# Design, Access & Heritage Statement

Beech Tree Cottage St. Martins Avenue, Epsom, Surrey, KT18 5HS

Installation of Solar PV system

**Project: Installation of 13 solar panels to the East side and rear roof slopes – 24/00312/FLH, within Worple Road Conservation Area.**

Authority: Epsom & Ewell Council

This Design, Access & Heritage Statement has been prepared by Project Solar UK on behalf of the Applicant to accompany the submission of a Planning Application for the proposed installation of a Solar PV array.

## Worple Road Conservation Area

The conservation area was designated on 11 December 1987 by Epsom and Ewell Borough Council.

The Worple Road Conservation Area is a mainly residential area to the southeast of Epsom Town Centre which was developed from the 1860s onwards with a variety of terraced, semi-detached and detached houses. Whilst the principal streets (Worple Road and Ashley Road, then called Eagle Road) pre-date this mid-19th century expansion, St Martin's Avenue was not fully laid out until the late 19th century, when a number of well detailed detached houses were added, one of which (No. 19 St Martin's Avenue) is now listed grade II – the only listed building in the conservation area. Although the buildings of the conservation area are mainly late 19th century in date, with a certain amount of modern infilling, it does lie immediately next to the Church Street Conservation Area, where the medieval village of Epsom was originally centred on the parish church of St Martin of Tours.

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The Worple Road Conservation Area encompasses a residential suburb to the southeast of the Epsom Town Centre which includes a variety of mainly mid to late-19th century properties ranging from modest terraced cottages to larger detached houses. Most of these were completed by 1895 although a few, most notably the well detailed red brick houses on the southeast side of St Martin's Avenue, date to slightly later.

The key streets in the conservation area are Worple Road and Ashley Road, both historic routes which connected the old village of Epsom around St Martin's Church and the later town centre with the downland to the south. Ladbroke Road and St Martin's Avenue represent late 19th century development over this downland, with the map of 1867 confirming that sub-division of the fields had already commenced to enable the new roads and buildings to be built. Narrow alleys, typical of the Epsom area and pre-dating the 19th century changes to the street layout, cross diagonally through the conservation area.

The buildings of the conservation area are mainly built from red or yellow London stock brick, with slate or tiled roofs. No. 39 Ashley Road and No. 58 Worple Road is a very prominent corner building which was originally one house and is faced in high quality knapped flint, a material which can also be seen in many of the boundary walls.

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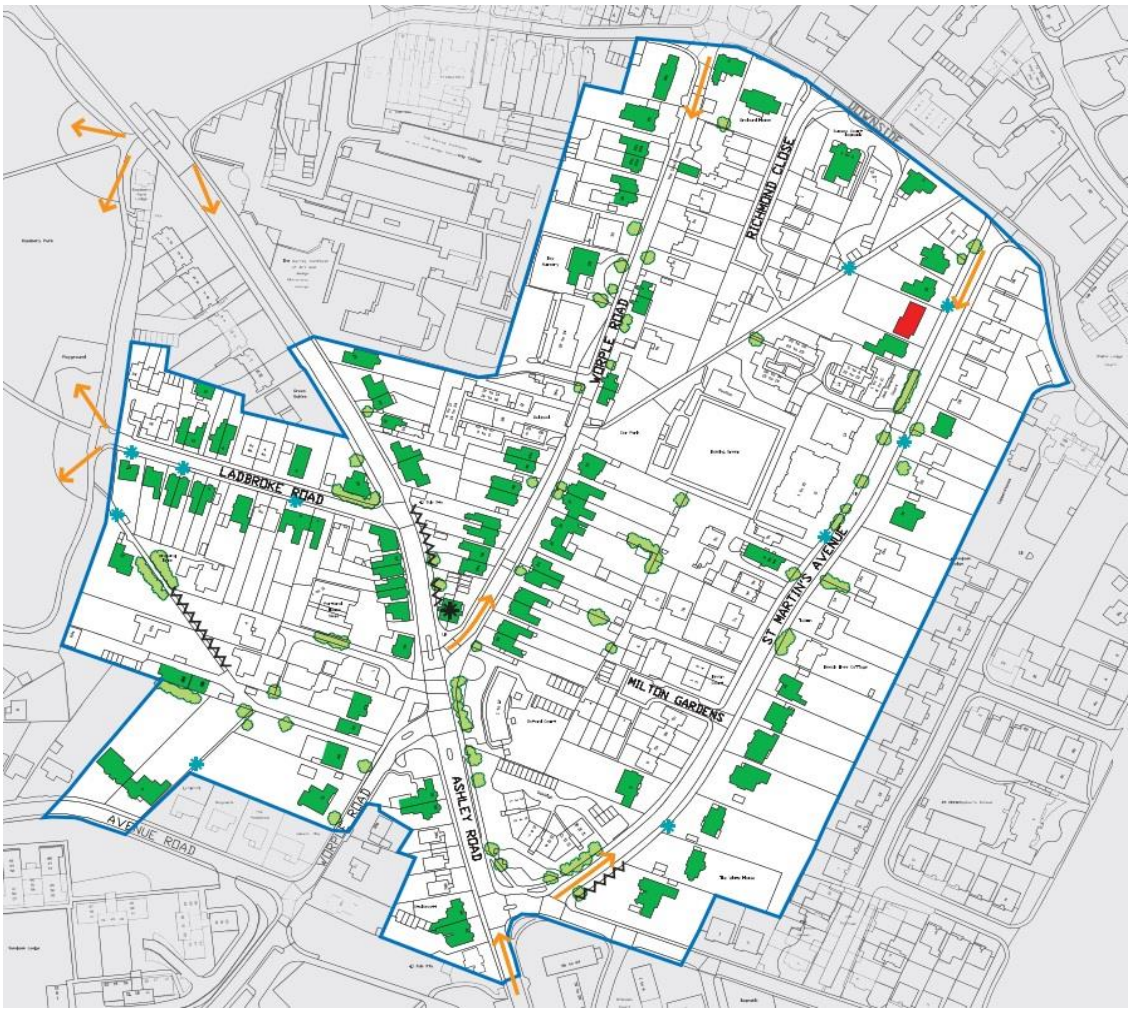
## Article 4

The Worple Road Conservation Area is under an Article 4 Direction which affect the following development:

**SCHEDULE**

1. The enlargement, improvement or other alteration of a dwelling house.
2. The enlargement of a dwelling house consisting of an addition or alteration to its roof.
3. Any other alteration to the roof of a dwelling house.
4. The erection or construction of a porch outside any external door of a dwelling house.
5. The provision within the curtilage of a dwelling house of a hard surface for any purpose incidental to the enjoyment of the dwelling house as such.
6. The erection, construction, maintenance, improvement or alteration of a gate, fence, wall or other means of enclosure.



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## General

Beech Tree Cottage is situated within the Worple Road Conservation Area and the proposal is to install solar panels to the rear and side roof pitches. The panels will not be installed to the front elevation of the property and will therefore not be visible from the highway directly in front of the house.

The panels on the rear roof pitch will have no visual impact to the Conservation Area and the panels to the side roof pitch will have minimal visual impact as they will only be visible when heading north on St Martins Avenue.

This statement should be read in conjunction with the plans and supporting documents that have been submitted with the planning application.

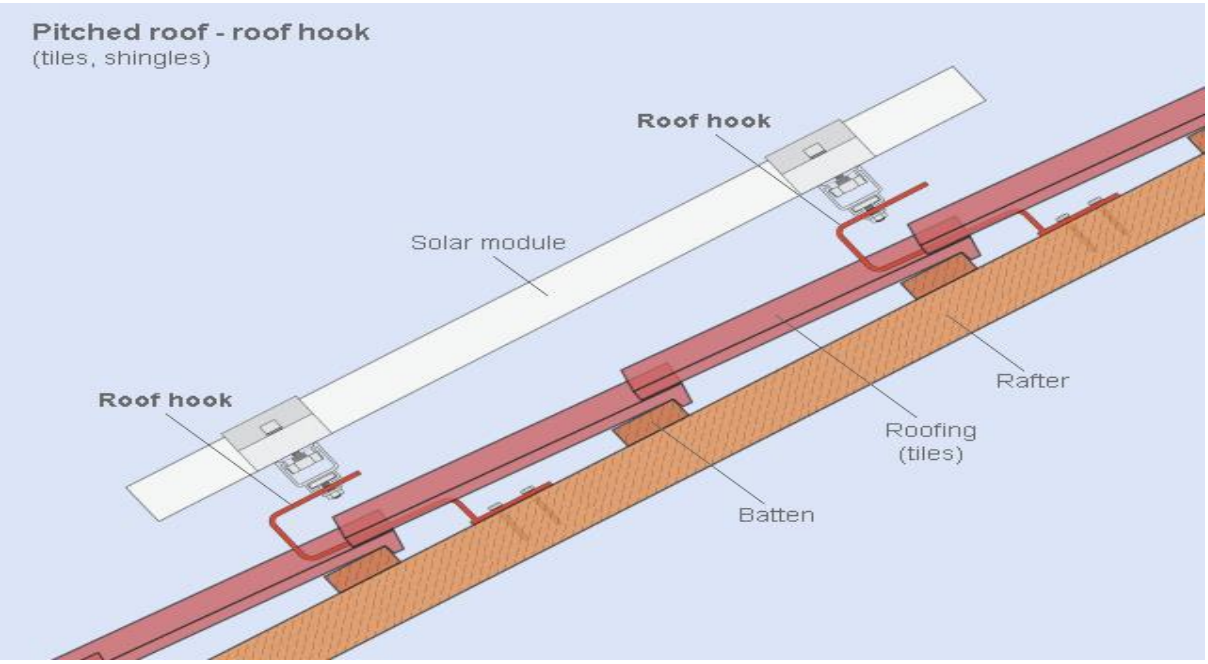
## Access

Our proposal will have no impact on access to and from the property or the surrounding area during and post installation.

## Design

A lot of thought was put in as to positioning of the system, the aesthetics of the system and the visibility of the system within the surrounding area. The rear and side roof pitches were deemed to be the best roof pitches in terms of optimum electricity generation, orientation and visual impact. There will be minimal visual impact to the surrounding Conservation Area.

The systems are installed in such a way that at the end of the panels lifespan the system can easily be removed and the roof will be returned to its original condition.



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The proposed installation will also comply with all the limits and conditions relating to the installation of solar panels on domestic premises within the Governments Planning Portal and the General Permitted Development Order (England) 2012 Part 14. The installation will also comply with Building Regulations via the MCS and NAPIT Competent Persons Scheme (We are accredited to both).

## Installation Guide

## Roof Anchors

Roof anchors are aluminium or steel components that screw directly into the rafters, forming the base of the mounting system. The type of anchor used is determined by the characteristics of the existing roof tiles and the height and spacing of the roof batons. The majority of the anchor fits under the tiles with only a small proportion of its tail visible. It is to this tail that the frame is attached.


### Mounting Systems

Once the roof anchors are secured in place the frame is attached to them. This attachment is made using a specially engineered locking system to ensure there is no movement and then tightened using conventional bolts. The frame consists of two parallel aluminium bars for each

row of panels. The panels sit directly on the frame and attached by clamps.
There are two varieties of clamp; end-clamps and mid-clamps. End-clamps are situated at the end of a row of panels, thereby helping to secure one panel. Mid-clamps are used between panels to help secure two panels in place and ensure there is equal spacing between them (usually 20mm) for aesthetic reasons. At least 4 clamps are used to secure each solar panel to the mounting frame, with different clamps being used for each brand of solar panel.

## The Solar PV Installation

Now that the components required for the installation have been laid out, the installation process itself can begin. Roofs are very rarely exactly ‘straight’. Inevitably the ridge, the eaves and the ground will not run perfectly parallel to each other. The installation looks best when the panels run parallel to the edge that is nearest them, which is usually the eaves. We recognise that after performance, aesthetics are the most important aspect of a solar photovoltaic installation and so our installation teams will ensure this to be the case.
We will arrange to have scaffold erected by locally sourced trained specialists. Depending on the expected length of the job this will either happen before or during the morning of the first working day. The scaffold is erected to reach the eaves of the roof and ensures the safety of those working on the roof with compliance to all relevant Health and Safety codes. Ladders from the scaffold across the roof are used when the roof tiles are slippery or fragile.

## Positioning the Roof Anchors

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It is important that the roof anchors are positioned carefully on the roof to ensure the solar panels can be installed correctly. The location of the rafters under the existing roof tiles are identified, to which the roof anchors will soon be screwed. The anchors are then placed on top of the tiles where they will eventually be positioned while measurements are taken to ensure that the aluminium frame will sit 'straight'.

Once the position of the anchors is determined they can be fixed to the roof. One roof tile is removed to allow the anchor to be screwed to the rafter and then replaced to ensure the roof remains watertight. It is important that the correct type of anchor is used and this would be determined during the site survey.

Once all the roof anchors are fixed into place, the aluminium bars that make up the frame are then locked into the anchors and screwed into place. Each bar is checked to make sure that it is straight and that all the bars are parallel to each other. This is the single most important step in ensuring that the panels will look correct.
If the length of the frame is longer than the aluminium bars supplied then they are spliced together using specially designed strips of aluminium and further bolts.

## Installing The Solar PV Panels

With the bars in place, the frame is complete and the panels can start to be attached and clamped to the frame. A minimum of 4 clamps is used per solar panel, though in some cases extra clamps are used to aid the parallel alignment of the rows.
The panels are either placed by row or by column depending upon which is the easiest in each specific situation. In the photo to the right the panels are being placed by row. In this case the top row is placed and the alignment of each row thereafter is taken from it.

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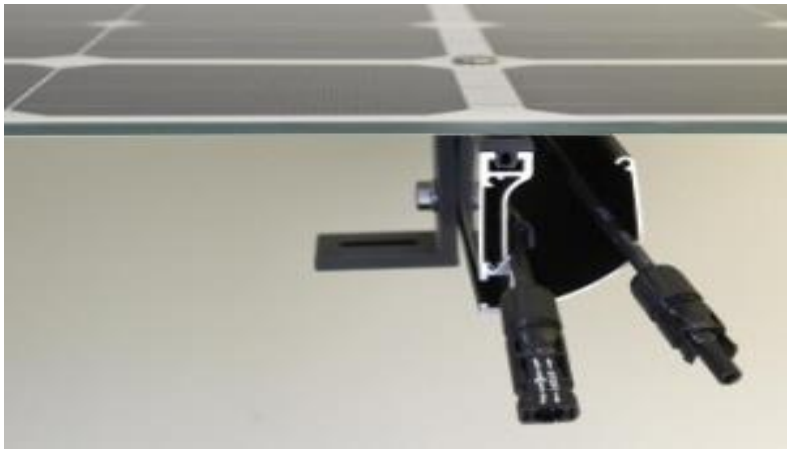
## Wiring The Panels



The solar panels are wired by the manufacturer, meaning the rooftop connection is straightforward. The specific voltage, amperage and power of the system determine how the panels are connected. Smaller systems connect a single series to a single inverter, while larger systems connect several parallel series into a single inverter. The largest systems may require multiple series into multiple inverters. Shading and panel positioning can also influence the design of the wiring.

## Installing the Final PV Panel

Once the top row of solar panels is correctly clamped the rows beneath are secured to the frame in the same manner, taking their positioning from the row above.
Aligning the panels parallel to the row above is extremely important in ensuring the finished system will look good. This process is made easier if the original frame is well placed, which is why our installers take care to get things right within the initial stages of the installation.
Once all the panels have been installed and the alignment checked the final wiring of the system can begin. The DC wiring from the panels on the roof needs to enter the property in order to be connected to the electrics in your home. In some cases this is achieved by running the wire under the eaves and directly into the loft. In others, such as in the image on the right, a hole is made within the wall which is then sealed to ensure it is watertight. Once the wiring has reached the inside of the property, the rooftop section of the installation is complete.

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