

## 13. GUIDELINES FOR SOLAR ENERGY PANELS & SOLAR THERMAL COLLECTORS

The Dulwich Estate supports residents who wish to reduce their carbon footprint by better insulating their homes or installing domestic renewable energy sources such as solar panels.

Most installations require prior approval from the Estate.

The design of a solar panel installation varies widely and there are a number of products now available for use in heritage settings which help to balance the visual impact. To ensure that the design is as in keeping as possible, consideration should be given to the size, layout, projection from the roof, the material and support framework.

If in doubt whether prior approval is required, please contact us.

When submitting your application for solar panels, the following guidance applies.

### **Location:**

- Solar panels are permitted to the rear roofs of properties, to flat sections of a main roof and side roofs subject to the detail, however they should not be conspicuous when viewed from the road or other public spaces, such as parks and shared amenity spaces.
- Solar panels on the front roof of a property or a side roof directly facing the main road are generally not permitted. Instead, consider installing them on flat roofs, rear extensions, behind parapets and on garden buildings or pergolas.
- An installation to a side roof of a mid-row property would be permitted but the panels should be set back from the front elevation to reduce the visual impact.
- A ground mounted array is an alternative location. It is important to ensure that the panels are not in the shade and ensure that any cable runs for the installation do not damage tree roots.

### **Layout:**

- The installation should not visually dominate the roof. To ensure this, on a pitched roof the edge of the panels should be positioned no less than 0.6m from the edges of the roof plane including the eaves. The highest point should be no closer than 0.3m from the ridge. Integrated panels are preferred, and the installation should not project from the wall or roof slope by more than 0.2m and details are to be provided demonstrating this.
- The layout should be regular in appearance and should not appear overly crowded. If you have existing dormers and roof lights allow sufficient spacing so that the installation does not appear crammed on. Panels should be aligned in one direction.
- When installed on a flat roof, solar panels are fixed to a frame that tilts them to the optimum solar angle. The height of the panels will vary depending on the orientation and location. Details of the overall height of solar panel installations will be required with detailed sections showing the relation to parapet walls and roof edges. Generally, flat roofs are a good location for solar panels if they are set back and screened by parapet walls. 3D drawings may be required to demonstrate how visible the installation will be.

## 13. GUIDELINES FOR SOLAR ENERGY PANELS & SOLAR THERMAL COLLECTORS CONT.

### Detailed Design:

- The colour of the solar panel, and its finish should be appropriate to the original roofing material. Supporting frames are available in anodised black or silver finish, the black finish is the least visually obtrusive and is recommended. Cut frame ends should be painted black or capped off.
- Where panels will cover a significant area of the roof, consideration should be given to roof-integrated or in-line photovoltaic (PV) panels. This involves removing the original slate or clay tiles and creating a very low-profile array with a flashing detail to integrate them into the roof covering. Roof-integrated solar panels are less visually obtrusive than those mounted on rails, they can also be more durable as the whole roof is replaced and warrantied.
- The Estate has a number of mid-century modern homes built since the 1950s, many of which were built as communities known as 'group developments'. For these developments where the layout means that the roof is in a prominent location roof-integrated solar panels will be a requirement. The panel design and layout will need to match neighbouring installations to create a consistent appearance and to protect the architectural quality of the development. Well-designed solutions providing a template for properties within group developments would be considered if they are supported by residents and Residents Associations. Evidence of detailed resident surveys would be required to support the submission.
- Roof-integrated solar panels have several advantages over rail-mounted installations in the longer term. The improved aesthetic appearance means that the design is an intended part of the roof and therefore they are recommended for

new build properties. For retrofit projects the load, including wind loads, on the existing structure is reduced, durability due to thermal movement is improved and maintenance for issues such as watertightness and bird infestation is reduced.

- Solar slates have a similar appearance to natural slates, however the difference in texture and colour is detectable and has a visual impact. The life expectancy of solar slates is shorter than natural slates, and they are not as efficient as solar panels. The installation of solar slates will be considered to the front, side and rear of properties built post 1940 on a case-by-case basis, subject to project specific technical details and samples being submitted for assessment. The solar slates must closely match the dimension, colour and texture of the original roof slates and be run from 'edge to edge' of the roof to avoid a contrasting natural slate border. To protect properties with traditional slate roofs built before 1940, however solar slates will not be permitted to the front roof. If permitted, solar slates would need to be maintained in good condition in perpetuity or replaced with natural slate to maintain the original appearance.
- Solar thermal type panels directly heat water for use in the home, while photovoltaic panels generate electricity. Fewer panels are required for heating water than for electricity generation. Solar thermal installations should also not project from the roof slope by more than 0.2m and the distance to roof edges and the ridge apply as above. Full details including section drawings are required to be submitted.
- Photovoltaic (PV) solar glass and insulating smart glass products are available. Fully transparent solar and insulating products can replace existing glazing on a 'like for like' basis.

Solar PV Glass can be fully transparent or range from a tinted grey to black. It has a pixelated appearance and is available in a range of transparencies, the more opaque the higher the performance. Solar glass would be suitable for new or retrofitted conservatories or roof lights. An application for replacement would be required and samples should be provided. Another solar glass product known as Semi-Transparent BIPV Glass has black square silicon cells embedded in transparent laminated glass at varying spacings giving different levels of transparency. The use of this product would be suitable for conservatory roofs, garden pergolas, greenhouses or ground level canopies subject to the details.

- Panels should be removed as soon as reasonably practicable when they are no longer needed.
- Battery installations should not be visible on the exterior of the front of the property. Please refer to guideline 14 for mechanical and electrical plant installations.
- Buildings with front or prominent side elevations facing south-east to south-west present particular problems for owners seeking an installation that complies with the guidelines. If your property has this alignment, contact the Scheme of Management office to discuss options that would comply with the guidelines.
- Solar panel installations must comply with the Building Regulations in terms of structural integrity, electrical and fire safety. For more information see the Government guidance at the online planning portal. A directory of qualified installer contractors registered with the Microgeneration Certification Scheme (MCS) is available here.

## 13. GUIDELINES FOR SOLAR ENERGY PANELS & SOLAR THERMAL COLLECTORS CONT.

### Further Considerations:

As part of the project planning process, the installer will provide predicted electricity generation data and, if requested to, can provide more accurate projections of energy savings based on the annual energy consumption shown on bills, rather than relying on assumptions in the modelling process. Ongoing research and improvements to holistic solar panel installations include battery efficiency and regulation of the manufacturing process.

Residents may want to check with their supplier that products have been manufactured responsibly, minimising toxic by-products and respecting human rights throughout the sourcing and manufacturing process. An Environmental Product Declaration or another form of life-cycle analysis may be available which illustrates the environmental footprint of the product and allows comparison with other options. If requested, suppliers should also be able to provide information regarding the extent to which they screen their supply chain for human rights risks.

### WHAT TO INCLUDE IN YOUR APPLICATION

- A roof plan drawn to scale showing the location and dimensions of the panels and the distance to the edges, the eaves and the ridge of the roof and other features. A north point should be included.
- Section details of the installation showing the dimension of the projection from the roof plane. Include details of mountings, flashings and parapets.
- A manufacturer's technical data sheet confirming the colour, finish and frame colour.
- Three dimensional drawings of the roof in context may be required to demonstrate the visual impact.
- A statement detailing the energy efficiency improvement of the building once the product is installed.
- Photographs of existing roofs or panel location taken from ground level including views from the street and other public areas.



Rail Mounted Solar Panel



Roof Integrated In-Line Panels



Solar Slate Edge To Edge Installation



Solar Roof Conservatory