

Neutral Citation Number: [2023] ECC Ely 1

In the Consistory Court of the Diocese of Ely

In the Matter of a Faculty Petition

The Chapel of King's College to Our Lady and St Nicholas

Oliver Caroe
(authorised to act on behalf of King's College)
Petitioner

INTRODUCTION

1. King's College Chapel is, as Historic England identified in their response, a masterpiece of England's late Gothic architectural manner (Perpendicular) and one of the most exceptional of England's buildings. It is Grade I listed and of worldwide significance. The Chapel was built between 1446 and 1531. It would be difficult to disagree with their conclusion that the Chapel is Cambridge's greatest monument. It has architectural significance both on the outside and inside. The fan vault roofing is the largest in Europe and in itself could be claimed to be one of the wonders of the world; it is hard to imagine how they were able to construct the vaulting nearly 500 years' ago.
2. King's College has a strong belief in its duty to combat climate change; they have taken innovative steps to reduce their carbon footprint in respect of new builds on college grounds and they have begun a programme across the college estate to see how they can use their buildings and grounds to provide renewable sources of energy with the aim of reaching net-zero carbon by 2030. That includes placing a photovoltaic array (I will refer to them generally as "solar panels") on Wilkins House, a Grade I listed building, and ground heat source pumps on its land.
3. One part of the overall plan is to place solar panels on both the north and south sides of the Chapel roof. Because the Chapel alone falls within the jurisdiction of the Consistory Court of the Diocese, this is the only part of the scheme which I have to consider. It is connected to the replacement of the lead roof which was failing as was highlighted in the 2018 QI Report and for which I have issued a faculty.
4. The installation of solar panels has been under consideration since Max Fordham LLP were commissioned by the college in 2019 to investigate the feasibility and potential for solar panels to be installed on various rooves in the college, including the Chapel. Detailed work on the plans began in September 2021; The college cannot be faulted for their

willingness to commit to the necessary research financially and in devoting time on bringing the project this far.

5. In February 2020 General Synod voted to adopt a policy for the church to be carbon neutral by 2030.
6. On 1st July 2022 The Faculty Jurisdiction (Amendment) Rules 2022 came into force which require all applications for a faculty to demonstrate that the development of the proposals have been considered with due regard to the guidance issued by the Church Building Council on reducing carbon emissions.
7. In November 2022 General Synod endorsed plans to achieve this target. Norwich+, the lead bishop on climate change, told Synod that
“The 2030 target is hugely ambitious, but the process is as important as the target. This work is central to our story with God and creation; and I see it as a key part of our obedience to God’s call to be stewards of creation.
8. The plan envisages simple changes such as preventing drafts or using emails to the exclusion of paper copies. However it identifies that more radical measures will be needed to achieve its target by 2030 and that this will include the use of solar panels where appropriate and where they can be afforded.
9. The government has set a target for carbon neutrality by 2050.

THE APPLICATION FOR A FACULTY

10. The need to replace the lead on the Chapel roof together with the pressing need to achieve net-zero carbon in accordance with the policy of the Church of England and of government has provided the catalyst for the application to install solar panels.
11. In the August 2022 “Statement of Significance, Needs and Design” paper provided by the Petitioner, he asserted based on the research of Professor Julian Allwood that the targets are on track to fail with consequences which will disproportionately affect the least developed and poorest nations first.
12. So far the progress on de-carbonising nationally and within the church has been negligible. It is going to take a sea-change in approach towards such schemes. The Petitioner likens it to the changes that have been made in historic buildings to ensure general safety and

reduce the risk of fires which would not have been contemplated 20 to 30 years ago.

CONSULTATION

13. I have set out the responses of the amenity societies and consultees in detail because their overall contribution to the decisions that Chancellors have to make cannot be overstated. I am grateful to all those who have responded for the care that they have taken and the detailed research which has informed their responses.
14. **The Church Buildings Council** (“CBC”) provided their first response in December 2021. They were impressed by the aspirations of the college and their commitment to net-zero carbon and supported the principle of the installation of solar panels on the Chapel roof. They noted that the national and worldwide prominence of the college placed the College in a strong position to showcase its commitment to net-zero carbon and to lead by example.
15. The CBC acknowledged that the panels will be visible through and above the perforated parapet from ground level. However they considered that those glimpses of the panels should not have to dominate the views of the Chapel, particularly if the panels are made from non reflective materials. They wanted further information about the benefits of having panels on the north slope and whether it would generate enough energy to justify it.
16. The CBC made further submissions on 14th November 2022. They remained supportive in principle of solar panel generation on the Chapel roof. They considered that solar panels should be part of an integrated package of measures when other things such as heat loss have been tackled and other systems have been made more efficient. They would welcome an explicit statement of intent about the college wide net-zero carbon strategy and the Chapel’s place within it.
17. They considered it unusual for an application to be made for installation on a north facing roof. On the basis of the sheer amount of energy that the South side could produce the CBC accepted that it could be suitable, subject to its financial viability and the actual carbon reduction attained.
18. The CBC are not satisfied that the calculations with which they have been provided has included the embodied carbon of the installation, including manufacture, transport, installation and maintenance in order

to arrive at an estimate of when it will break even in carbon terms. Such calculations will need to distinguish between north and south rooves.

19. **The Society for the Preservation of Ancient Buildings** (“SPAB”) responded on 26th April 2022 after a site visit. SPAB considered it to be evident that the visual impact would be far greater than the architect’s report suggested and the panels would be clearly visible from the ground within the college buildings as well as from a number of viewpoints. Whilst the committee members were generally supportive of solar panels in this location, they felt strongly that, with such an important building, the aesthetics of the proposal must have greater weight than in other schemes. This was likely to be regarded as a precedent, which if not done well, could have adverse consequences for other highly designated buildings contemplating similar schemes.
20. They felt it was essential that the panels did not appear above the ridgeline and the view through the tracery of the parapet should be given careful consideration to see if there might be some means of installing a mesh or screening to break up the hard reflective line of the installations. They thought it unlikely that the north facing array would pass any test of harm versus benefit. Their conclusion was that the final solution may need to be smaller to be acceptable, be very well designed, and possibly only occupy the South Roof. Since that visit the Petitioner has taken the decision to reduce the height of the solar panels to bring them further below the ridge.
21. SPAB provided a second response on 14th November 2022. They were satisfied that no harm to the building’s historic fabric would result from the installation of the panels. They considered that any harm would be primarily visual. They commended the work done by the Petitioner to minimise the impact and to facilitate assessment of the impact. They are concerned by the changes when clouds pass overhead because of the reflective surface of the panels which would result in the roof becoming a more prominent feature of the building. It would result in a measure of harm to the architectural significance of the building but it was their view that the level of harm would be less than substantial and may therefore be acceptable if a clear and convincing justification can be provided.
22. To provide that justification the Petitioner must demonstrate that there are clear public benefits in terms of carbon reduction. They are not satisfied that the college has an adopted and funded sustainability strategy such as to provide a convincing justification of carbon reduction required. They consider that a proposal of this type must form part of a whole building/estate approach articulated in a sustainability policy

which sets out the range of measures which will be taken to reduce the carbon footprint. It should address other measures involving lesser harm which are going to be taken by the college and what the comparative impact will be. In principle they are satisfied, given the College's policy to exploit whatever rooves are appropriate within the college, that the Chapel roof is worth pursuing if the conspicuousness of the installation can be reduced.

23. As the combined output of the rooves considerably exceed the Chapel's usage requirements which could be achieved by the south array alone, it calls into question the justification for the north array at all or the south array to be of the extent proposed.
24. A key detail missing from the proposal is a clear profile of the expected generation against the electrical demand for use by the college overall. They comment that it is not known what measures have been taken to reduce the electricity demand from non-Chapel usage nor is it clear what, less visible, rooves may be viable to generate further electricity for this supply.
25. The north roof will produce 60% of the electricity of that of the south roof which could result in the north roof having a carbon payback of over 10 years thus emitting more carbon into the climate between now and 2030, not less.
26. In considering the proposals they have been mindful of the requirements of the National Planning Policy Framework ("NPPF"). With that in mind, I have considered, in particular, paragraphs 199 and 200:

199. 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 (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

200. Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of...; b) assets of the highest significance, notably... grade I and II* listed buildings... and World Heritage Sites, should be wholly exceptional."

27. **The Greater Cambridge Shared Planning Historic Environment Team** reported in May 2022 after their site meeting that from ground level the large majority of the Chapel roof is obscured, save where there are glimpses of it through piercings in the parapets and between the pinnacles and turrets from various vantage points which included higher level vantage points such as the tower of Great St Mary's. However, even from that high point, the parapet and pinnacles dominate the view.
28. They raised specific concerns about the positioning of the panels and considered that harm would depend on the extent the panels covered the roof. Provided that opportunities were taken to minimise the visibility of the panels, the officers were likely to be able to support the proposal on the basis of the benefits.
29. In a second report dated December 2022 the conservation officer, having assessed the views of the roof from a variety of places concluded that it would have a modest adverse impact. This, taking into account the importance of the Chapel as a listed building, is then to be weighed against any public benefits.
30. He acknowledged that the roof itself is only a part of the overall appearance of views of the Chapel and is not prominent in terms of architectural elements. Having considered each vantage point in turn he concluded there are several viewpoints from which there could be a harmful impact on the appearance of the Chapel. The visual impact of the panels would vary according to viewpoint and brightness. There is concern the panels would not appear recessive in the way that the existing lead covering does. There would be a shinier surface capable of detracting from the appearance of the building. At each end of the roof will be areas of lead which will contrast with the solar panels. His research into well-known images of the Chapel show that they are taken at street level and do not feature the roof. However with the use of drones and the explosion in online videos it should be taken into consideration that the roof is more visible than it has been historically, A comparison with other lead rooves in the locality would be seen from higher vantage points.
31. The council's aim is to ensure a balanced approach between protecting the heritage assets of Cambridge and ensuring that they contribute to tackling climate change and reducing the carbon emissions of the City. Acceptable levels of intervention will vary dependent upon the impact on the significance of the heritage site in question; the harm will be weighed against the public benefit of the proposal.

32. The conservation officer relies on the Decarbonisation Report of Max Fordham in which he has said that the Chapel roof slopes are “moderately suitable” and the north slope “slightly suitable” for solar panels. Whilst I will take that into account factors when making my decision, I regret that, even with the help of “word search”, I have been unable to locate those words in that report or any other report written by Max Fordham with which I have been provided. The passages I have found in his Decarbonisation Report dated 30th May 2022 are as follows:

“The Chapel roof provides the single largest opportunity for PV generation on the site, with a potential generation capacity of 125kWp.” (§9.1 of the report)

“Reduction in heat loads, implementation of heat pumps and renewable electricity generation all have a part to play in achieving net zero carbon. Fabric improvements are needed...

Renewable electricity generation projects may be implemented quickly, have relatively short payback periods and create carbon savings while the grid carbon intensity decreases. Beyond the point where grid supplied electricity is carbon neutral, renewable generation has relevance in decreasing costs associated with importing electricity and supporting capacity in the transition to a smart grid. The largest and most impactful current opportunity is the implementation of PVs in conjunction with the replacement of the lead roof of the Chapel which has the potential to reduce the college carbon emissions by an average of 23 tonnes a year over the next 30 years.” (§13.1 – Conclusions)

33. The conservation officer suggests alternative options such as a ground based solar array or using the District Heat Network. He concluded that the aim of supplying a sustainable source of energy to the college is a beneficial one. However the effect of the proposal on the Chapel's architectural interest or significance would be the principle impact, because the panels would effectively form a roof covering of a different character and appearance to the lead roof and visual differences would be apparent in a limited way. The degree of harm to the Chapel's significance, and to other historical buildings surrounding it, would be modest, that is less than substantial, but given the building's importance, this harm has to be of concern and would conflict with the local planning policy. He identified that the provision of renewable energy is a public benefit and an important part of reaching net-zero carbon targets and responding to the climate emergency.
34. **Historic England** (“HE”) responded in October 2022. HE identified that the Chapel skyline makes an important contribution to its architectural interest and the complex appreciation of the Chapel from within the

college and in views from the surrounding streets, the Backs, the river, and beyond. The roof has always been covered in lead and it contributes to the Chapel's architectural character.

35. HE accepted that from many vantage points the roof can either not be seen or plays little part. In others the roof can be seen, almost always as part of a larger whole, for instance from Garret Hostel Bridge, from the southern end of Kings Parade and from within Great Court as well as from Trinity and Queens Lanes. It can be seen from the raised vantage points of the tower of Great St Mary's and Castle Mound. HE concluded that, although the contribution of the skyline and the relationship between the lead covering of the roof and the stonework surrounding the roof to the Chapel's significance is important, it is modest when considered in the context of the Chapel's significance as a whole. The exterior could be described as a prelude to what is contained within. In addition to the fan vaulted ceiling, the supreme example of its kind, there is the excellence of the renaissance screen and stalls and the remarkable quality and survival of the Henrician glass which combine with the building's exterior to make the Chapel a transcendent work of art.
36. Whilst accepting that there will be no impact where the roof covering cannot be seen, where it can be seen, and particularly from places closer to the college, it will have a harmful effect. The view from the tower of Great St Mary's would be transformed by the application of the contemporary material forming a reflective screen. HE concluded that:
 - (a) Wherever they would be visible, the solar panels would be discordant; their appearance would shift with the weather and be alien to that of the Chapel's historic materials;
 - (b) Their discordant character would detract from the Chapel's appearance and erode its authenticity and integrity;
 - (c) While the solar panels would be visible only in some views, their impact would not be insignificant: some of the affected views are of great importance and all contribute to the dynamic way in which the Chapel's architecture is best appreciated.
37. They are at odds with the petitioner as to whether the solar panels would be "reflective". They conclude from their observations that the panels create a reflective screen and do reflect the colours in the sky; in some conditions the changes will be pronounced and the panels can mirror the colour of the lead roof but as the sky changes they are sometimes very dark, almost black, and at other times very light, or white.

38. They understand the Petitioner’s meaning of “reflective” to be that there would be no direct reflection of light from the sun, of the sort that would cause glinting, or even powerful rays of light reflected from the solar installation; they have no reason to disagree with that conclusion save with the minor exception of short periods early in the morning for a short part of the year.
39. In considering the Duffield Questions, HE acknowledges that, in addition to the policies relating to the conservation of historic buildings, the Church of England policy in respect to climate change is relevant to this petition. HE points to the passage in the Framework Policy agreed at General Synod in July 2022 that energy generation is to be taken as a public benefit regardless of the scale of a project but, while approval of such proposals is desirable, a project’s adverse impacts may justify refusal.
40. They submit that the petition should be refused unless the Chancellor concludes that the harm that the installation would cause would be outweighed by the public benefit provided by renewable power generation. HE accepts that the effect on the significance of the Chapel as a whole would be modest. They consider the justification for carrying out the proposals is neither clear nor convincing but is “questionable” and the “public benefit” has to be considered in a broad context:
- (a) The decarbonisation report commissioned by the college concludes that the contribution of the solar panels on the Chapel roof would secure a reduction of approximately 1.4% of the college’s carbon emissions;
 - (b) Whilst the Church of England’s Routemap to net-zero provides a clear indication of the importance of renewable energy generation, it does not provide guidance on how to set this against the “strong presumption against proposals which will adversely affect the special character of a listed building”.
 - (c) The NPPF also establishes a requirement that local planning authorities provide a positive strategy maximising the potential for renewable energy generation while addressing visual impacts and encouraging them to identify suitable areas for renewable energy generation. HE points out that other buildings and spaces across Cambridge offer opportunities to generate more renewable energy without harm to the Chapel or other unacceptable or adverse impacts.

PETITIONER'S RESPONSE

41. The Petitioner responded to the issues raised by HE and others with the assistance of Turley, the planning consultants. The Petitioner disagrees with the conclusion of HE that the public benefit would be limited: The NPPF at §158 states that when determining planning applications for renewable and low carbon development, local planning authorities should not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognises that even small scale projects provide a valuable contribution to cutting greenhouse gas emissions. The Petitioner submits that the contribution made by the solar panels remains a valuable contribution and suggests that HE has ignored the positive aspects of well-being, opportunities for mission, and putting the church to viable uses that are consistent with its role as a place of worship.
42. The Chapel roof is the single largest potential opportunity for renewable electricity generation on the main college site and equates to almost half of the achievable roof space for solar panels. Because the scaffolding is in place for re-leading the roof, the lost opportunity cost of not doing this now and up to 2050 (the expected lifespan of the panels) equates to 410 tonnes of CO₂. It allows the Chapel to contribute to the moral and ethical wellbeing of a place of learning. The solar panels will exceed the energy needs of the Chapel looked at on its own. Because the interior of the Chapel is so remarkable, significant and sensitive it cannot be adapted in any significant way to lessen its carbon footprint which is an avenue open to some churches.
43. "A Summary Statement of Significance and Visual Impact Assessment" dated July 2022 looked at the various possible views of the roof of the Chapel. The Petitioner considers that HE have not acknowledged that the contrast that was apparent between the lead and the localised trial areas of solar panels will not be as remarkable when the solar panels are there on the roof overall. Further, the zoomed-in photographs relied upon by HE distorts what would be apparent at ground level or from a distance. Because the solar panels will not reach as high as was first intended, they will barely impact on the skyline, something which concerned HE,
44. As to "reflection" the Petitioner comments that a slight change in tone, or even colour, picked up by the solar panels could add to the dynamic experience not detract from it. In any event a lead roof does not appear precisely the same in all weather conditions, especially when wet, nor is it a homogeneous surface where patched or weathered. The patination of the roof will not be even and there is often distraction when the sun casts shadows onto the roof from the pinnacles and turrets. They

suggest that this could be argued to be just as conspicuous as any change in tone of sky picked up by the solar panels. The Petitioner is unclear from the submission why HE suggests that such changes in tone would be detrimental to its heritage significance.

45. In respect of HE's submissions as to the availability of other spaces in Cambridge to provide renewable energy, the Petitioner responded that that is something over which they have no control. It is unarguable that all possible sites and opportunities for reducing carbon emissions have to be part of a national transition.
46. The Petitioner commissioned Max Fordham to produce the "King's College Cambridge Decarbonisation Report" dated May 2022. He was asked to look at the potential for improving energy losses, energy strategies, the potential contribution of self generated electricity and overall operational carbon impact across the estate. It recognises the role of heat exchange, including ground source heat exchangers and refers to the 2019 study to assess the potential of all roofs for the use of solar panels, that two areas were already in use and that the Chapel provides the single largest opportunity for PV generation on the site, with a potential generation capacity of 125 kWp.
47. The report recognises that every tonne of carbon emissions saved has value. It identifies that fabric improvements greatly reduce the carbon and running costs, but realises that there will be limitations on the fabric improvements which can be made because of the architectural and historic significance of buildings at the college. Allowing for this and that more and more of the electricity produced on the grid will come from renewable resources, it is estimated that the residual carbon emissions for the college will be 24 tonnes of CO₂ by 2040 and 11 tonnes by 2050. It concludes that

"The largest and most impactful current opportunity is the implementation of PV's in conjunction with the replacement of the lead roof of the Chapel which has the potential to reduce the college's carbon emissions by an average of 23 tonnes a year over the next 30 years."
48. A further report entitled "Chapel Solar PV Assessment" dated 6th October 2022 by Max Fordham sought to assist with the following:
 - (a) Eleven different makes of panel were compared and the REC Alpha Pure 410 was selected on grounds of high input density, coordination with the roof, an all-black appearance and commercial availability. I note that the CBC submission dated 6th February 2023 accepts the proposal can be determined on the

basis that the product chosen is the best available fit within the criteria.

- (b) The south roof payback period is likely to be 4.5 years and the north roof 6.4 years. The annual CO₂ reduction is 15969kg and 11219 kg respectively. I calculate, in percentage terms, that the north roof creates a carbon reduction of approximately 70.25% of that produced by the south roof. The CBC have returned to this issue in their submission dated 6th February 2023. Whilst they accept that south slope array would pay back its embodied carbon and produce a modest net carbon saving over its lifetime, they are not satisfied that the north slope would do so. They consider it reasonable to distinguish between them, topic I should return to later.
 - (c) The Chapel demand for electricity is approximately 15% of the college's overall demand. All excess electricity generated by the Chapel rooves would be used within the main college site.
49. Turley, with input from the Petitioner, produced a Planning and Heritage Statement in August 2022. The report sets out the historic and heritage importance of the Chapel and the surrounding buildings and that it is in a Grade II* registered area. It sets out the changes to the installation brought about after the mock-up process which included bringing the solar panels down the roof to a position where they are now 1.3 metres from the ridge, and reducing the height of the fixings to bring the panels closer to the lead roof. It calculates the annual PV output as 105,864 KWH/yr and that the north panels would be 57% as efficient as the south facing ones. The college's business case for the installation is primarily based on non-financial goals such as achieving net-zero targets and the binding policy commitments for college estate.
50. The report also deals with an area of concern which has been raised, namely whether the college had considered other options and whether there was a coherent policy on achieving net-zero. It identifies that the college has already taken major steps to reduce carbon emissions across the estate especially in respect of new build. The retrofitting and refurbishment of its existing building stock is also a major aspect of their overall plan and quantity surveyors have been asked to carry out an assessment of the entire College estate to cost out potential approaches and alternatives. It has not prevented the college from beginning an upgrade in any event at Market and Garden Hostels as well as elsewhere. They have considered the use of farmland owned by the college but have rejected that on grounds of unsuitability due to remoteness and because they are let on a commercial basis.

51. The Chapel has already taken steps to de-carbonise through their low energy lighting scheme and, with their boilers reaching the end of their useful lives, they intend to replace them probably with electric under floor heating.
52. The report reviews the existing research carried out on the views of the roof from different places. It concludes that the visibility of the solar panels is very limited in any of the main iconic and enduring viewpoints of the Chapel. Where the roof covering is seen it continues to form a consistent background with the pinnacles and decorative pierced balustrade and towers remaining as the eye-catches, either in silhouette against the sky or, in extremely limited situations, against the plane backcloth of the uniform surface of the roof. They accept the mock-up revealed that the only noticeable visual impact was from the edge of the arrays which, in some views, appeared as a more shaded tone through the pierced parapet. They suggest that was more noticeable because the mock-up was only on a small area rather than consistently covering the whole roof. Moving the panels down the roof means of the bottom edge now largely visually blends into the shadow into the lattice work of the parapet.
53. Taken overall they consider the level of harm to the architectural historic interest not only of the Chapel but the surrounding area is minimal and at a very low level of less than substantial harm.
54. The report deals with the test against the local planning policies. Whilst I have taken this into consideration they have only a marginal effect on the decision which I have to make; that will be a matter for Greater Cambridge Shared Planning to consider when it deals with the planning application. As to the public benefits, where the test is not dissimilar to that which I am required to consider, the report contends that the public benefits are the contribution the works will make towards renewable energy generation and its contribution to tackling the climate emergency. It accepts that installing two arrays of solar panels on the Chapel roof is not going to solve the issue on its own but it points to paragraph 158(b) of the NPPF which states that even small scale projects provide a valuable contribution to cutting greenhouse gas emissions.
55. It concludes that from the outset they have acknowledged that the Chapel is an exceptional historic building but they do not accept that this means that it should be treated like a museum piece. At its inception it was one of the greatest examples of constructional excellent and Masons' skill and art. it seems appropriate that it is today at the

forefront of how historic buildings can be sensitively adapted to tackle the climate emergency.

56. They would not have preceded if the proposed installation was likely to damage underlying fabric, or if the roof covering was an important aspect of its heritage significance, or if the solar panels would be obtrusive or noticeable in any key views and thus spoil people's enjoyment of seeing the building within the historic townscape. The solar panels will just about be visible in two of the assessed viewpoints, one from the top of Great St Mary's and one from Kings Parade. The most iconic views are unaffected.
57. The CBC in their submission of 6th February 2023 raise concerns that the Statement of Significance, Needs and Design does not sufficiently reflect the role of the Chapel as a place of worship and mission where that response might be articulated or enriched as a missional objective or expression of faith. I agree. However I note that in Chapter 6 of the Statement it refers to the requirement of all faculty applications to demonstrate that the development of the proposal has been considered with regard to the guidance issued by the CBC on reducing carbon emissions which provides at least a nod in the direction of the Church of England's mission in respect of climate change. I agree that the application could have been enhanced by, for instance, written support from the Dean or Chaplain. However, because of the overall material which I have been provided with including the responses from other bodies, I am satisfied that I have a sufficient understanding of the missional objective and expression of faith that such projects would engage in this or any other church building without inviting further submissions from the Petitioner..

DIOCESAN ADVISORY COMMITTEE VISIT AND ADVICE

58. The Diocesan Advisory Committee's ("DAC") site visit took place on 4th November 2022. Even taking account of the revised location of the solar panels further from the ridgeline and the reduction in the height of the panels above the lead they acknowledged that there would be some degree of visual harm resulting from the installation. Compared to the photographs provided by HE the new position of the solar panels would significantly reduce the opportunity to glimpse them above the stone parapet, particularly from Great St Mary's. They went to the Grand Arcade multistorey car park which, perhaps, offers the best view of the Chapel from a high point and concluded that the ridge would scarcely be visible from the car park and the view through the piercings of the parapet would be from an oblique angle reducing the visibility through the piercings, as would apply to the crenulations and pinnacles which would greatly limit any view of the roof further west.

59. They considered a large carbon-neutral generation scheme would be strongly in support of the fifth mark of mission. The five marks of mission have been developed by the Anglican Consultative Council since 1984. They have been widely adopted as an understanding of what contemporary mission is about and were formally adopted by the General Synod in 1996 and were last revised in 2017. The fifth mark reads:
- “To strive to safeguard the integrity of creation and sustain and renew the life of the earth”
60. The Committee concluded that the robustness of the visual harm argument – that from certain very select viewpoints, with good eyesight and in certain lighting conditions the panels will be visible – is insufficient to outweigh the demonstrated public benefit of this proposal.
61. Further detailed notes were provided by a member of the Committee, the Revd Canon Nigel Cooper, an expert on environmental matters. He draws a distinction between “intentional design” and “necessitated design”. The lead covering of the roof was necessitated design because, at that point in history, it was the only viable material to cover a roof. Intentional design can be seen in the design of the parapets, pinnacles and towers, and in the roof height and pitch. He argues that 21st century changes to a clear original intention will be more harmful than changes to necessitated design.
62. He accepts that, although most people in the building conservation world would probably prefer traditional technology and finishes, the roof coverings were not ornaments on the building they provided good practical engineering solutions to keeping the rain out. He suggests that in weighing the harm of the array it is not merely a question of how much it can be seen; there is also the question of the degree of significance of a lead roof as an original design feature and, the arguably, positive aesthetic of a PV array in present circumstances.
63. He argues that the harm to other historic architectural heritage cannot be ignored. UNESCO has highlighted a number of sites which are at risk from climate change, including Orkney and Stonehenge. HE has recognised that climate change will increase the maintenance needed to historic buildings and that global warming is likely to encourage both fungal and plant growth and insect infestation affecting historic building materials. Structural problems may also increase from changing extremes and fluctuations in temperature leading to subsidence, structural deformation and collapse in the most severe cases. HE concluded that:

“We will not meet our emission targets and sustain our heritage without changing our approach.”

64. Since the publication of the NPPF and the General Synod’s resolution the evidence of climate change has become stronger and more concerning. There is a general acceptance that the commissioning of renewable generation is woefully behind schedule. Every new installation assists to reach targets and is preferable to taking renewable electricity out of the grid.

DISCUSSION

65. The fundamental question I will need to consider before deciding whether to issue a faculty is the visual impact of placing solar panels on the roof on the Chapel overall. A subsidiary but aligned issue is that of “reflection”.
66. I visited the College on Thursday 26th January 2023; it was a largely overcast day. I was warned in advance that the mock-up of some solar panels on the south roof had been taken down and that the scaffolding and its safety gauze would hamper my view. I asked to be allowed to go up the scaffolding to roof level. As a result I had to meet with the Petitioner to enable safe access and to allow him to point out the height to which the solar panels would sit on the pitched roof, and, as a result of him being present, he was also able to save me time by directing me to the various vantage points on the ground from which I wished to see the Chapel roof. As with any view undertaken it was made clear that this was not a hearing of the Consistory Court and no evidence was taken by me other than through what I saw.
67. From my own observations, when close to the college, the roof was not visible. From the far distance, the roof itself has a reduced impact. In the middle distance, which includes, for example, some views from King’s Parade, Senate House Hill, and Garret Hostel Bridge (although this view is at some distance and at an oblique angle), some limited parts of the solar panels will be visible through the stone tracery and past the pinnacles. I did not go up Great St Mary’s tower but can readily see that the view will be impacted, albeit less so now that it is intended that the solar panels will be placed further down the roof from the ridge. I note that a trip up the tower is a source of revenue for the church but that no submissions have been made by Great St Mary’s as to any detrimental effect it may have. I note (from photographs) that their own roof has a number of solar panels on it which would be visible to any visitor to the tower.

68. From my own observations and the generality of the submissions I have read, I accept that the solar panels will only be seen from a limited number of places and then only to a limited extent.
69. I also note from the DAC site report that they were told that when the mock-up was in place, none of those who had photographed the Chapel and who had been asked had noticed it. This is at a time when the difference between the lead and the solar panels would have been stark.
70. I struggle to see why a “reflection” of a changing sky should adversely affect a visitor’s enjoyment or perception of this historic building. Lead changes colour when damp; stone buildings change colour depending on the sunlight available. Bearing in mind my findings as to where and to what extent the solar panels will be visible, I judge it to be very unlikely that this will create an adverse impression on anyone looking at the building.
71. However, I note that the CBC submission dated 6th February 2023 that a recent entrant into the market, “Solarskin”, have an adhesive overlay which might make a difference to the visual impact. They recommend a trial of the film although they believe it should not stand in the way of a decision in this case.
72. Climate change is an emotive issue but there are few people who would not concede that climate change is a reality and, if not reversed, its effects over the long term will be catastrophic for the planet. In addition to the effect on its people and its flora and fauna, its historic sites and buildings are under threat in the long term.
73. The Church of England wants to respond ethically and in a socially responsible way to combat climate change and thereby fulfil the fifth mark of mission. It has a responsibility to protect and nurture God’s gift to us. By setting down as its goal a date 20 years in advance of national government for net-zero carbon emissions, it have given itself an imperative to encourage change within church buildings at an even more rapid rate than that expected nationally or internationally. There are seven years left for the Church of England to fulfil its target. It is unsurprising that a scheme which, it is believed, would provide more than its power needs and which has a relatively short carbon pay-back period for the south roof and longer one for the north roof should have been taken up by a college which is taking the need to respond to climate change very seriously and which is willing to invest in change.

74. It is relevant to my consideration whether the Chapel has done anything to reduce its carbon footprint or whether it is simply going for the “easy option” of solar panels. I am satisfied that their application for a faculty for replacing much of the lighting in the Chapel with LED lights and the likely course that they are contemplating when the boiler has to be replaced shows that this is just one, albeit major, element in their general approach to reducing carbon emissions.
75. I have read the arguments about the use of other areas of the estate to provide sites for solar panels. It is perhaps unfortunate that, were the Chapel standing on its own or with limited outbuildings, as might a village church, these arguments would be less easy to mount. In my judgment it is the college’s wish to maximise the number of rooves available for reducing the carbon footprint of the whole college. The Chapel happens to provide the largest area for the installation of solar panels. If I accept the argument that the college should only use other rooves available to it, it would be tantamount to accepting that the church should stand in the way of the college reducing its carbon emissions and leave it just to the “secular rooves” to provide solar energy. There is no suggestion that the college could get to net-zero without solar panels being placed on the roof of the Chapel; nor is it suggested that solar panels on the Chapel will do more than assist them on the way to net-zero. I am not convinced that the church would be acting as a good neighbour were it to turn its back on the college by refusing to install panels on the Chapel unless the arguments against it were good ones.
76. In their submission of 6th February 2023 the CBC suggest that it would be helpful were I to see a statement of adopted policy or strategy. In my judgment the material that I have seen explicitly and implicitly gives me the information that I require to assess the college policy and strategy. The aim of the college to get to net-zero is clear and the ways in which they hope to achieve that, bearing in mind the age and architectural importance of some of their buildings, is also, in general terms clear. Where this is a policy to be implemented over many years it is not possible to be specific about many elements of it, for instance where and in what form the ground source heat exchange will happen or whether the college will consider wall insulation in the older buildings. That they are looking at all options is quite apparent and that the Chapel roof is incorporated in that policy is well evidenced.
77. The arguments about other net-zero options in Cambridge may be for Greater Cambridge Shared Planning to consider if they so wish. I also have in mind that, where every developed nation is so far behind its targets for net-zero emissions, any scheme whatever its size, needs to be considered if it will reduce carbon emissions generally.

78. There has been much discussion as to the carbon benefits of placing solar panels on the north roof. I am greatly assisted by the CBC's submissions provided on 6th February 2023 which brings those points into sharp focus. They submit that the UK grid is decarbonising as more renewable energy comes on stream. They submit that this means that it will take longer to pay back. The BIES publishes forecasts of the carbon element in grid production for years ahead. Factoring this into the calculation has a significant effect, they suggest. They calculate, as a result, that the break even point for the north slope would not produce a net carbon saving over the lifetime of the solar panels.
79. Leaving on one side that the only reason that the UK grid is decarbonising is because of various projects to provide renewable energy both large and small, if the CBC are right as to their calculations then the justification for placing panels on the north roof is greatly reduced. They also question what effect it would have on the Chapel structure were the weight of the solar panels on the south roof not to be matched by a similar weight on the north roof. That, where monetary considerations are not an issue, may favour the installation of solar panels on the north roof to balance out the weight.
80. I am well aware that two emotionally charged considerations come head to head in an application such as this: the preservation of a building of outstanding beauty, and the reversal of climate change ultimately to save our planet.

APPROACH TO THE ISSUES

81. No one has asked to be a party opponent, but only that their views are taken into account in making my decision.
82. Before considering the first of the Duffield Questions, in accordance with In Re St John the Baptist, Penshurst, I must first decide what is the special architectural and/or historic interest of the church as a whole. This is a Grade I listed building and, were there grades within Grade I, it would be at the very top of them.
83. In considering whether I should grant the Faculty I have followed the guidance laid down in In Re St Alkmund, Duffield:-
- (i) Would the proposals, if implemented, result in harm to the significance of the church as a building of special architectural or historic interest?
84. My answer is "yes"

(ii) How serious would the harm be?

85. In my judgment the harm would be less than substantial. Were the Chapel to be of less national and international importance and beauty I would judge the harm to be minimal. However because of its status the harm is somewhere above minimal. The harm is much reduced because there are only some places from which the roof can be seen and, in the context of the building as a whole, both inside and out, the roof is not the feature which has led to its international renown.

86. It is accepted, and I take into account, that the solar panels could be removed without any harm being done to the fabric of the building beyond some work on the lead which can be easily accomplished. It follows that it is reversible.

(iii) How clear and convincing is the justification for carrying out the proposals?

87. I am satisfied that the scheme will allow the Chapel to reach net-zero in respect of its electricity demands. If the Chapel goes over to underfloor heating it will provide most if not all its heating needs. If they use ground source heat exchange to provide heat within the Chapel, then it will require power to turn the necessary fans. Although not bound to do so, they have fulfilled the Diocesan and Church of England aim to be net-zero as a church within the diocese.

88. I accept that the argument in respect of the north roof is not as strong and that there may be a longer payback period at 6.4 years or, if the latest information is correct, longer than the lifespan of the solar panels. There is in my judgment a need to look longer term. An annual CO₂ reduction from the north roof alone of 11219 kg remains significant and a clear and convincing justification for carrying out the works. I have also taken into account that the scaffolding is in place to allow the work to be done. Not only is the cost of the scaffolding significant at £700,000 but, if a decision was delayed and then taken in the next 30 years (the projected life of the solar panels), there would be a carbon cost in erecting the scaffolding for a second time.

89. I consider that more research would be needed before granting a faculty for solar panels on the north roof.

(iv) Bearing in mind that there is a strong presumption against proposals which will adversely affect the special character of a listed building, will any resulting public benefit (including matters such as liturgical freedom, pastoral well-being, opportunities for mission, and putting the church to viable uses that are consistent

with its rôle as a place of worship and mission) outweigh the harm? In answering this question, the more serious the harm, the greater will be the level of benefit needed before the proposals should be permitted. This will particularly be the case if the harm is to a building which is listed Grade I or 2*, where serious harm should only exceptionally be allowed.

90. I have no doubt that this project is in accordance with the fifth mark of mission. Showing the church to be at the forefront of taking measures to combat climate change is in strong support of its mission generally. I agree with the view expressed by SPAB that this is likely to be regarded as a precedent, which if not done well, could have adverse consequences for other highly designated buildings contemplating similar schemes. I judge that, through the careful planning that has been done on this scheme, it has been “done well” and it ought to act as encouragement to other churches, and possibly other public buildings, to take a careful look at whether they can also contribute to reducing carbon emissions. In coming to this decision I have not lost sight of the fact that this is a Grade I listed building of an exceptional nature but, as I have already found, I do not judge that this will cause serious harm to the Chapel.
91. It follows that I will grant the faculty but subject to the following conditions:
- (a) Planning consent is granted and a copy of the consent is lodged with the Registry.
 - (b) The Petitioner is to provide an updated assessment of the carbon payback for the north roof in light of, in particular, the CBC’s latest calculations. The assessment should also include observations as to the effect on the structure without an identical weight on the north roof, were the eventual decision to allow for solar panels on the south roof only. The assessment should be produced within 28 days and provided to the DAC and other bodies who have responded during the application process. Any submissions from those interested parties should be provided within 21 days thereafter. I will then decide whether the faculty will be granted for the south roof alone or both rooves.
 - (c) A test should be conducted as to whether an adhesive overlay might mitigate any issues as to “reflection”, and as to the lifespan of any such an overlay before the work on fitting the solar panels begins. The Petitioner is to send the results to the DAC to decide whether this is a beneficial addition to the solar panels. If agreement cannot be reached the matter is to be referred back to me for a decision.

- (d) The solar panels should be removed from the roof at the expiry of their useful life or on being superseded by technological advances.
- (e) Every year for the first five years and thereafter at 5 year intervals the architect is to monitor the impact the presence of the panels may have on the performance and longevity of the roof covering. The results are to be published on the Chapel and/or college website and be provided to the DAC. The specifications of the monitoring are to be agreed with the DAC before the panels are fitted to the roof.

His Honour Judge Leonard KC
Chancellor of the Diocese of Ely
7th February 2023