizontal	See roof diagrams
Postcode region	Zone 1

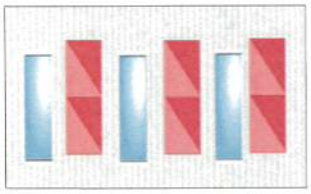
Performance Calculations

kWh/kWp (Kk)	See sunpath diagrams
Shade Factor (SF)	See sunpath diagrams
Estimated output (kWp x Kk x SF)	10547 kWh

Roof diagrams

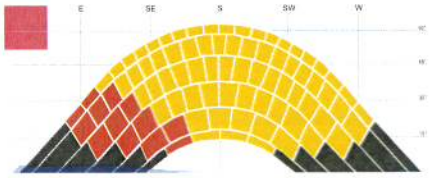


Roof West Orientation: 84° Pitch: 38°

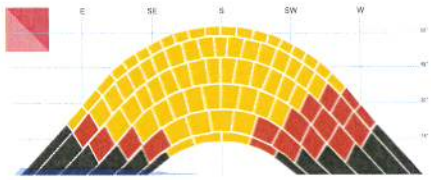


Roof East Orientation: -96° Pitch: 38°

Sunpath diagrams



Shade factor: 0.87 Kk: 794



Shade factor: 0.83 Kk: 755

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.

APPENDIX B

		Actual Year To Date	Current Annual Bud	Variance Annual Total	Committed Expenditure	Funds Available	% Spent
Works & Service							
301	Works Depot, Office & Wardens						
1004	Service Charges	0	200	200			0.0%
	Works Depot, Office & Wardens :- Income	**0**	**200**	**200**			**0.0%**
4011	Rates	9,184	9,056	(128)		(128)	101.4%
4012	Water	128	500	372		372	25.7%
4014	Electricity	1,330	3,000	1,670		1,670	44.3%
4015	Gas	1,300	2,500	1,200		1,200	52.0%
4017	Cleaning & Refuse	245	400	155		155	61.2%
4036	Property Maintenance	1,999	2,000	1		1	100.0%
4037	Grounds Maintenance	173	300	127		127	57.8%
4038	Maintenance Contract	802	1,400	599		599	57.3%
	Works Depot, Office & Wardens :- Indirect Expenditure	**15,162**	**19,156**	**3,994**	**0**	**3,994**	**79.1%**
	Net Income over Expenditure	**(15,162)**	**(18,956)**	**(3,794)**			
304	Vehicles Tools & Equipment						
4010	Staff Costs Misc	439	600	161		161	73.1%
4041	Equipment Hire	0	4,000	4,000		4,000	0.0%
4042	Equipment Maintenance	1,160	5,000	3,840		3,840	23.2%
4043	Vehicle Maintenance	424	4,500	4,076		4,076	9.4%
4044	Vehicle Fuel	2,672	5,000	2,328		2,328	53.4%
4045	Vehicle Tax & Insure	159	3,300	3,141		3,141	4.8%
4046	Small Tools & Equipment	1,720	3,000	1,280		1,280	57.3%
4050	Chemicals	0	200	200		200	0.0%
	Vehicles Tools & Equipment :- Indirect Expenditure	**6,574**	**25,600**	**19,026**	**0**	**19,026**	**25.7%**
	Net Expenditure	**(6,574)**	**(25,600)**	**(19,026)**			
305	Litter, Rubbish & Graffiti						
4016	Knotweed	0	500	500		500	0.0%
4017	Cleaning & Refuse	1,330	2,800	1,470		1,470	47.5%
4018	Litter	0	500	500		500	0.0%
	Litter, Rubbish & Graffiti :- Indirect Expenditure	**1,330**	**3,800**	**2,470**	**0**	**2,470**	**35.0%**
	Net Expenditure	**(1,330)**	**(3,800)**	**(2,470)**			

Continued over page

		Actual Year To Date	Current Annual Bud	Variance Annual Total	Committed Expenditure	Funds Available	% Spent
311	Cemeteries						
1031	Burial & Memorials Income In	2,452	7,000	4,548			35.0%
1032	Burial & Memorials Income Out	8,176	18,000	9,824			45.4%
	Cemeteries :- Income	**10,628**	**25,000**	**14,372**			**42.5%**
4011	Rates	953	1,005	52		52	94.8%
4012	Water	154	180	26		26	85.6%
4037	Grounds Maintenance	181	1,000	819		819	18.1%
	Cemeteries :- Indirect Expenditure	**1,288**	**2,185**	**897**	**0**	**897**	**58.9%**
	Net Income over Expenditure	**9,340**	**22,815**	**13,475**			
314	War Memorial & Closed Churchya						
4036	Property Maintenance	0	1,200	1,200		1,200	0.0%
4037	Grounds Maintenance	894	1,000	106		106	89.4%
	War Memorial & Closed Churchya :- Indirect Expenditure	**894**	**2,200**	**1,306**	**0**	**1,306**	**40.6%**
	Net Expenditure	**(894)**	**(2,200)**	**(1,306)**			
321	Footpaths & Street Furniture						
4036	Property Maintenance	45	500	455		455	9.0%
	Footpaths & Street Furniture :- Indirect Expenditure	**45**	**500**	**455**	**0**	**455**	**9.0%**
	Net Expenditure	**(45)**	**(500)**	**(455)**			
322	Footway Lighting						
4014	Electricity	572	1,500	928		928	38.1%
4066	Footway Light Repairs	3,369	3,500	131		131	96.3%
	Footway Lighting :- Indirect Expenditure	**3,941**	**5,000**	**1,059**	**0**	**1,059**	**78.8%**
	Net Expenditure	**(3,941)**	**(5,000)**	**(1,059)**			
341	Partnership Working						
4061	Partnership Working	382	2,000	1,618		1,618	19.1%
	Partnership Working :- Indirect Expenditure	**382**	**2,000**	**1,618**	**0**	**1,618**	**19.1%**
	Net Expenditure	**(382)**	**(2,000)**	**(1,618)**			
	Works & Service :- Income	**10,628**	**25,200**	**14,572**			**42.2%**
	Expenditure	**29,615**	**60,441**	**30,826**	**0**	**30,826**	**49.0%**
	Movement to/(from) Gen Reserve	**(18,987)**	**(35,241)**	**(16,254)**			

Continued over page

	Actual Year To Date	Current Annual Bud	Variance Annual Total	Committed Expenditure	Funds Available	% Spent
Grand Totals:- Income	**10,628**	**25,200**	**14,572**			**42.2%**
Expenditure	**29,615**	**60,441**	**30,826**	**0**	**30,826**	**49.0%**
Net Income over Expenditure	**(18,987)**	**(35,241)**	**(16,254)**			
Movement to/(from) Gen Reserve	**(18,987)**	**(35,241)**	**(16,254)**			

Detailed Income & Expenditure by Budget Heading 01/01/2025

Month No: 9 Cost Centre Report

		Actual Year To Date	Current Annual Bud	Variance Annual Total	Committed Expenditure	Funds Available	% Spent
901	EMR Works & Services						
9320	Cemeteries	0	26,554	26,554		26,554	0.0%
9321	EMR Vehicles	0	77,105	77,105		77,105	0.0%
9323	EMR Office Equipment	955	2,055	1,100		1,100	46.5%
9325	EMR Depot	6,644	3,939	(2,705)		(2,705)	168.7%
9327	EMR Footway Lights	11,921	55,067	43,146		43,146	21.6%
9329	EMR Street Furniture	0	12,335	12,335		12,335	0.0%
9330	EMR Warden House	0	1,823	1,823		1,823	0.0%
EMR Works & Services :- Indirect Expenditure		**19,520**	**178,878**	**159,358**	**0**	**159,358**	**10.9%**
Net Expenditure		**(19,520)**	**(178,878)**	**(159,358)**			
Grand Totals:- Income		**0**	**0**	**0**			**0.0%**
Expenditure		**19,520**	**178,878**	**159,358**	**0**	**159,358**	**10.9%**
Net Income over Expenditure		**(19,520)**	**(178,878)**	**(159,358)**			
Movement to/(from) Gen Reserve		**(19,520)**	**(178,878)**	**(159,358)**			