BS23-0002 DESIGN AND ACCESS STATEMENT

25 The Street, Surlingham, Norwich, Norfolk. NR14 7AJ

PROPOSED:

Installation of a 48-panel ground mounted solar array.

Revision	Date Created	Created By	Reviewed by	Approved by
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ACCREDITATIONS

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1. The Site

1.1.

The site is at 25 The Street, which is located in the established residential area of Surlingham.

Surlingham is a village located approximately 6/7 miles, off the A146 Beccles/Norwich road and accessed by minor roads Via Bramerton or Rockland St Mary.

1.2.

The site is accessed via a shingle drive off The Street with a farm gate set well back from the highway and with adequate turning for vehicles within the curtilage. The shingle drive extends past the dwelling and formal garden along the southern side boundary giving access to the land at the rear which extends across the rear boundary of the adjacent dwelling 23 The Street.

1.3.

The properties residential curtilage takes in approximately 2.57 acres of land, with 2.3 acres as dedicated garden space which is made up of flora.

1.4.

The garden is flanked along the South and West edge with a dense collection of varying height trees.

1.5.

The dwelling and outbuilding (barn) are listed, and the initial proposals were discussed with the conservation officer (Mr Steve Beckett).

2. The Proposal

2.1.

The existing dwelling has no Low Carbon Technology (LCT) used for energy generation. With the increase in energy instability over the past two years, the increase in costs associated with this, and the future trend of increased electricity use as the market transitions, the applicants are wanting to insulate themselves against the unknown volatility of the energy market and decrease their needs of high carbon intensive energy from the national grid.

The applicants have a young, growing family, and wish to further improve the existing energy resilience of the property including future changes that will see the need for electric vehicle charging as legislation changes making them compulsory.

2.2.

The property has two connection points of which the LCT could be connected, a three-phase board in the barn, and a single-phase board to the rear of the property. Exploring the energy demand of the property including future demand, whilst being sympathetic to the environmental impact of the system and its visual impact to the surround environment, a single-phase system has been decided upon.

2.3.

The proposal is as follows:

1) Installation of a stainless steel & galvanised steel mounting frame
2) Installation of 48, Longi HiMo5 500W Solar Panels
3) Installation of a small concrete pad and custom-built enclosure for electrical equipment
4) Ground works to trench the transmission and data cables to the property.

3. The Design

3.1.

In arriving at the final design proposal, the applicants' requirements for reducing their reliance on grid imported energy, whilst installation enough generation to insulate them from the increase in energy use in the future were considered strictly in a manner which would be sympathetic to the local environment.

The applicants' have a strong desire to secure the longevity of the property and its energy independence, and the proposal reflects a considered and logical approach to secure this long term.

3.2.

The array will consist of 48 x **Longi HiMo5 LR5-66H|H 500W** Solar Panels. These will be mounted on a **Sunfixings Park Tegra Single Structure** ground mounted system in two rows of 24 panels. This system was chosen to mitigate as much environmental impact as possible requiring as little as 26 ground screws to support the array, mitigating any permeability issues and ensure free drainage remains as is. It also boasts low elevation, to minimise visual impact, whilst having an inclination angle of 30° allowing close to optimal solar generation of the panels. A 2D cross section of the array can be seen below in figure 1 and attached in appendix.

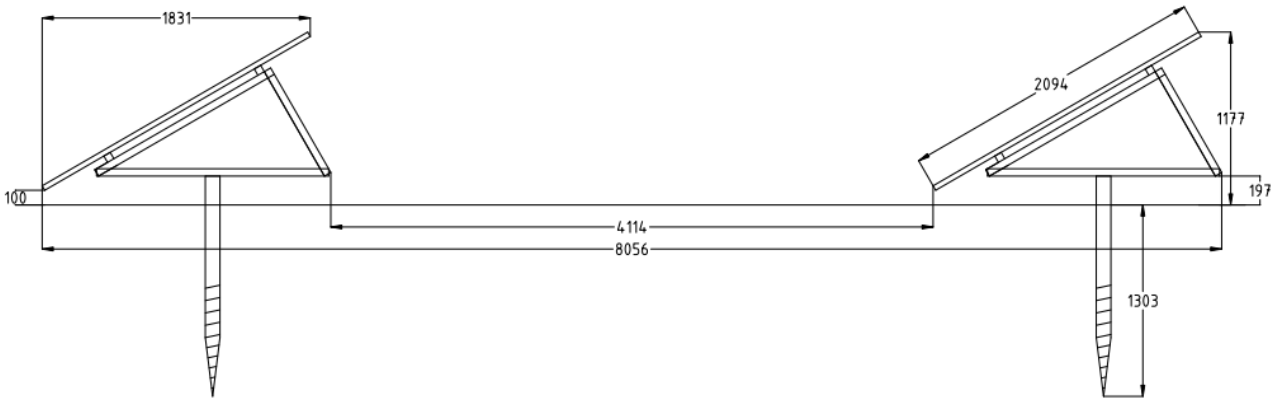

Figure 1 - 2D elevation of mounting system and panels

From figure one, the array will sit no less than 100mm from ground level, keeping the top edge of the array below 1200mm, lowering the visual impact of the array.

3.3.

The total dimensions will sit in an area of 27,676mm x 8,056mm as shown in figure 2 and attached in appendix.

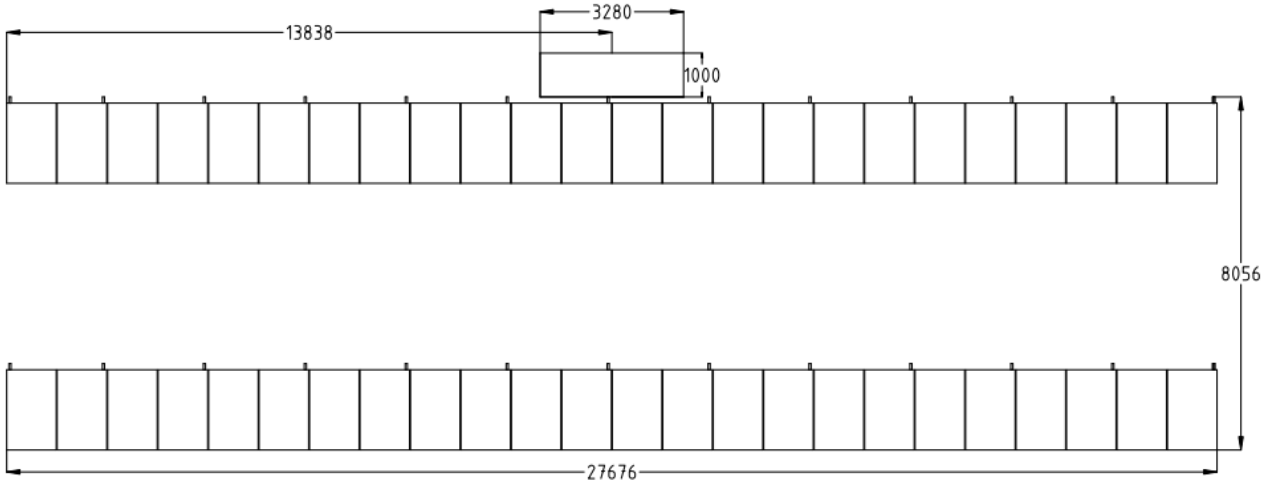

Figure 2 - Array dimensions

This spacing has been chosen to mitigate shading from one row to the next. During the winter solstice, the Sun sits 14.1° from the horizon, casting long shadows. This has been used to guide the placement of the second row, ensuring that during the lowest sun heights, the array can successfully generate energy.

3.4.

To house the solar equipment required to transmit the energy back to the property, a small enclosure is required. This enclosure will be place along the Northeast and house the electrical inverters, isolators, switch gear, batteries and meter. This enclosure will be 3,280mm L, 1,000mm W and 1200mm H, keeping the enclosure height near parallel with the top of the solar panels. The exterior of the custom-built enclosure will be materials and colours sympathetic to the surroundings, helping it visually blend in.

The enclosure will sit on a small concrete pad approximately 100mm thick buried to ground level, keeping the top height of the enclosure as explained above. Figure 3 and attached appendix, shows the external dimensions and internal layout of the enclosure.

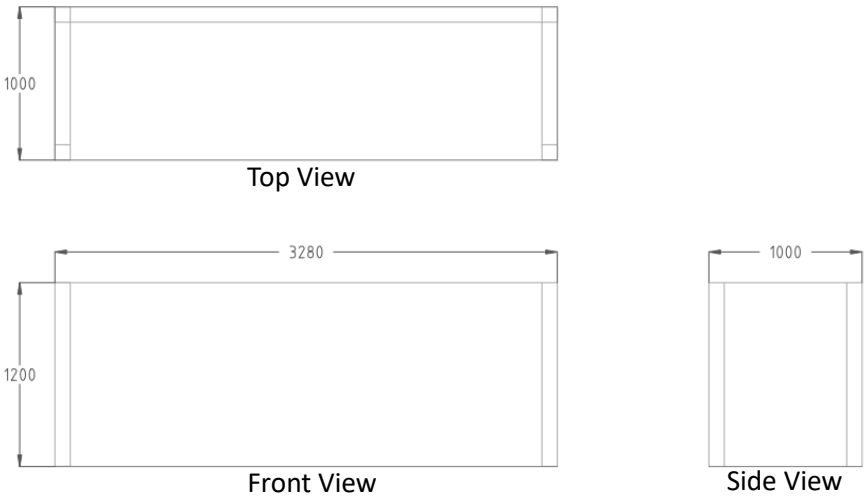

Figure 3 - Enclosure dimensions and layout

3.5.

A cable trench will be required to safely carry the energy back to the grid connection point within the property. The trench will be 500mm deep and 400mm wide adhering to UK Power Networks recommendations. Within this trench, a single 35mm armoured power cables and a 10.5mm armoured data cable will be buried. Each cable will sit within ducting to aid in longevity and ease installation. On top of the cables, UK Power Network recommended cable protection will be laid, allowing surveyors to pick up on the buried cable if future developments are conducted within the area. This will also further protect the cables from any accidental excavation within the area. The trench will then be back filled with the original soil and overseeded to seamlessly blend back in with the surrounding. Figure 4 shows a cross sectional drawing of the cable trench.

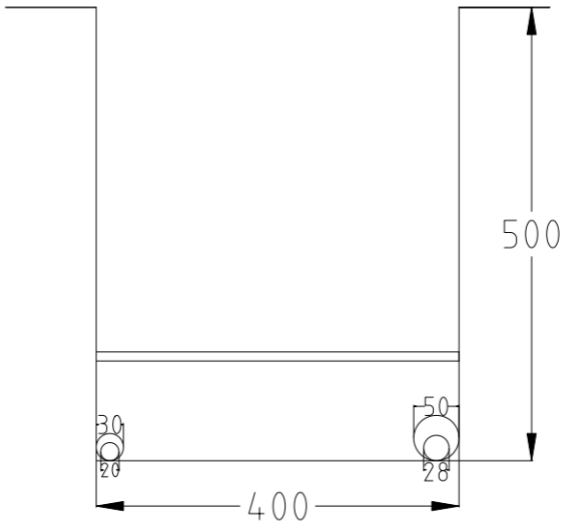

Figure 4 - Cable trench cross section

The cable route will consist of three straight stretches to minimise length and distribution. The total route length will be approximately 168m in length. Figure 5 shows the intended cable route.

Figure 5 - Cable route

4. Access

The existing vehicular access off The Street has good visibility and is considered suitable without any improvement. Existing drive and turning area ensures vehicles leave in a forward gear. The proposals do not change the vehicular access point from the existing.

5. Conclusion

Having engaged with the Conservation Office to seek advice on whether Listed Building Consent (LBC) was required and being advised it wasn't, the applicants feel that the proposals represent a considered approach to reducing their energy dependence on the national grid, whilst generating sufficient energy to future proof the property for the decades ahead.

The arrays' location has been selected after a detailed shading analysis was carried out. This report has been attached as an appendix.

Any unused energy produced by the solar array will be exported to the National Grid, allowing other users to have access to this energy, having a secondary effect of lowering the carbon intensity of the grid.