Design & Access Statement for the installation of a solar PV array on the flat roof of 33 Spencer Rise, NW5 1AR

This statement is to be read in conjunction with the drawings submitted with the application for Full Planning consent. It follows on from an application submitted on 19/1/13 (2013/0385/P), which was subsequently withdrawn.

Introduction

1. It is proposed to install a solar photo-voltaic (PV) array on the flat 2nd floor roof of 33 Spencer Rise.

The existing site

2. No 33 lies on the north side of, and about half way along Spencer Rise. The property dates from the 1860's[1] (or possibly 1870's).

3. The building lies within the Dartmouth Park Conservation Area and comprises a three storey mid terrace house, including accommodation within the roof space, with two storey addition to the rear, likely to have been constructed at the same time as the main building[2] or built soon thereafter. It is of predominately brick construction with a slate pitched roof with a flat central section (now zinc, formerly of asphalt). To the front elevation a (recently modified) terrace interrupts about 1/3 of the pitch, behind a raised front parapet (common to some of the adjacent properties). To the rear elevation is a dormer.

4. Prior to its recent renovation (commenced Dec 2011), the property had not been fundamentally altered for about 50 years. The key elements of the renovation comprised the re-building of the dilapidated roof and the construction of a ground floor 'fill-in' extension to the rear.

5. The renovation has sought to retain and/or restore the original features (both internally and externally - see Para. 41) using traditional materials. These include the sash windows to the front, the chimneys and overall form and fabric of the roof, with all doors and windows of timber.

6. The property is not listed.

The proposal

7. The application is retrospective for the installation of an array of solar panels situated on the flat part of the roof. Generated electricity is indirectly used by the occupants, being fed back in to the grid. There is no fundamental alteration to the structure of the property or its footprint. There is no known impact upon biodiversity.

8. The panels were installed in early 2012 when the building was clad in scaffold. Although it was appreciated that there would be a reduction in efficiency, the panels were positioned at a sub-optimum angle in order not to be visible from the

[1] Patrick Lefevre, pers comm
[2] Building Survey Report. Warmans Surveying. April 2011

street. It was not appreciated that there could be any visual impact, until the scaffold sheeting was removed and attention drawn to the matter by Camden Council around August 2012. At present, the panels are installed such that there is minimal visibility at street level in Spencer Rise, but a dominance within the roofscape from the rear, particularly from the gap between 98 and 100 Chetwynd Road.

Rationale

9. For a number of decades, the impact of human activity upon the earths climate through the release of greenhouse gases, has been recognised. It is also accepted that the inevitable raising of global temperatures will have catastrophic consequences for many people around the globe, and elsewhere will have serious social and economic, as well as environmental, adverse effects.

10. It is now accepted that human-induced raising of global temperatures is inevitable, and the aim is not to avoid global warming, but limit it to within 2° of pre-industrial levels and adapt to the changes that will be (and are) taking place.

11. The generation of CO_2 through the burning of fossil fuels is one of the main sources of greenhouse gas, and consequently, much attention is focussed upon reduction of fossil fuel use. Although politically favoured, nuclear power is not a viable option[3], carbon capture and storage not sufficiently advanced and, as a western society, we appear unwilling to tackle demand management. Consequently, the only alternative is the use of clean, renewable forms of energy. It is not surprising therefore that it is Government policy to promote the use such 'alternative' energy forms. It is recognised also that many renewable sources have the capacity to be generated at a small, local scale, thereby making a contribution to CO_2 reduction.

12. As well as conservation of energy, conservation of the historic built environment is an important facet of maintaining sense of place (and therefore engendering coherent communities), especially within the urban context. Modifications to places of historical merit which pay scant regard to the structure and form of the buildings, result in an (often permanent) loss of an important part of our collective heritage.

13. The vision of the restoration project has been to create a home environment which, given the age of the house, seeks to approach 'zero carbon' as much as possible, while fully recognising the historical / architectural value of the building and its adjacent environment.

Policy

14. Since March 2012, strategic planning policy has been dictated by the **National Planning Policy Framework** (NPPF).

[3] David Fleming (2007) The Lean Guide to Nuclear Energy: A Life-Cycle in Trouble.

15. This makes it plain that there should be a “presumption in favour of sustainable development so that it is clear that development which is sustainable can be approved” (Para. 15).

16. One of the core principles is that the use of renewable energy sources should be encouraged to support the transition to a low carbon future (Para. 17). The same paragraph states that heritage assets need to be conserved “in a manner appropriate to their significance”.

17. The guidance states that local planning authorities should “recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions” (Para. 98) and as such local planning authorities should:

    - actively support energy efficiency improvements to existing buildings (Para. 95)
    - have a positive strategy to promote energy from renewable ... sources (Para. 97), and
    - design their policies to maximise renewable ... energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative ... visual impacts (Para. 97)

18. The guidance states that local planning authorities “should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance” (Para. 126).

19. Furthermore, it states that “when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset’s conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting” Para. 132).

20. Policies within the Camden **Local Development Framework** broadly reflect those of national policy.

21. Along with minimising energy use and maximising energy efficiency, Policy CS13 of the Core Strategy looks to on-site renewable energy generation as an important component in relation to development. The Core Strategy states that “Energy efficiency measures relating to heritage assets will be welcomed provided that they do not cause harm to the significance of the heritage asset and its setting” (Para. 13.9), even with respect to a listed building, depending upon its form (Para. 25.16).

22. In relation to Conservation Areas, the Council will only permit development within conservation areas that preserves and enhances the character and appearance of the area (DP25).

23. The **energy efficiency planning guidance for Dartmouth Park Conservation Area** (August 2012) recognises that “improving the energy efficiency of older homes will play an essential part in achieving national emissions reduction targets” (Para. 1.1), and in order reduce domestic fuel costs, “a positive,

innovative and inclusive approach to improving the energy efficiency of all homes is essential" (Para. 1.3).

24. With regard to PVs, "the Council will require them to be located, where possible, where they will not be highly visible from the public realm, and to be flush with the plane of the roof so as to preserve the views of the roofscapes that are visible across the conservation area" (Para 3.2.4).

25. The document goes on to acknowledge that flat roofs "offer significant opportunities for siting solar panels that are not visible from the public realm".

26. In terms of assessing general suitability for PVs, the guidance notes that:

- A suitably oriented location with minimal visual impact on the building or area should be chosen.
- The power output of poorly oriented and/or shaded installations is significantly reduced.
- It makes economic sense to consider the installation of solar pv panels when the roof is being replaced or repaired.

Current layout & scale

27. The layout of the panels is shown in the accompanying plans and photographs below.

28. Each of the six panels used are Sanyo HIT250, each measuring 86 x 161cm (being 3.5cm thick). They each have a maximum power output of 250W, thereby providing a total output of 1.5kW.

29. The panels are mounted on an aluminium frame. The installation of the panels was arranged at the same time the roof was constructed (see Para. 26; Fig. 1). This not only eliminated the need to use ballast, but allowed a system of bolts to be integrated into the zinc roof, such that if the frame was to be removed, the traditional 'form' of the zinc roof would not be affected (Fig. 2).

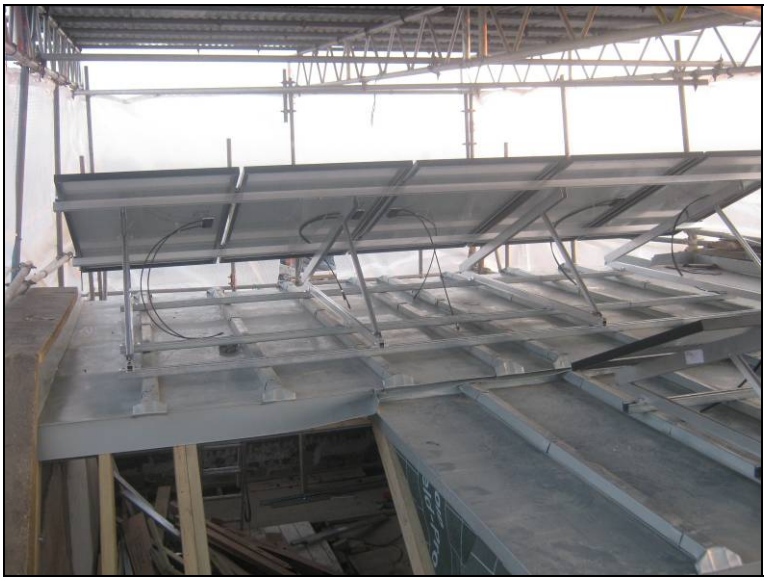

Fig 1 Installation of solar panels during the roof restoration.

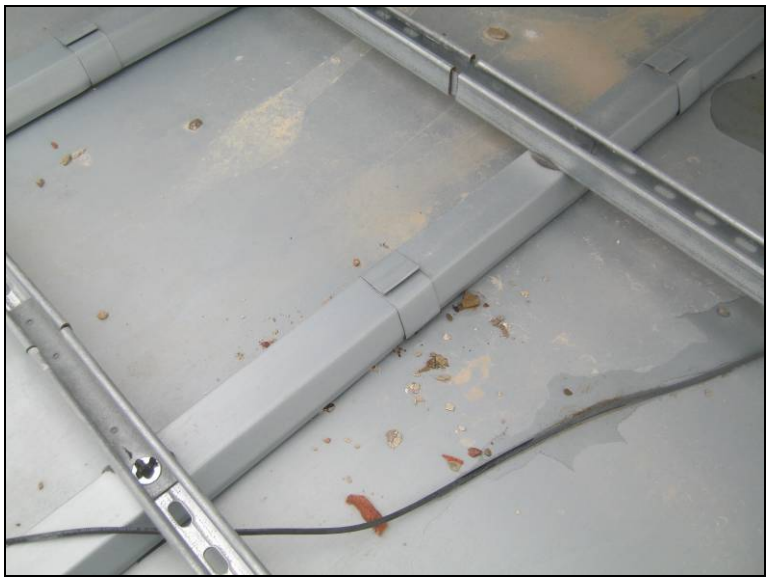

Fig 2 Attachment of solar panel frame to uprights of zinc roof

30. Five of the panels are mounted ‘portrait’ towards the front (south) of the flat roof, set back by 80cm (Fig. 3). The sixth is mounted separately, oriented ‘landscape’ on the rear of the flat roof (north). The total lateral extent of the front array is 4.4m. All the panels are angled at the same pitch of 24° (see Para. 47), facing almost due south, in order to receive adequate solar gain.

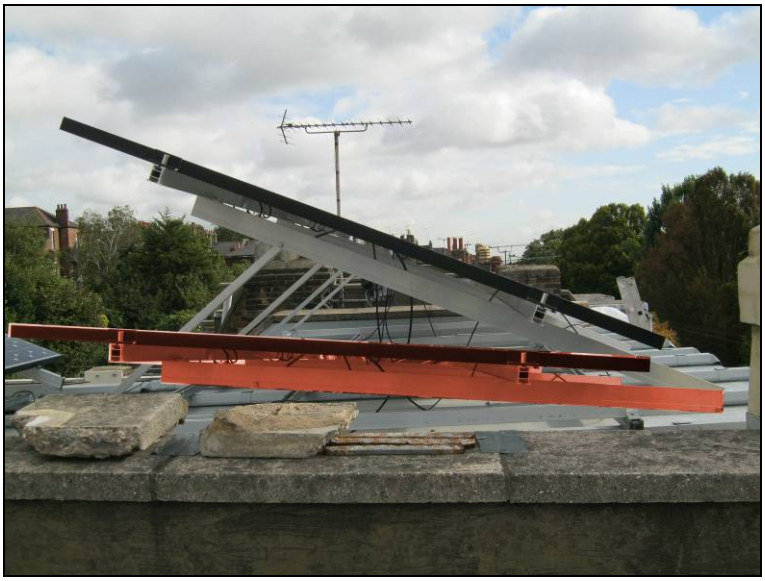

Fig 3 West elevation view (ie looking east) of panels and mounting frame. The nearest panel is that visible from the public realm. The red 'panel' indicates the position to which the panels will be lowered.

31. The maximum projection of the panels above the flat roof is 95cm.

Current appearance & landscaping

32. On the front elevation, the pitched part of the roof is set back behind the front parapet, and the panels mounted on the flat roof, which is set back further still. As such, the panels are almost entirely screened from views from the public realm from the south.

33. It is the case that, from the south side of Spencer Rise, as the building is approached from the west, part of one panel is visible (Figs. 4 & 5). This visibility extends over an approach distance of 20m.

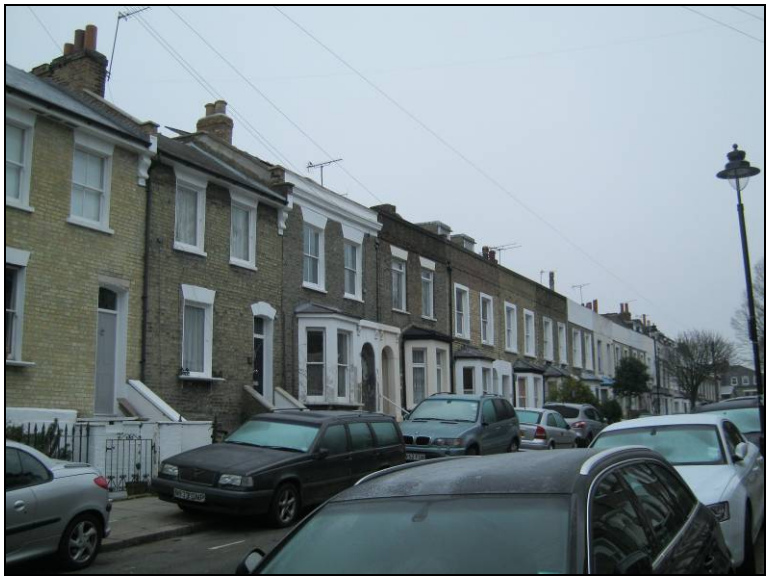

Fig 4 Solar panel (towards top left corner of photograph) taken from the street *at maximum point of visibility*, outside No 34.

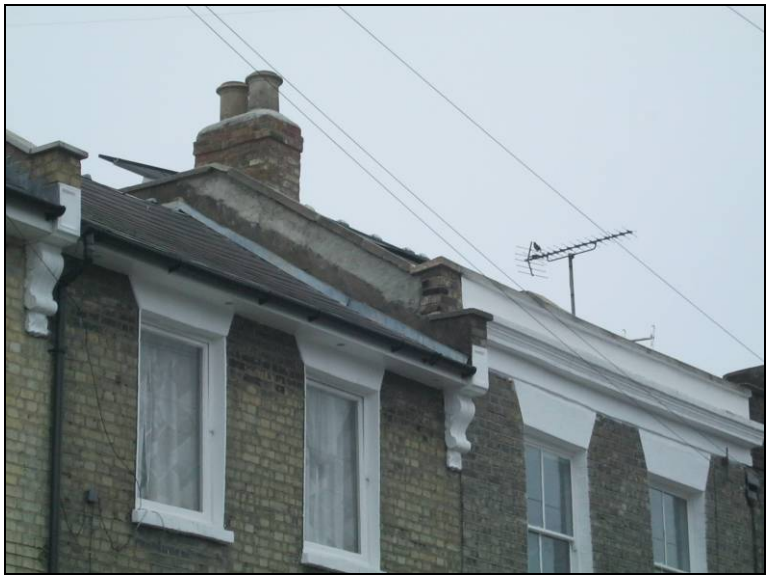

Fig 5 Close up of solar panel shown in Fig. 4.

34. The panels are at their most prominent when observed from the north, where they currently dominate the roofscape (Figs. 6, 7 & 9). As stated above (Paras. 24 & 25), visibility from the public realm is an important aspect when looking at the benefit of renewables in a built-environment conservation context. There is a small gap between 98 and 100 Chetwynd Road, through which the roof of 33 Spencer Rise is visible, and the panels are evident (Fig. 6). The panels are visible over a distance of no more than 6m as one walks along the north side of Chetwynd Road (they are not visible from the pavement on the south side).

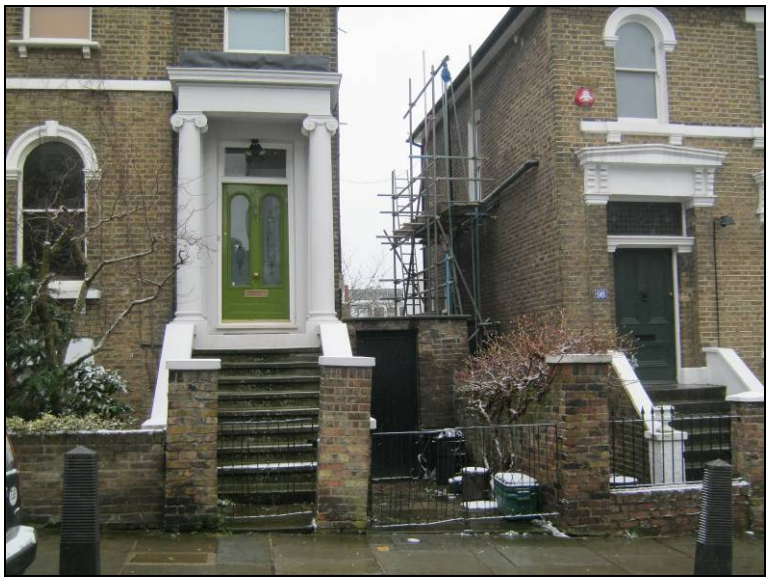

Fig 6 The solar panels at No 33 Spencer Rise as seen from the north side of Chetwynd Road through the gap between No. 98 and 100.

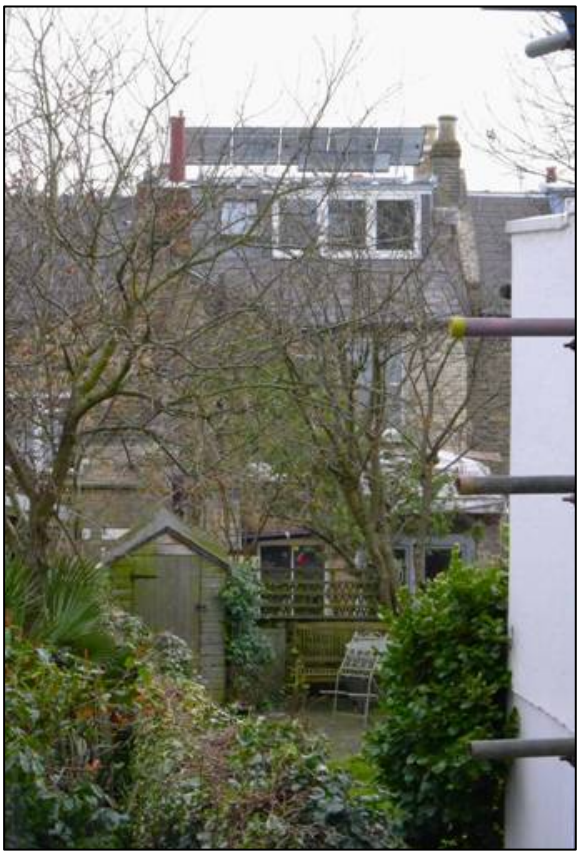

Fig 7 Current view of rear of solar panels as seen from the gap between 98 and 100 Chetwynd Road (likely to be a telephoto picture from the north side of the road).

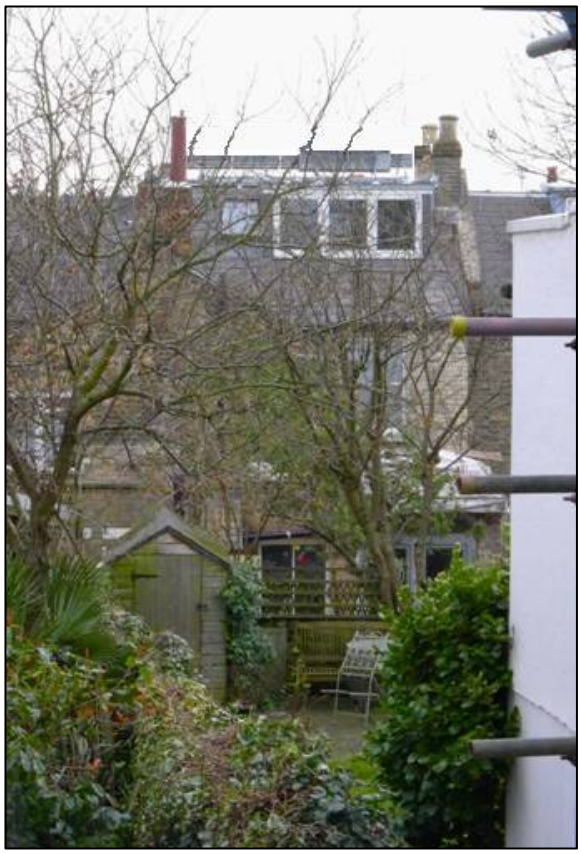

Fig 8 As Fig. 6 but edited to give impression of view following reduction of angle of panels.

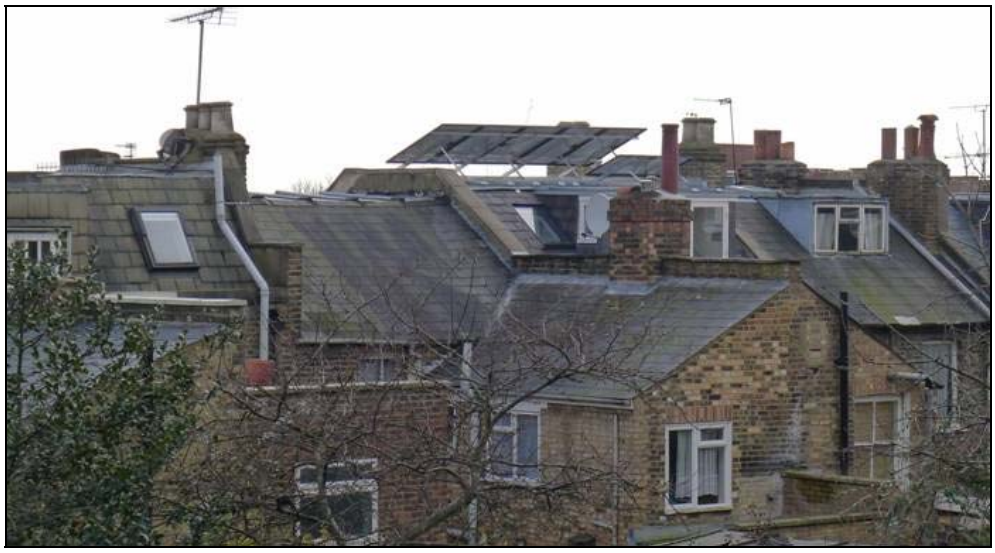

Fig 9 Current view of rear of solar panels as seen from the NE, from a house on Chetwynd Road (likely to be a telephoto picture).

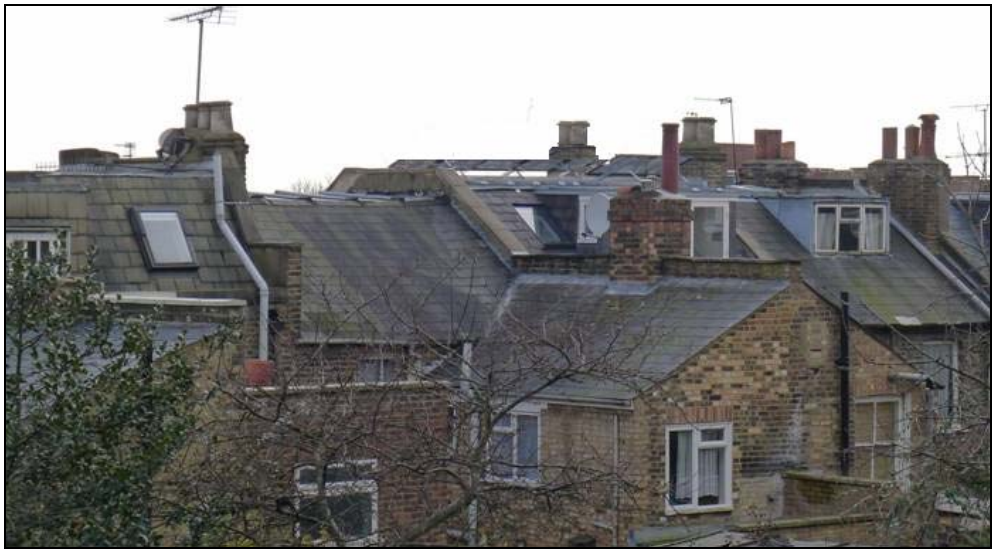

Fig 10 As Fig. 8 but edited to give impression of view following reduction of angle of panels.

Proposed layout, appearance & landscaping

35. As the array is on a flat roof, there is no impact upon or alteration to the exiting landscaping.

36. It is proposed to lower the 5 panels such that their top edge corresponds to that of the single panel mounted on the dormer to the rear (which will remain in its current position). This will take the 5 panels down to just short of horizontal (to approx 4º).

37. While lowering the panels as proposed will not completely eliminate the visibility from the rear, it will have a huge impact on reducing their current dominance, making them very much subordinate to other elements of the roofscape (Figs. 7 & 9). The current limited visibility from the public realm in Spencer Rise will be completely eliminated.

38. In weighing up the energy benefits of the current proposal with the residual visual impact from the north, it is of note that whilst the roofscape is an important component of Spencer Rise, and No 33 makes an important contribution to the streetscape, the Dartmouth Park conservation area appraisal also recognises that Spencer Rise "is one of the few streets ... which is marred by isolated mansard roof additions" which adversely affects the roofscape[4].

Access

39. No changes are being made to access arrangements. The property is in private ownership and there is no public access.

Additional information

The conservation fabric

40. The installation of solar panels is an environmentally benign addition in undertaking what is considered an exemplary renovation of a Victorian property that not only preserves, but enhances its conservation (energy, historical and ecological[5]) features.

41. It is acknowledged that, as currently configured, there is an element of visual impact from the 5 panels as viewed from the public realm, that was not envisaged prior to their installation. However, in the context of other factors, the impact of this revised scheme is considered minimal and outweighed by the energy benefits conferred and other measures previously implemented unilaterally by the applicant which both enhance/restore the conservation fabric of the building, improve its visual amenity and/or increase its energy efficiency:

- all sashes and boxes have been renewed with ultra-slim double/glazed units, thereby allowing the original form of the sashes to be faithfully re-created
- virtually all flooring has been restored with reclaimed, if not the original, wooden floorboards.
- all flooring has been fully insulated
- all existing fireplaces have been retained (one re-opened)
- wall detail to majority of rooms has been restored (for example plaster cornicing and solid timber picture rails & skirting)
- a chimney, 'accidentally' rendered by the builder, was re-built with reclaimed brick

[4] Dartmouth Park conservation area appraisal and management plan. January 2009. Para 7.61
[5] An integral 'Habibat' bat box has been installed within the brickwork of the building

- 1960s front door will be replaced with a mortise and tenon timber door in the style most likely to reflect that of the original
- the size of the dormer for which planning consent was granted, was reduced
- a conservation grade (not required by planning) skylight was installed to the rear of the property
- a zinc roof has replaced that previously of asphalt
- artificial slates to the pitch of the roof have been replaced with Welsh slate
- All internal & external lighting is low energy and/or LED.

42. The above does not include other measures as required by Building Control (such as internal wall insulation, roof insulation), which have also been implemented.

43. Elements of the above demonstrate that the energy hierarchy[6] has been applied. Focus has been on reducing demand and then implementing 'easy wins' (such as draft-proofing fireplaces, use of LEDs), thereby properly justifying the use of PVs.

Bisham Gardens

44. In making this application, careful consideration has been given to national and local policies - also in relation to other applications. In particular, the permission which was granted for the installation of solar panels at 23 Bisham Gardens (Applic: 2011/2930/P) is noted. Also within a conservation area, the visual amenity was an important consideration. However, despite the reduction in angle from the original proposal, the panels are clearly visible from a number of positions within the street (see Figs. 11 & 12). From visiting the area, it was noted that *two* sets of panels remained visible from outside No 34 opposite to the western end of the road, and around the corner to the north on to Swains Lane (an approach distance of some 30m). The sides / rear of the panels are visible from Swains Lane along an additional distance of 10m. In contrast, the panels at No 33 Spencer Rise would, from the street, only be visible along a distance of no more than 6m along Chetwynd Road. Furthermore, due to the diverse nature of the roofline along Spencer Rise, it is suggested that the panels at No 33 would appear far less incongruous, and would not attract the eye as much as those at 23 Bisham Gardens (Fig. 13).

[6] Camden Planning Guidance 3. Sustainability.

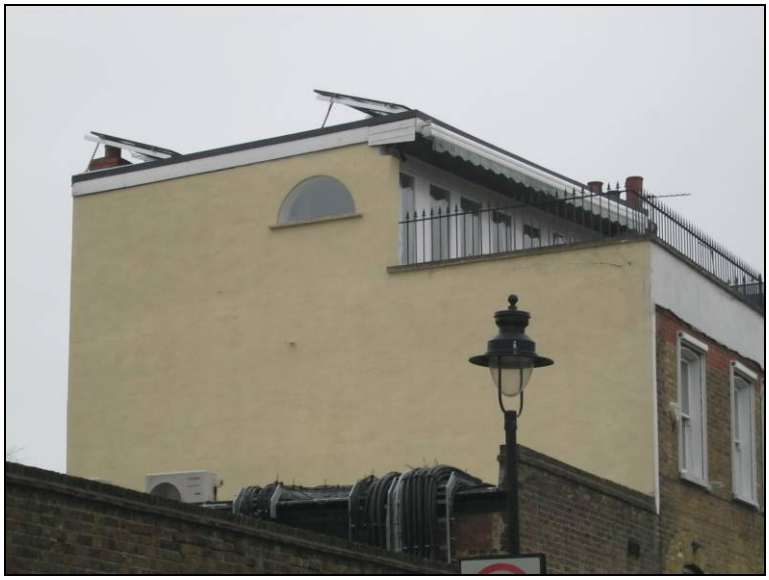

Fig 11 Solar panels clearly visible on 23 Bishham Gardens. Taken from Bisham Gardens.

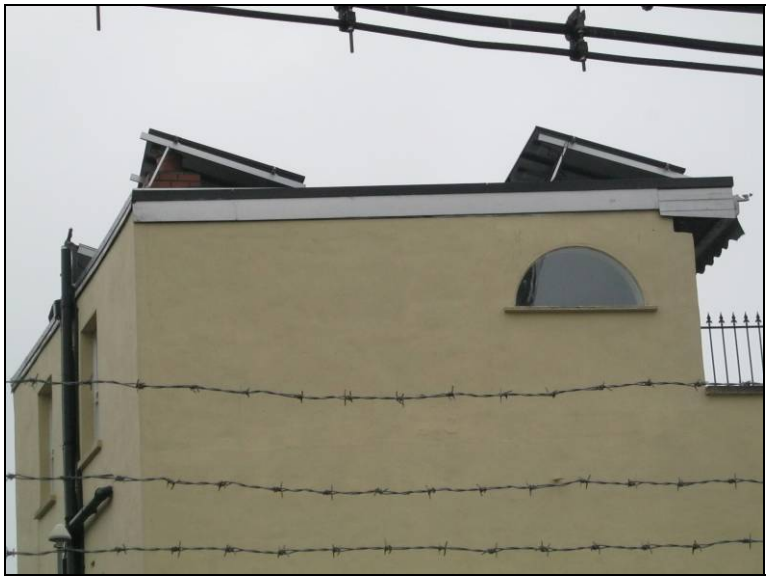

Fig 12 Rear of solar panels clearly visible on 23 Bishham Gardens. Taken from Swains Lane.

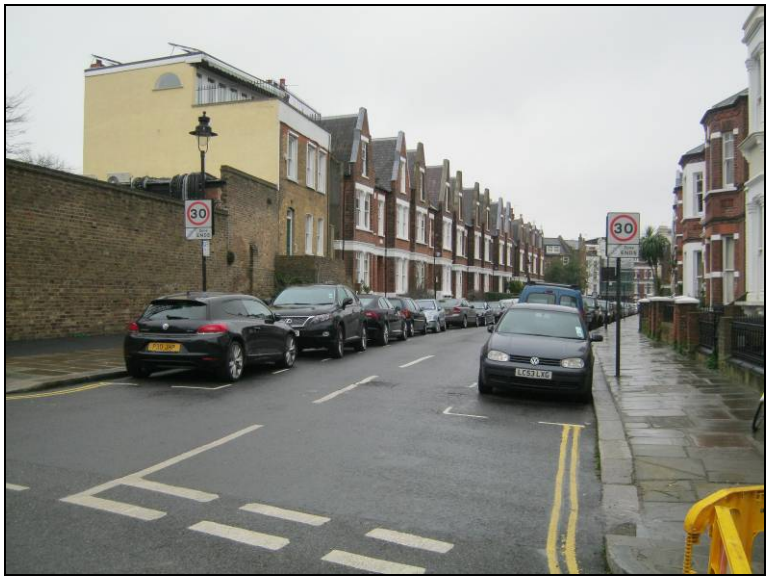

Fig 13 Streetscape with clear visibility of solar panels at 23 Bishham Gardens.

45. Consequently, if the arrangement at Bisham Gardens met the policy criteria, then it would be surprising to find that the panels at Spencer Rise do not.

A matter of 'permanence'

46. The Dartmouth Park energy guidance notes the different extent to which the historical fabric of the conservation area maybe permanently impacted by different energy efficiency / production measures. In terms of maximum reversibility, the installation of PVs is probably the least detrimental, as their installation has a negligible impact upon the feature to which they are mounted (in this case, for example, its removal would leave the zinc reproduction of a 'traditional' roof intact). It is the same principle as the installation of a television aerial. Whilst from a *visual amenity* point of view, the presence of the panel cannot be denied, from a *conservation* perspective, the fabric of the house has not been affected. In other words, there is no 'alteration' or 'destruction' of the heritage asset[7]. This being the case provides a greater justification for the installation given the energy benefits it confers.

Lowering of the panel

47. During installation, consideration was given to keeping the panels as low as possible, and a decision made to install them at 20° [8].

48. The initial application considered the potential to lowering the angle of the panels and referred to the Dartmouth Park energy guidance, which states that "the power output of poorly oriented ... installations is significantly reduced".

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[7] NPPF, Para. 132

[8] During pre-application discussions with the enforcement officer, it was erroneously recalled that the panel was set at 30°, leading to the figures obtained below. It is the case that at the time of installation, a decision was taken to install at 20°, not 30°, in order to (it was believed) eliminate any visual impact. Measurement of the panels themselves reveals that currently they are set at 24°.

49. It was pointed out that, due to the nature of the system, it is not possible to lower some panels within the system with a simple 'pro-rata' decrease in energy production: The efficiency of the remaining panels drops to the same level as those at the lowest angle[9].

50. Information obtained from the installer[10] states that their would be a 6% drop in efficiency from a 30° angle to 10°, and a 13% drop from 30° to horizontal. In their current position, the panels have already incurred a reduction of efficiency, having been installed at 24°.

51. In terms of life cycle analysis and carbon generation in producing the panel, the aluminium frame and the process of its installation, the more efficient the generation and the longer the panels provide electricity, the more the CO_2 production would be offset. Figures from the Inventory of Carbon & Energy[11] show the embodied carbon of monocrystalline panels (those used at Spencer Rise) to be up to 440gg CO_2/sqm, giving a total of up to 3 tonne CO_2 for the panels at Spencer Rise[12]. Figures for the energy payback time are up to eight years (ie solar panels produce as much energy as was consumed during their manufacturing and installation within eight years. After eight years they are carbon negative)[13].

52. Irrespective of the above figures, the more efficient the electricity generation, the quicker the embodied carbon will be offset and the more energy 'gain' will be achieved in the panels' operative life. By not mounting the panel at its optimum angle, one is effectively 'wasting' energy, in the same way as using single glazed windows or un-insulated roofs. With the initial application, it was believed that the minor visual impact from the south of the solar panel at No 33 was not of sufficient 'significance' (see Para. 13.9 of the Camden Core Strategy[14] and Para. 17 of NPPF) to justify the energy wasted upon altering its slope.

53. However, upon reviewing the visual impact from the north, it is accepted that, although there will be a 13% reduction in efficiency, this will be justified by the very significant reduction of visual impact.

Overview

54. It is accepted that in this proposal, the panels on the flat roof of No 33 will remain visible over a very short distance from the public realm from the north side of Chetwynd Road, and it is appreciated that *any* visibility may be frowned upon from a conservation perspective. It is suggested however, that the angle to which the panels will be reduced will have a dramatic *positive* effect in reducing their

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[9] email from Green Tomato energy to Greg Carson, 28/9/12 - attached
[10] See email to Clair Tampin of 12/10/12.
[11] University of Bath, 2011
[12] Five panels, each at 1.39m^2
[13] Bankier C & Gale S (2006) *Energy Payback of Roof Mounted Photovoltaic Cells*. Energy Bulletin
[14] "Energy efficiency measures relating to heritage assets will be welcomed provided that they do not cause harm to the significance of the heritage asset and its setting".

dominance of the roofscape as viewed from the north (as well as eliminating views from the public realm from the south) which will be *de minimus* in relation to the overall streetscape, the benefits that PVs confer and the numerous conservation measures that have been applied in the sympathetic restoration of this property.

55. The solar panels will bring about a significant reduction in CO_2 emissions by meeting a proportion of the buildings' electricity demand, making the building more sustainable. Along with the points made above, the proposal therefore fully supports the Council's commitment to sustainability.

Dr Greg Carson, CEnv MIEEM
28 March 2013