eco2solar

May 2022

Eco2solar PV Site Guide

Standard G98 Installation

(This document is to be used for supplementary information only and it does not replace the original specification or the pre-start meeting document)

Contents

Summary

Note that there is a MINIMUM 4 WEEK CALL OFF (from design approval) for STANDARD IN ROOF JOBS

Please quote your unique Site PV reference when calling off plots. This will be emailed to the Site Manager by our Customer Support team when your project goes live.

Note that the following **MUST** be in place prior to Eco2solar attending any plots for 1st or 2nd fix;

1st fix

- For standard In Roof Viridian and GSE installs, the roof needs to be at felt and batten stage

2nd Fix

- There must be permanent mains power to the plot
- 2 meter working platform next to loft hatch
- A fixed structure of 2 x vertical timber upstands within a meter of the loft hatch 600mm apart to allow us to fix the fireproof board/inverters to
- A 6mm² Twin & Earth 6242Y cable running from the consumer unit to the inverter location for domestic installations under 4kw. Any systems above 4kw will require a bespoke schematic and cable specification
- A CAT5/6 shielded twisted pair (STP) will run from the DNO utility meter (service head) to the inverter location
- A high integrity consumer unit fitted with a 16A type A RCBO, in accordance with BS 7671 amendment 2 March 2022

We will confirm with site, prior to attending, that all the above requirements are in place. If we attend and the plot is not ready for us to complete our work, an abortive visit charge of £350 per plot will be chargeable.

Further details on these requirements are available in this document.

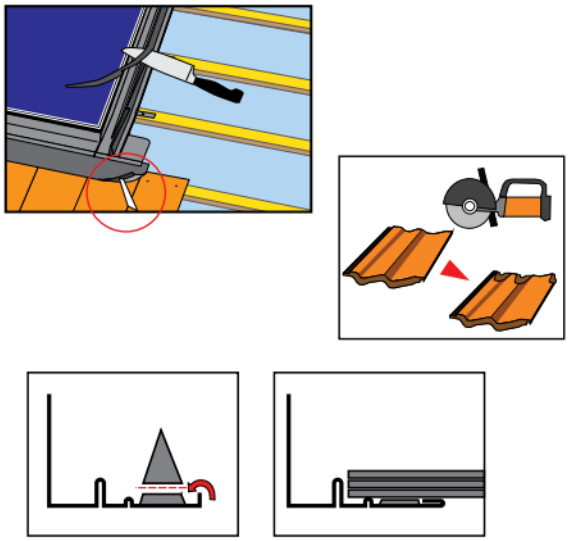
The onsite roofing contractor

Roof Preparation Requirements

- For any in roof PV system, whether Viridian or GSE, the roof needs to be at **felt and batten stage** before Eco2 Solar attend site.
- It is the site roofers responsibility to dress/stick down the bottom flashing.
- With the GSE systems, it is also the site roofers responsibility to install the side soak strips when completing their tiling works. Side soak strips will be left with the Site Manager when we have completed each first fix.

Viridian Systems

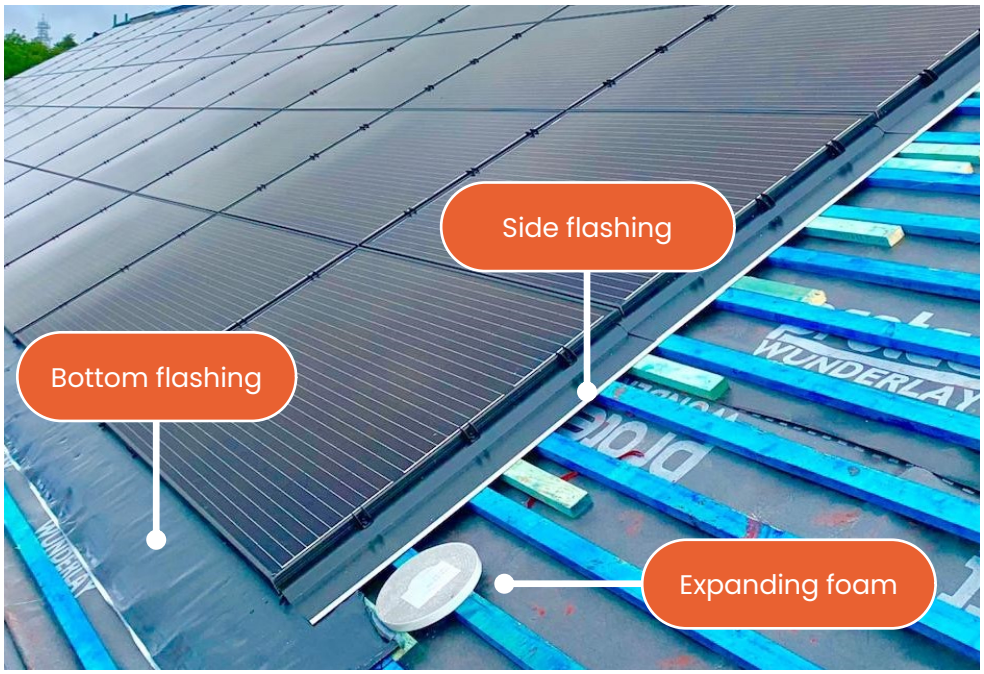
- Once the installation of the array is complete could you please draw your roofer's attention to the following points
    - To fit the bottom flashing ensure that the tiles are CLEAN AND DRY, remove the paper strip on the underside of the flashing and dress the flashing down onto the tiles. Ensure that the bitumen strip is well bonded to the tiles.
    - For some tile types it may be necessary to chamfer the high points of the tiles under the bottom flashing.
    - The outside edge of the side flashings can be flattened over.
    - The foam strip on the side flashing can be trimmed to within 10mm of its base, however not completely removed.



- The tiles will need to be cut in as close as possible around the array.

GSE Systems

- Once the installation of the array is complete could you please draw your roofer's attention to the following points.



- The outside lip of the side flashing can be flattened slightly, if required.
- The expanding foam that is left next to the array must be stuck from the top to the bottom of the clean and dry side flashings.

This must be done just prior to the tiles being fitted to allow the foam to fully expand under the tiles.

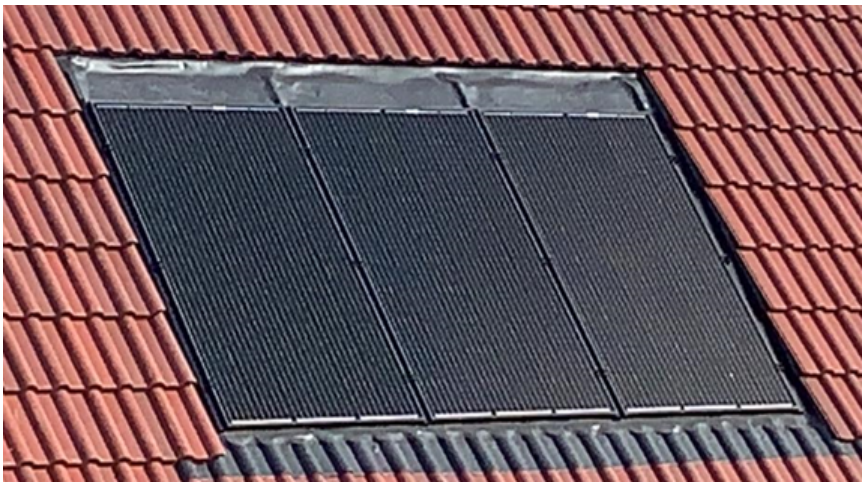
- If a solid bottom flashing has been installed then the flashing can simply be lifted and the tiles fitted and fixed. The flashing will then just rest back on the tiles.
- If a flexible Wakaflex bottom flashing has been installed please ensure that the 6 points below are followed with particular attention paid to no.1 ENSURE APPLICATION AREA IS CLEAN AND DRY. This is vital to ensure that the product adheres correctly to the tiles. Please note the Wakaflex installation guidelines below

Wakaflex Installation Guidelines

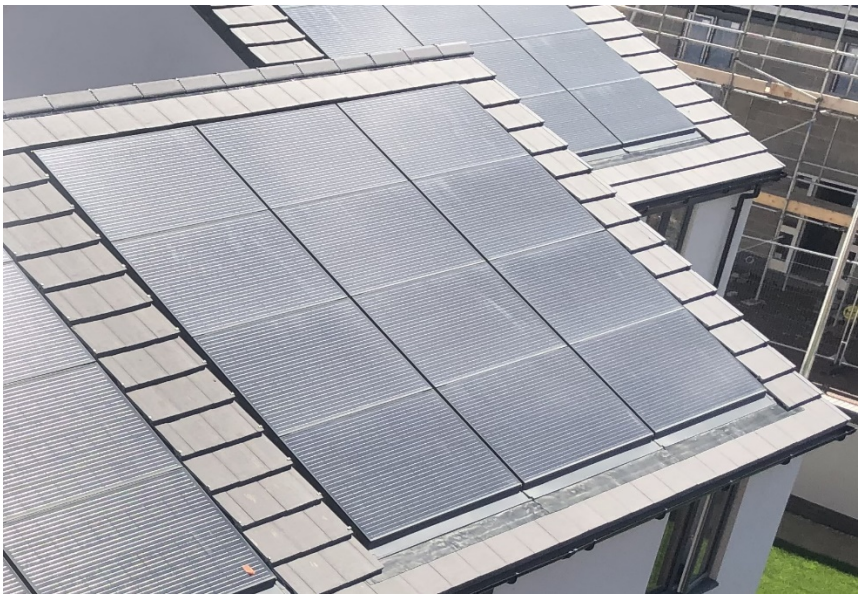
1. Ensure application area is clean and dry.
2. Form Wakaflex to basic shape of roof and remove the first (top) section of the protective backing.
3. Place Wakaflex into position. Firmly fix top butyl strip into place and slowly remove the remaining protective backing. Only remove protective backing from section you're working on.
4. Dress Wakaflex firmly by hand to stretch the aluminium mesh over the roof profile. Ensure a tight fit over the substructure. A wallpaper roller can be used if required.
5. Apply firm pressure to the lower butyl strip to create a watertight seal against the roof.
6. For joins, overlap by a minimum of 50mm and add pressure. Wakaflex will immediately adhere to itself and permanently cure in 15-20 minutes.

- The tiles will need to be cut in as closely as possible around the array. Particular attention needs to be paid to the tiles across the top of the array.

Example of an INCORRECT installation



Example of a CORRECT installation



The onsite electrical contractor

Prior to work commencing the electrical contractor will have received,

- Specification of works at the quotation stage
- Drawings
- Again, specification of works at the pre-start meeting.

Inverter Location

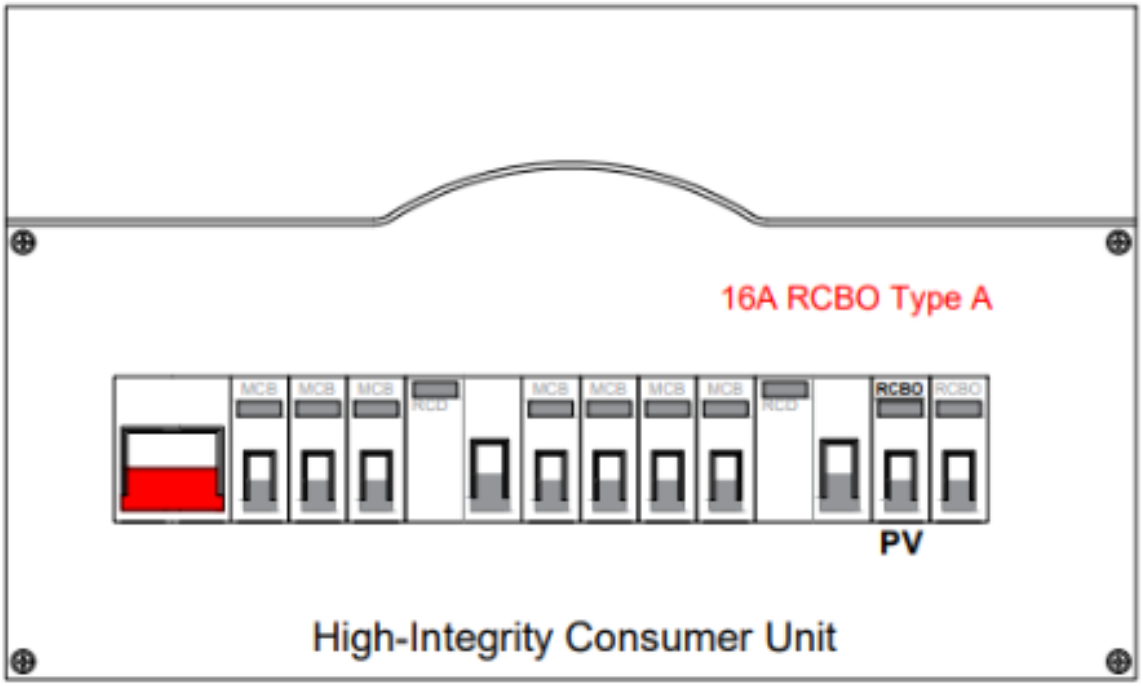
To ensure compliance with BS7671 and the Electricity at Work Regulations 1989 (HSR25) the house builder shall observe the following:

- Inverter shall be located close to the loft hatch and not impede the use of a loft ladder

- 2 meter working platform provided to allow safe access & egress for the electrician, home owner and maintenance personnel in the future
- Install 2 vertical upright posts approx. 600mm apart. This structure will be used to fix our fire-retardant board and inverter to.

AC Cable Requirements

- The site electrical contractor shall Install a continuous **6mm²** twin & earth 6242Y from the consumer via a (local) loop and then to the loft space near the loft hatch. Please clip the cable up from the ceiling plasterboard to prevent it being lost or buried by the rockwool insulation.
- The supply cable shall be selected and erected so as to comply with the latest requirements of BS 7671.
- The PV system shall be installed on its own dedicated circuit where no other current using equipment is permitted.
- Consumer Unit – leave approximately 300mm inside the consumer unit. Please do not terminate the cable, Eco2solar will do this during T&C of the system.
- The local loop needs to project out 300mm so our electricians can install the AC isolator and Generation Meter
- In the loft space, please leave approximately 2000mm of cable near the loft hatch and clipped at least 300mm above the insulation.

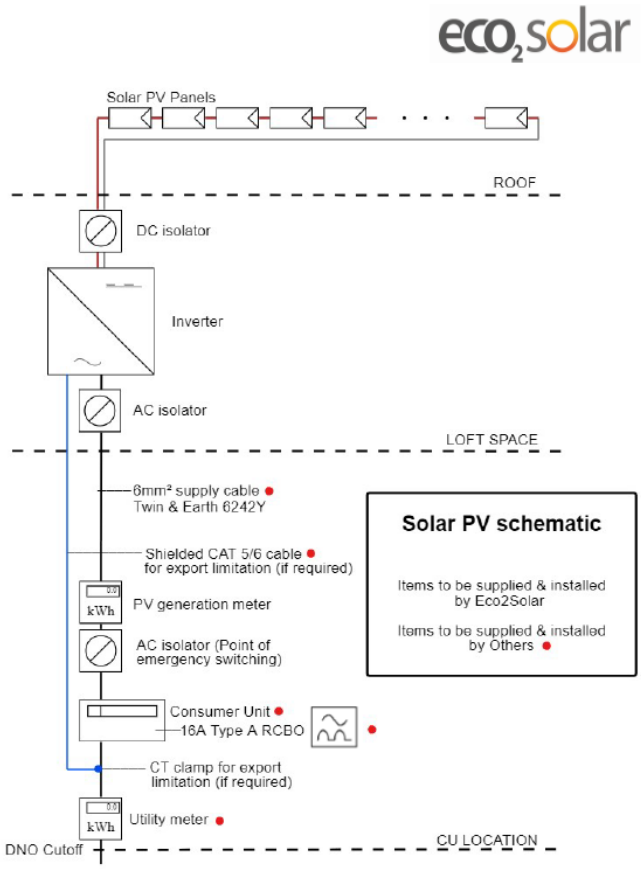


DC Cable Requirements

- Inverters in loft space are clipped direct by Eco2solar installers unless other arrangements have been made prior.
- All other locations will be by design, please see drawing for specification. If the DC strings are run over a distance of 20m or buried in walls then there are two compliant methods available:
    - 2 Core Steel Wire Armoured Cable, sized as specification.
    - Or, Metallic conduit to contain double insulated Solar cables.
        - Note; 6242Y T&E must NOT be used for DC strings or supplies.

Data Cable Requirements

Applies to Export Limitation only - Site to install a shielded 4 pair CAT5/6 cable from the inverter location to the DNO service head / cut out fuse. *(Please refer to your original specification)*



Consumer Unit & Protective Device

- Site to provide a High Integrity consumer unit or similar fitted with a **16A type A RCBO** ready for the Eco2solar second fix. The installation of a high integrity consumer unit complies with BS 7161 Amendment 2 March 2022 *(32 &, 531.3.2)* and the MCS/ECA guidance *(2.3.1)*. Regulations state that every installation shall be divide circuits to reduce the risk of unwanted tripping and to minimise any inconvenience.
- Note; RCBO Type AC Shall not be used where a load current contains DC components *(531.3.3)* i.e. Solar PV, EV charging etc…

- A High Integrity consumer unit will also future proof the installation should an EV charge point be required.

Solar PV and the Distribution Network Operator (DNO)

Every site Eco2solar installs PV on requires a Distribution Network Operator (DNO) application to request that the load generated from the PV systems can be connected to the grid.

Eco2solar will submit this application to the DNO on the developers behalf.

In order to submit this application, the developer needs to provide us with postal addresses, MPANs and a signed letter of authority for the site. If they do not issue us with the postal addresses and MPANS, we CANNOT submit the application.

The DNO approval process can take up to 60 days from receipt of application therefore we need to submit the DNO application at least 60 days before the first plot is due to be completed.

The DNO may issue a network study fee to allow connection. This cost will be passed directly to the developer for payment. Note that we cannot connect the PV arrays to the grid without payment of these charges.

In the event that we do need to connect the PV arrays to the grid prior to receiving approval, then we will 'Lock Off' the systems using a padlock. This padlock can be removed once the DNO have provided approval to connect. As soon as we have approval from the DNO to connect, we will provide a code which can be used to remove the padlock. Once you receive this code, remove the padlock and turn on the PV system using the isolator switch.

Note that the solar PV system has been fully installed, tested and commissioned by our professional engineers prior to being locked off.

LEGAL NOTICE: Please note that forced or unauthorised removal of the Solar PV padlock may lead to a DNO prosecution in court.

Post Commissioning

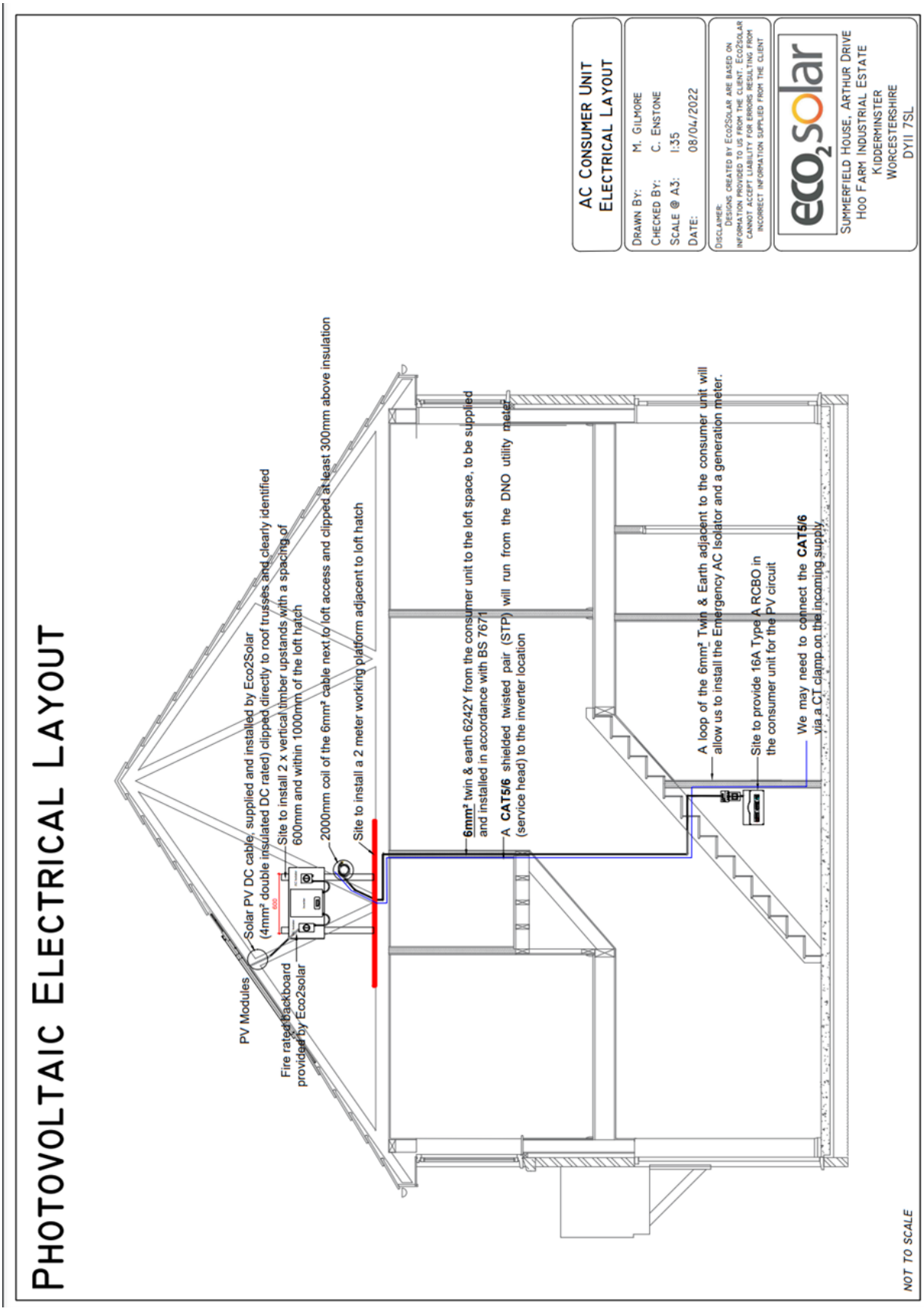
Once a plot has been commissioned, Eco2solar will supply the nominated contact at the developer with the following plot level information;

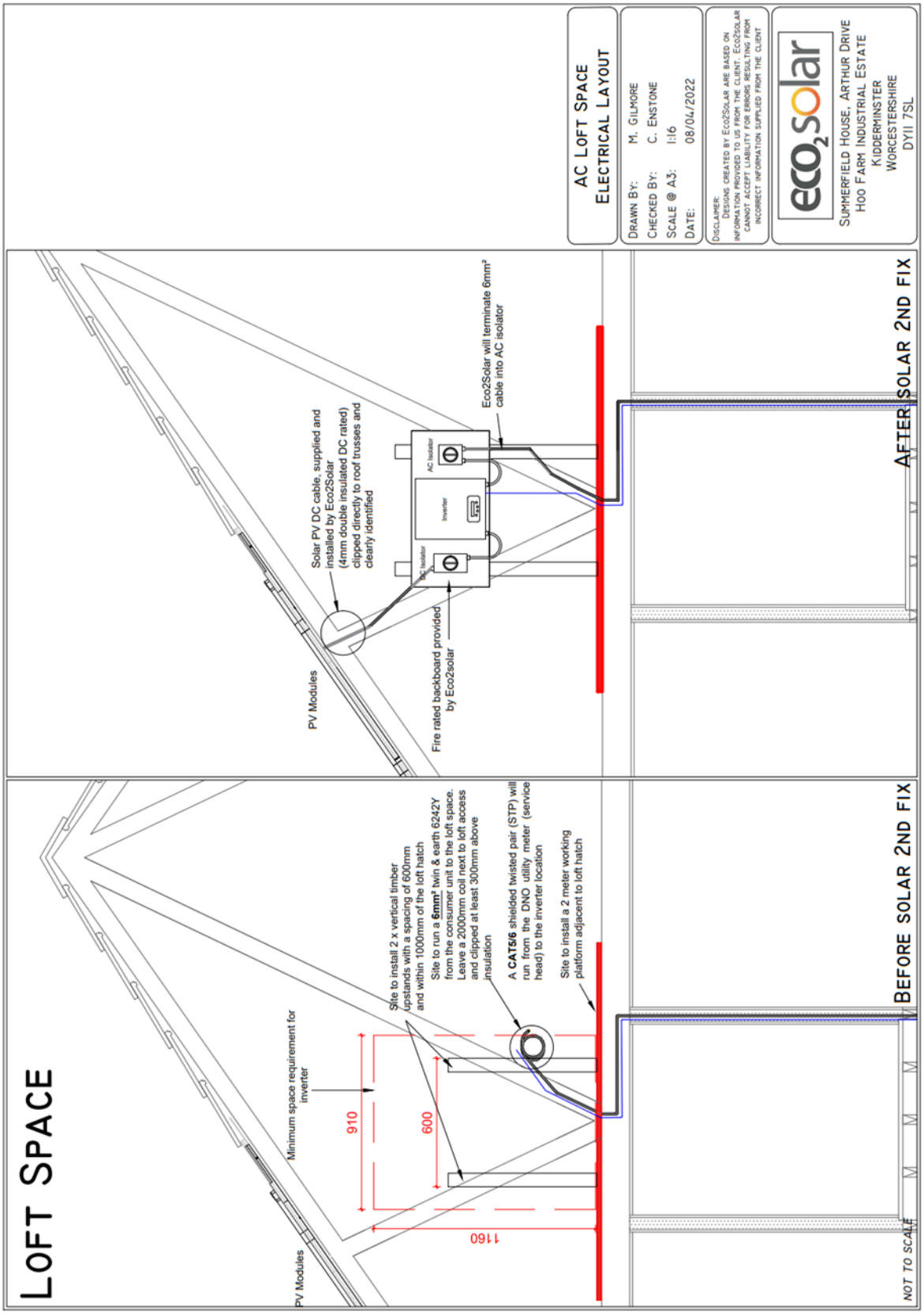
- MCS Certificate
- User Manual
- Installation Detail Sheet
- G98 Commissioning Certificate

From the date of commissioning, Eco2solar has 10 days to generate the MCS Certificate. Any changes required to MCS Certificates AFTER the certificate has been generated will be subject to additional charges.

Eco2solar will notify the DNO of plot commissioning within 28 days from connection.

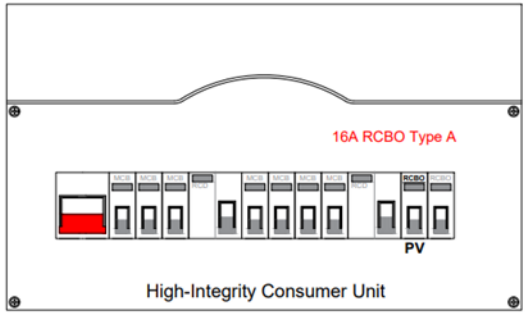
Photovoltaic Electrical Layout – Generic




AC Loft Space
Electrical Layout
Drawn By: M. Gilmore
Checked By: C. Enstone
Scale @ A3: 1:16
Date: 08/04/2022
Disclaimer:
Designs created by Eco2Solar are based on information provided to us from the client. Eco2Solar cannot accept liability for errors resulting from incorrect information supplied from the client
eco2solar
Summerfield House, Arthur Drive
Hoo Farm Industrial Estate
Kidderminster
Worcestershire
DY11 7SL
After Solar 2nd Fix
Eco2Solar will terminate 6mm² cable into AC isolator
Solar PV DC cable, supplied and installed by Eco2Solar (4mm double insulated DC rated) clipped directly to roof trusses and clearly identified
PV Modules
Fire rated backboard provided by Eco2solar
AC Isolator
Inverter
DC Isolator
Loft Space
Minimum space requirement for inverter
910
600
1160
Site to install 2 x vertical timber upstands with a spacing of 600mm and within 1000mm of the loft hatch
Site to run a 6mm² twin & earth 6242Y from the consumer unit to the loft space. Leave a 2000mm coil next to loft access and clipped at least 300mm above insulation
A CAT5/6 shielded twisted pair (STP) will run from the DNO utility meter (service head) to the inverter location
Site to install a 2 meter working platform adjacent to loft hatch
PV Modules
Before Solar 2nd Fix
NOT TO SCALE

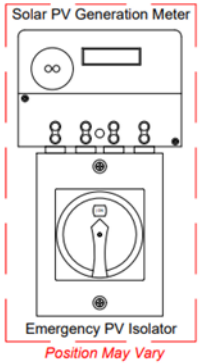
Consumer Unit

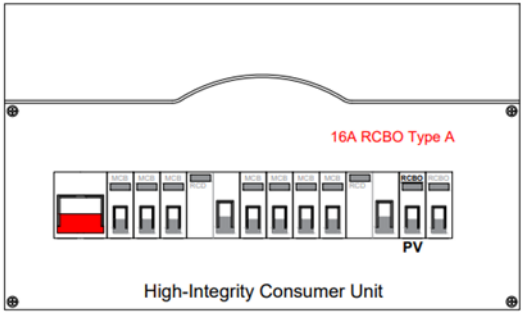
- The site electrical contractor shall install a continuous **6mm²** twin & earth 6242Y from the consumer unit via a (local) loop and then to the loft space near the access hatch.
- The supply cable shall be selected and installed so as to comply with the latest requirements of BS 7671
- At the consumer unit location, the local loop needs to project out 300mm so our electricians can install the AC isolator and Generation Meter
- Please leave approximately 300mm of cable inside the consumer unit. Please do not terminate the cable, Eco2solar will do this during T&C of the system.
- Please provide a 16A RCBO Type A for the PV circuit
- In the loft space, please leave 2000mm of cable clipped above the insulation.



NOT TO SCALE

BEFORE SOLAR 2ND FIX





AFTER SOLAR 2ND FIX

AC Consumer Unit Electrical Layout

Drawn By:	M. Gilmore
Checked By:	C. Enstone
Scale @ A3:	1:16
Date:	08/04/2022

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Eco2solar Inclusion & Exclusion Table

Inclusions/Exclusions	Supplied and Installed By	
	eco2solar	Others
MCS approved PV Panels	✓	
MCS approved fixing system for System Quoted	✓	
Single Core DC Cable	✓	
DC Isolators	✓	
Grid approved inverters	✓	
Generation Meter	✓	
AC Isolators x 2	✓	
DC works fully installed by Eco2Solar	✓	
Commissioned by Eco2Solar	✓	
Full working drawings	✓	
DNO Application	✓	
User Manuals/Handover packs	✓	
Export limitation devices or cable (if required) at additional cost	✓	
6mm² AC supply cable installed from Consumer Unit (CU) /Distribution Board (DB) to inverter location		✓
CAT5/6 STP cable installed from DNO Utility meter to inverter location		✓
Heat/Smoke Detectors		✓
Type A RCBO in the CU/ DB		✓
Site to provide 2 x vertical timber upstands next to loft hatch 600mm apart to allow us to brace inverters to		✓
Sacrificial layer/membrane (if needed) on flat roof		✓
Cable entry provided by roofing contractors		✓
Site access/lifting equipment/banksman/slinger/signaller		✓
Site welfare		✓
Application for planning and building control approval		✓
Safe working environment (scaffolding/edge protection)		✓
1.2m x 2m landing deck/platform next to the loft hatch		✓
Off-loading facilities		✓
Parking		✓
Production of BS7671 certificate for AC cable installed by others		✓
Lightning protection and surge protection for the PV system		✓
DC cable containment within the building		✓
Connection charges or network study costs from DNO		✓
Choice of electricity supplier, informing electricity supplier of installation or negotiation of SEG		✓
Installation of import/export meter or GSM meter		✓
Structural assessment / calculations to confirm roof can support the loads from the PV system		✓

Typical Consumer Unit, AC Isolator & Generation Meter Layouts