



<b>Planning Committee Date</b>	7 February 2023
<b>Report to</b>	Cambridge City Council Planning Committee
<b>Lead Officer</b>	Joint Director of Planning and Economic Development
<b>Reference</b>	22/03811/FUL
<b>Site</b>	Kings College, Kings Parade, Cambridge
<b>Ward / Parish</b>	Newnham
<b>Proposal</b>	Installation of photovoltaic panel arrays on the north and south slopes of Kings College Chapel and related infrastructure.
<b>Applicant</b>	King's College Cambridge
<b>Presenting Officer</b>	Mary Collins
<b>Reason Reported to Committee</b>	Application raises special planning policy or other considerations
<b>Member Site Visit Date</b>	
<b>Key Issues</b>	<ol style="list-style-type: none"><li>1. Impact on significance of Grade I and setting of Grade II Listed Buildings</li><li>2. Impact on Park/Garden of special interest</li><li>3. Impact on Historic Core Conservation area</li><li>4. Carbon reduction</li><li>5. Public benefits</li></ol>
<b>Recommendation</b>	REFUSE

## 1.0 Executive Summary

- 1.1 The application seeks planning permission for the installation of 492 photovoltaic (PV) panel arrays on the north and south slopes of Kings College Chapel and related infrastructure.
- 1.2 Having considered the proposals carefully and considering the impact of the PV panels on the significance of the Grade I Listed chapel; Officers are of the view that the magnitude of the public benefit derived from the solar panels in this case does not outweigh the less than substantial harm identified to the heritage interests of the Grade I listed chapel.
- 1.3 The recommendation is accordingly that the application be refused.

## 2.0 Site Description and Context

None-relevant		Tree Preservation Order	
Conservation Area	x	Local Nature Reserve	
Setting of Listed Building	x	Flood Zone 1	
Building of Local Interest		Green Belt	
Historic Park and Garden	x	Protected Open Space	x
Scheduled Ancient Monument		Controlled Parking Zone	
Local Neighbourhood and District Centre		Article 4 Direction	

- 2.1 The application site is on the western side of King's Parade and falls within the Historic Core Conservation Area. The Chapel is a Grade I listed building. The Chapel and all the buildings of King's College sit within the Grade II\* Registered Park and Garden of Special Historic Interest which encompasses all the College's Courts and Gardens (including those west of the river and therefore forming part of 'The Backs').
- 2.2 The Chapel forms the north side of First Court which is enclosed by buildings which are all Grade I listed. They are The Fellows' (or Gibbs) Building which forms the west side; The Screens and entrance gateway on King's Parade which forms the east side and the South Range of First Court. Within First Court are Twelve lampposts and a Fountain in the centre, all of these are Grade II listed.
- 2.3 The chapel roof is nearly 300ft long and laid without steps in mini-roll lead, falling to lead parapet gutters. Although a large expanse, it is a plain,

practical roof with no decorative leadwork and largely concealed by the openwork parapet, pinnacles, upper turrets and battlements.

- 2.4 To the east of the Chapel on the east side of King's Parade is the Grade I Listed Church of St Mary the Great. South of this are a number of Grade II listed 'town' buildings, generally shops and cafes with King's College student accommodation above. These form a continuous and attractive group along the east side of King's Parade and turn the corner into St Mary's Passage.
- 2.5 The site is within the city centre, Air Quality Management Area and located within the strategic district heating area.

### **3.0 The Proposal**

- 3.1 The application seeks planning permission for the installation of photovoltaic panel arrays on the north and south slopes of Kings College Chapel and related infrastructure.
- 3.2 The panel specification is an all-black panel and frame and a panel with low reflectivity. The 492 solar panels are to be split over both the north and south roof slopes of the Chapel and would be carried on a frame fixed just above the renewed lead roof covering currently being installed.
- 3.3 The PV panels would not extend across the full roof length of the roof, each end would have an area of lead roof towards the corner turrets.
- 3.4 Listed Building Consent is not required for these works as the Chapel is subject to the 'Ecclesiastical Exemption' and the equivalent approval must be gained from, in this case, the Church of England through the Faculty Jurisdiction. Historic England are key advisors to both the secular and ecclesiastical bodies on such matters.

### **4.0 Relevant Site History**

- 4.1 18/0510/FUL - Addition of PV panels to south facing roof slope of Wilkins Building and improvements to roof access to enable regular maintenance including additional lead covered access hatches in roof.  
Approved: 08.06.2018

### **5.0 Policy**

#### **5.1 National**

National Planning Policy Framework 2021

National Planning Practice Guidance

National Design Guide 2021

Circular 11/95 (Conditions, Annex A)

Conservation of Habitats and Species Regulations 2017

Environment Act 2021

Equalities Act 2010

## 5.2 **Cambridge Local Plan 2018**

Policy 1: The presumption in favour of sustainable development

Policy 29: Renewable and Low Carbon Generation

Policy 55: Responding to context

Policy 56: Creating successful places

Policy 59: Designing landscape and the public realm

Policy 61: Conservation and enhancement of historic environment

Policy 63: Works to a heritage asset to address climate change

## 5.3 **Neighbourhood Plan**

N/A

## 5.4 **Supplementary Planning Documents**

Biodiversity SPD – Adopted February 2022

Sustainable Design and Construction SPD – Adopted January 2020

## 5.5 **Other Guidance**

Cambridge Historic Core Conservation Area Appraisal (2015)

## 6.0 **Consultations**

### 6.1 **Cambridge Airport - Object to this proposal unless a condition requiring a Glint and Glare assessment is applied to any planning permission.**

The proposed development has been examined from an aerodrome safeguarding perspective and could conflict with safeguarding criteria.

The introduction of PV panels on the roof of the buildings may affect the operations at Cambridge airport. The PV reflections could have an impact on Airport operations due to glint and glare effects. Cambridge Airport requires a glint and glare assessment to be required by condition to determine full impact on pilots approaching the airport and air traffic controllers in the ATC tower.

Given the nature of the proposed development it is possible that a crane may be required during its construction. Draw the applicant's attention to the requirement within the British Standard Code of Practice for the safe

use of Cranes, for crane operators to consult the aerodrome before erecting a crane in close proximity to an aerodrome.

**6.2 County Highways Development Management - No comment**

**6.3 Conservation Officer – Objection.** Clearly, the aim of supplying more energy to the College sustainably is a beneficial one. In the supporting statement the architects say, “The installation of a PV array can essentially be seen as visually substituting one backdrop for another. But it cannot visually distract and must be muted, constant and uniform.” The concern is that these later criteria are not fully met. Rather than damage to historic fabric, the effect of the proposal on the Chapel’s architectural interest or significance would be the principal impact. The PV panels would effectively form a roof covering of different character and appearance than the lead roof and the visual differences would be apparent albeit in a limited way. The degree of harm to the Chapel’s significance would be modest (ie “less than substantial” harm in the terminology of the NPPF) but given the building’s importance (and noting NPPF para 199 below), this harm has to be of concern and would conflict with the Local Plan policies referred to above.

Arising from the harm to the Chapel itself, there would also be some related limited, harm to the significance of the historic buildings surrounding the Chapel, and to the Central Conservation Area. However, this would be secondary to the impact of the proposal on the significance of the Chapel. Both Local Plan policy and NPPF (para 202) indicate that any harm to the setting of the Listed Building, or other heritage assets, should be weighed against the public benefits of the proposal (including the carbon reduction).

**6.4 Environmental Health – No objection.** Have no comments or recommended conditions to make regarding this application

**6.5 Historic England – Objection.** King’s College Chapel, a masterpiece of the Perpendicular style, is one of the most exceptional of England’s buildings. The proposed installation of solar panels on its roof would form part of King’s College’s strategic response to the climate crisis. Historic England considers that the work would harm people’s appreciation of the Chapel’s extraordinary architectural character – that is, harm its significance.

Its impact would be both upon the fabric of the Chapel and on its appearance and character; it would also give rise to questions of maintenance and management.

Historic England considers that the effect of the proposal on people’s appreciation of the Chapel’s architectural interest would be the principal impact.

In our judgement, however, the application is wrong to conclude that the lead covering is a thing apart from the architectural interest of the Chapel.

It is intrinsic to that interest. The Chapel is Cambridge's greatest monument, visible across the city. The part played in views of the Chapel by the parapets and by the lead roof covering is varied, on account both of the direction of the views and their distance. In some views, the Chapel roof can either not be seen or plays little part. These include both distant views from the surrounding countryside and the most celebrated view of the Backs, with the Chapel at its centre, as well as oblique views from the Market Square and the direct view of the east end from King's Parade. In others, the roof can be seen, almost always as part of a larger whole. The north slope is visible from Garret Hostel Bridge, which affords the best public views along the Cam. In the view from the southern end of King's Parade – the most expansive town view – the roof can be clearly seen as part of the skyline, as it can within the Great Court – which provides the best frontal view of either of the long elevations. It also plays an important part in the views of the Chapel from Trinity and Queens Lanes.

The roof features prominently in the view from the tower of Great St. Mary's Church, which affords the best opportunity to appreciate the boldness and richness of the Chapel's skyline. It can be seen, but not clearly, in the prospect over Cambridge from Castle Mound. From these views one can draw the following conclusions. a) Skyline and roof form part of a coherent architectural composition; the role of the roof's lead covering is intrinsic to the overall effect. b) Views of the roof may be limited but contribute to the appreciation of the Chapel's architecture. c) The roof covering plays no part in the most celebrated view of the Chapel – that from the Backs – but is present in other important views. While the contribution of the skyline, and of the relationship between the lead covering of the roof and the stonework of turrets, finials and parapets, to the Chapel's significance is important, it is also modest, when considered in the context of the Chapel's significance as a whole.

Skyline and roof covering form part of the Chapel's magnificent exterior. Arguably, this is, above all, a prelude to what lies within. The discipline and richness of the Chapel's fan-vaulted interior – the supreme example of its kind, the excellence of the Renaissance screen and stalls, and the remarkable quality and survival of the Henrician glass, combine with the building's exterior to make the Chapel a transcendent work of art. It remains, in form and detail, remarkably true to the conception of its founder and creators. This consideration of the Chapel's significance has dealt essentially with the building's architectural interest. Significance may be considered to comprise archaeological, architectural, artistic and historic interests.

These are best seen not as discrete interests but as overlapping lenses. Architectural interest is the most relevant here, although the Chapel is rich in all these interests. The Chapel is listed at grade I.

The exceptional character of the Chapel should not obscure the interest and significance of King's College as a whole. It comprises a group of primarily 18th and 19th century buildings which are themselves of very high

architectural and historic interest, as their landscape setting is of artistic and historic interest. The Chapel stands in the heart of Cambridge and at the heart – but not the geographical centre – of the Cambridge Historic Core Conservation Area. The account of views of the Chapel has encompassed those places in the conservation area that would be affected by the proposal. The largely collegiate townscape, and the Backs, in the vicinity of the Chapel, form only a small part of what is an extensive conservation area. The effect of the proposed installation would be felt in only a small part of the area, albeit its most remarkable part.

The proposed solar installation would harm the significance of King's College Chapel. Its harmful impact would be primarily to the Chapel's architectural interest. The harm would be caused by the visibility of the solar panels, the difference between their character and that of lead, and their consequent effect on the architectural character of the Chapel. Indirectly, this would also affect the Chapel's historic interest. Broadly, the installation would seem unlikely to harm the historic fabric of the building, although we hope to explore this aspect of the proposals further with the applicants.

Wherever one can now see the Chapel's lead roof covering, the solar panels would be visible. Their visibility would be limited, and in every view, they would form part of a much larger composition. Their presence would nevertheless damage the viewer's appreciation of the Chapel's architectural interest. The appearance and character of the solar panels would be very different to that of lead. Although the panels themselves would be dark, the evidence of the mock-ups now in place shows that their appearance would change with the weather, due to their reflective quality. They would pick up the changing tone – and perhaps colour – of the sky, shifting from light to dark under changing skies.

On account of its reflective quality, it would become a conspicuous part of the view of the north slope from Garret Hostel Bridge and in that from the southern end of King's Parade. It would be conspicuous from within First Court, and in the views of the Chapel from Trinity and Queen's Lanes.

In the view from the tower of Great St. Mary's Church, the exceptional prospect of the Chapel's roofscape and skyline would be transformed by the application of this contemporary material, forming a reflective screen. It would damage the unity of the architectural composition dating from the Middle Ages.

The prospect over Cambridge from Castle Mound would be less obviously affected.

Considering the presence of the solar installation in these views prompts the following conclusions, on which the proposition at the heart of this letter – that the proposed solar installation would harm the significance of the Chapel – rests. 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. The degree to which the solar

panels would, or would not, be conspicuous would depend on the changing skies. 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. When the full significance of the Chapel is considered, the degree of harm to the sum of the Chapel's significance would be modest. This does not mean that it would be either inconsequential or of little importance, for reasons set out below. The proposed installation would also cause some, very limited, harm to the significance of the fine historic buildings surrounding the Chapel, and to the townscape of central Cambridge. Historic England considers that this limited harm would add little to the harmful impact of the proposals on the significance of the Chapel.

The proposed installation of solar panels on the slopes of King's College Chapel would harm the significance of what is an exceptionally significant building, would damage the architectural character and interest of the building, by over-laying much of the renewed lead roof covering with an additional covering of radically different character. Indirectly, they would also harm the Chapel's historic interest. The reflective quality of the extensive solar installation would make it quite different in appearance to the lead roof covering itself, which it would largely obscure. The changing tone and colour of the panels would attract attention, detracting from the architectural character the roof and skyline, which together make an important contribution to the Chapel's architectural interest and, therefore, to its significance.

While the architecture of its exterior is monumental and bold, and while the Chapel's skyline, one of the richest parts of the exterior, makes an important contribution to the architecture of the exterior, the Chapel's interior contributes still more to the building's significance. The Chapel's significance is also enriched by the landscape and townscape in which it stands. Given the richness of the Chapel's significance, it must be the case that the impact of the proposals on its significance as a whole would be modest. In the terminology of the Framework, the harm would be "less than substantial" (NPPF, 202). That does not, of course, mean that the harm following from the proposals would be of modest, or less than substantial, consequence.

The Max Fordham Decarbonisation Report suggests that the installation would secure a reduction of about 1.4% in the College's carbon emissions. Historic England considers that the limited contribution that the proposals would make to the reduction of the College's carbon emissions, the indication within the Framework that impacts can be unacceptable, and the Framework's promotion of a strategic approach to the provision of renewable energy generation, raise questions about the justification for this proposal.



Historic England recommends that the application should be refused, unless the Council concludes that the harm it would cause to the significance of the Chapel would be outweighed by the public benefit which this instance of renewable power generation would provide.

**6.6 The Gardens Trust – do not wish to comment on the proposals at this stage.** Have considered the information provided in support of the application and liaised with colleagues in Cambridgeshire Gardens Trust, would however emphasise that this does not in any way signify either approval or disapproval of the proposals.

**6.7 Nature Conservation Projects Officer – No objection** The Preliminary Bat Appraisal identifies the building as having high bat roost potential, but only relatively low use by bats species visiting mainly at night. There is no evidence of a maternity roost. Content with the survey effort and rationale for proceeding under a precautionary method statement with ecological supervision as set out in the report.

If minded to approve, would request that the method statement within the Preliminary Bat Appraisal is included within the approved documents or if required submitted under condition as a technical document to be complied with.

Given the high bat roost potential, if the works are not commenced within one year of permission would request follow up surveys to ensure the bat roost status has not changed in the interim and any method statement or license requirement reviewed accordingly and submitted to the LPA for approval

**6.8 Society for the Protection of Ancient Buildings (SPAB) – Object Supportive of the principle of the proposal, do not consider the justification for the harm caused to be sufficiently robust in this case.**

In examining proposals for listed buildings where the justification is framed primarily in terms of carbon reduction, the SPAB aims for a balanced approach. We recognise and support the need to improve the sustainability of buildings of all ages. Where there are clear and convincing public benefits in terms of sustainability, we accept that a measure of harm may sometimes be justifiable to achieve this. Equally, if an applicant seeks to justify harm to the significance of a designated heritage asset on the basis of sustainability improvements, the public benefits in terms of carbon reduction must be clearly demonstrated.

Any harm in this case would be primarily visual and would flow from the presence of PV arrays on the north and south roof slopes, the roof slopes being partially visible from numerous vantage points on the College estate and surrounding area. Any harm caused would therefore be primarily to the architectural significance of the Chapel and, to a lesser extent, the other buildings that sit in close proximity to it.

We concluded that the panels will be slightly visible through the perforations of the parapet, but that this will not be obvious to most taking in a general view of the building. We also noted that, as the panels would cover the whole of the slope, there would be no contrast between lead and PV panel, a factor which may help to reduce the visual impact. We were, however, struck by the way that the reflective surface of the panels changes as clouds pass overhead, showing as white with cloud cover, and black when the sky cleared.

When observed on site, it is beyond doubt that they are reflective of the changing weather conditions overhead, and that this gives them a dynamic nature that is very different to the more static and recessive nature of a lead roof. With arrays in place, the roof would become a more prominent feature of the building. We consider that this alteration of the balance of architectural composition would result in a measure of harm to the architectural significance of the building. However, in our view, the level of harm would be less than substantial and may therefore be acceptable if a clear and convincing justification can be provided.

The College has commissioned a detailed report by building services consultancy Max Fordham, which outlines a number of options for achieving decarbonisation. However, while the application refers to this report as the College's sustainability strategy, it is in fact a set of recommendations, many of which the report assesses as difficult to deliver without substantial harm to the highly listed historic assets that form the greater part of the estate.

The scope of change outlined in the report would necessitate very considerable funds to be deployed by the College. While the Max Fordham report is informative, we can see no evidence in the application or elsewhere that the College has an adopted and funded sustainability strategy. This is a key point as, in order to provide the clear and convincing justification of carbon reduction required, 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 that will be taken to reduce the carbon footprint. We do recognise that the College has carried out a number of actions in this respect, but evidence is needed of an holistic approach that explains what other actions the College intends to take to reduce carbon emissions.

We think this is particularly important in the current case given that the reduction in emissions that would result from the PV array is calculated by the Max Fordham report as being in the order of only 1.4%. What other measures involving lesser harm does the College intend to take, and what will the comparative impact be? Examples of this type of action might be better draught proofing, using LED lightbulbs, using A+++ appliances, lowering heating temperatures, installing TVRs on radiators, etc.

Output from the combined arrays will considerably exceed the chapel's usage requirements and in fact the Chapel's electricity usage would be more than met by the south array. This calls into question the justification for the north array as well as the requirement for a south array of the extent

proposed. While the College has said that that this will be addressed by using the excess electricity for other buildings, it is not clear what the benefit will be or whether this could be achieved in other, less harmful ways.

The College has more than one mains electricity connection and it has been suggested that the array will be wired back into the one that serves the Chapel and adjacent buildings. However, a key detail missing from the proposal is a clear profile of the expected generation against the electrical demand through the meter into which the array will be connected. There has been some attempt to estimate expected generation against the chapel usage, and the entire College use, and the reality will be somewhere in between. As the proposed panels' output will far exceed the electricity demand of the chapel itself, the benefit from an array of the size intended will be primarily in supplying the rest of the college estate which uses electricity through the same meter to which the chapel is connected. However, it is not known what measures have been taken to reduce the electricity demand from the 'non-chapel' usage (such as installing LED lighting and the like), nor is it clear what other, less visible, roofs may be viable to generate further electricity for this supply.

The applicant has provided us with data showing the performance and embodied carbon impact of the north and south arrays respectively. This demonstrates that the north side would take 6.4 years to pay back from the electricity generated. This would mean that the proposal would emit more carbon into the climate between now and 2030, not less. The calculations presented suggest that the north side array will produce only 60% of the electricity of that of the south side.

The north side array also has a higher potential for visual harm in the key view from Trinity Lane as the mock up demonstrates that the top edge of the panels would mask the ridge line. This is due to the more acute angle of sight at the point at which the building first becomes visible from the Lane. The north side array will also be clearly visible when viewed from the tower of the Church of St Mary the Great.

While we are supportive of the principle of the proposal, for the reasons given above, we do not consider the justification for the harm caused to be sufficiently robust in this case. The benefit of the north side array in particular has not been demonstrated clearly enough. Were the building in question to be less important and prominent then it might be possible to accept a finer balance.

**6.9 Sustainability** - Although we would generally offer support for renewable energy generation of this type, and see no issues with the system proposed, mindful of the chosen location for the technology and question its possible impact on such a significant heritage asset. Support would be offered from a sustainable construction point of view, only if it was deemed that the renewable energy/sustainability benefits of the scheme outweighed the possible negative impacts on the heritage asset and historic environment,

for which, advice should be sought from appropriate colleagues in heritage/conservation

The scheme does seek to reduce carbon emissions associated with energy use in response to the climate emergency and as part of the College's transition to net zero carbon. While it will be difficult for the college to fully decarbonise using onsite measures due to the nature of the College's estate, the Decarbonisation Report prepared by Max Fordham does identify a range of measures that the College can implement, from fabric improvements, energy efficiency measures, renewable heat, and energy generation in the form of photovoltaic panels. This approach, which considers the College's estate as a whole, is welcomed. As the covering design report notes, every tonne of carbon reduced has a value.

Micro inverters are to be used, which will enable each roof slope array to operate independently. The generation potential of the panels is 105,864 kWh/year with a carbon saving over approx. 23 tonnes of carbon per year for the next 30 years.

Given the carbon saving being achieved and the care with which this proposal has been designed and tested through the development of the trial PV array, the proposals are supported from a sustainable design and construction perspective.

#### **6.10 Cambridge Past, Present and Future**

Note that the panels would only reduce the College's carbon emissions by 1.4% compared to other energy efficiency measures.

Consider that the low angle of the roof and the parapets significantly minimises the visual impact of the panels.

However appreciate the points made by Historic England in their representation (12 October 2022) that currently, when the roof is visible, the lead provides a matt, unchanging background. With solar panels though, the 'colour' of the roof would change with the panels reflecting the light and dark of changing skies. Although when one is admiring the building, one looks at it as a whole, with all its architectural features, the fact that the view of the roof would look at times out of place by the use of 21 century materials, may draw the eye to the roof over other features.

There appear to be key factors that are particular to this development - the piggybacking on the roof repairs, the limited visual impact and being part of a wider plan to reduce energy across the college estate. Although we consider that there is modest visual impact on the building, it is being made on a building of great significance.

#### **7.0 Third Party Representations**

One response in support received - Decarbonisation is an important process and King's College has a large roof to install solar panels. The photos they have produced show minimal visual impact and believe the additional of solar panels outweighs any impact.

## **8.0 Member Representations**

Not applicable

## **9.0 Local Groups / Petition**

Not applicable

9.1 The above representations are a summary of the comments that have been received. Full details of the representations are available on the Council's website.

## **10.0 Assessment**

### **10.1 Principle of Development**

10.2 Policy 55 of the Local Plan seeks to ensure that all new development responds appropriately to its context. Policy 61 of the Cambridge Local Plan seeks to ensure that proposals for development preserve or enhance Cambridge's historic environment and demonstrate a clear understanding of the significance of the asset, the wider context within which the asset sits and any impact upon it. This reflects National Planning Policy Guidance and the clear legal obligations on the Council to have special regard to the desirability of preserving the special architectural or historic interest of buildings or their setting in line with S66 and 72 of the Planning (Listed Building and Conservation Areas) Act 1990.

10.3 Policies 29, 61 and 63 of the Local Plan are supportive of environmental improvements and energy generation subject to the impact on the heritage asset being minimised.

10.4 Policy 29 of the Local Plan states proposals for development involving the provision of renewable and/or low carbon energy generation, will be supported, subject to the acceptability of their wider impacts. Potential impacts may be acceptable if they are minor, or are outweighed by wider benefits, including the need for energy from renewable and low carbon sources, which will contribute to reducing carbon and other emissions. While the Council wishes to promote renewable and low carbon energy generation, there is also a need to balance this desire against other objectives for Cambridge, such as... protection and enhancement of the historic environment" (CLP, paragraph 4.14).

10.5 Policy 63 of the Local Plan seeks to encourage "proposals to enhance the environmental performance of heritage assets", provided that their "design

and specification ensures that the significance of the asset is not compromised by inappropriate interventions”.

- 10.6 As the Local Plan 2018 states at 7.32 & 33, the Council is committed to tackling climate change and reducing the carbon emissions of Cambridge. At the same time, the Council is committed to conserving the city’s historic environment, particularly preserving and enhancing the character and appearance of its heritage assets. The Council’s aim, therefore, 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 asset in question. Where works would harm the building's integrity or significance, that harm will be weighed against the public benefit of the proposal.
- 10.7 In respect of the climate crisis, the Framework’s policies promote the provision of renewable energy, recognise constraints, and encourage a strategic approach. These policies should be understood in the light of the Government’s target for the United Kingdom to reach net zero carbon by 2050. Any increased provision of renewable energy is to be taken as a public benefit. The National Planning Policy Framework’s policy in respect of the determination of applications for renewable energy generation states this clearly (NPPF, 158, a), and it accords with the Government’s target for the United Kingdom to reach net zero carbon by 2050.
- 10.8 Paragraph 158 states “When determining planning applications for renewable and low carbon development, local planning authorities should:
- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
  - b) approve the application if its impacts are (or can be made) acceptable...”
- 10.9 Here, both the Framework’s policies, which, while promoting the provision of renewable energy, encourage a strategic approach to this objective and recognise constraints, and the Local Plan’s policies, and advocacy of a “balanced approach”, are pertinent (NPPF, 155, 158, CLP, paragraph 7.32).

### **Impact of proposal on Heritage Assets**

- 10.10 The application falls within the Historic Core of the Central Conservation Area. The application relates to the Grade I listed chapel, which is within the setting of Grade II listed buildings and is within a registered Parks and Gardens of Special Historic Interest at Grade II\*. Section 66 of the Planning (Listed Buildings and Conservation Areas) Act 1990 states that a local authority shall have regard to the desirability of preserving features of special architectural or historic interest, and in particular, Listed Buildings. Section 72 provides that special attention shall be paid to the desirability of

preserving or enhancing the character or appearance of a Conservation Area.

- 10.11 The National Planning Policy Framework describes how local planning authorities should identify and assess the particular significance of any heritage asset and take this into account to avoid or minimise conflict between conservation and any aspect of a proposal (paragraph 195). It establishes the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation and the desirability of new development making a positive contribution to local character and distinctiveness, (paragraph 197).
- 10.12 Paragraph 199 of the National Planning Policy Framework (NPPF 2021) requires 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 (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. Paragraph 200 states "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."

### **Significance of heritage assets**

- 10.13 The heritage assets in this case are of the finest quality. King's College Chapel, begun in 1446 and completed in 1531, stands as one of England's most remarkable buildings. It is a building of local, National, European and international significance. The chapel within the college complex, Registered Garden, and the Historic Core of the Cambridge Central Conservation Area, is Grade I Listed for its exceptional architectural/historic interest and is generally held to be the most instantly recognisable and iconic building in Cambridge.
- 10.14 The Chapel is, above all, an extraordinary work of architecture and art, one of the outstanding manifestations of the Perpendicular style – England's late Gothic architectural manner. The Chapel is a monumental structure, simple in form but bold in architectural expression. Its twelve bays are articulated by colossal buttresses separating vast traceried windows; its towering walls rise to a dramatic skyline; the single bay elevations to east and west are equally powerful. The Chapel's skyline makes an important contribution to its architectural interest. With its turrets, finials and openwork parapets, it is among the richest elements of the exterior. The parapet is of considerable scale. It is pierced with tall, lozenge-shaped openings, cusped at top and bottom; the pattern of the opening is repeated in the merlons (the upward projections of the parapet).
- 10.15 The appearance of the Chapel's skyline plays its part in the viewer's complex appreciation of the Chapel, from within the College and in views from the surrounding streets, the Backs, the river and beyond. The changing

relationships of the components of the skyline, as the viewer looks at the Chapel from changing positions, help to make the viewer's experience of the Chapel dynamic. The openwork parapet appears solid when viewed obliquely, opening as the viewer moves to obtain a more direct view.

- 10.16 When one can see through the parapets, they are seen sometimes against sky, and sometimes against the roof's lead covering. Both sky and lead contribute to the Chapel's skyline, and to the experience of its architecture. Lead is the proper covering to the Chapel roof. The roof was built for, and has always been roofed with, lead; and it has always been seen roofed with lead. The lead roof covering contributes to the Chapel's architectural character.
- 10.17 King's Parade / Senate House Hill section of the Cambridge Historic Core Appraisal states, "Today, King's Parade and Senate House Hill are exceptionally busy and probably the most photographed streets in Cambridge." and "King's College Chapel is the most visually important building with its east end rising well above the other buildings and its vast east window framed by corner towers." The exceptional significance of the Listed building is well described by Historic England and in the assessments submitted by Caroe and Turley.
- 10.18 The College lies within the conservation area where it is appreciated in conjunction with the other colleges along the river. The Conservation Area Appraisal illustrates the key positive views to the focal features of the Gibbs Building, the Chapel and south range of Clare College. It states 'the views across The Backs are the most frequently reproduced images of Cambridge, with the view of Clare College and King's College Chapel being the iconic image used to represent the university and city around the world. The quality of these views is a combination of the green setting of manicured lawns with wilder paddocks, the river with its traditional activity of punting and architecturally elaborate bridges, the spectacular architecture of the historic college buildings as the focus of the view (without interruption of discordant structures), and the clear space behind, again without interference of structures that might draw attention away from historic college buildings'
- 10.19 The heritage assets identified especially the Grade I Chapel are of the very highest significance, with high evidential, historical, aesthetic and communal values. King's College as a whole comprises a group of primarily 18th and 19th century buildings which are themselves of very high architectural and historic interest, and their landscape setting is of artistic and historic interest. Subsequently, the weight that the Council should give to their conservation should therefore be very considerable. The Framework is also clear that any harm, requires clear and convincing justification.
- 10.20 Officers as well as Historic England and SPAB have identified that harm to the significance of the listed building will occur as a result of the proposal and that this would be less than substantial to a moderate degree.



- 10.21 It is 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. In general, glimpses of the roof can be seen through piercings of the parapets and between the pinnacles and turrets from various street level vantage points. However wherever one can currently see the Chapel's lead roof covering, the solar PV panels would be visible. The installation of a PV panels can essentially be seen as visually substituting one backdrop for another.
- 10.22 It is the observation of conservation specialists from the evidence provided from the mock-ups in place on the roof, that although the PV panels are black and their specification is of low reflectivity, they have a shiny surface and are reflective. It is considered that the solar panels would pick up the changing tone and perhaps colour of the sky, shifting from light to dark under changing skies. The appearance of the panels and by extension the roof, would change as clouds pass overhead, showing as white with cloud cover, and black when the sky cleared.
- 10.23 The solar panels would therefore have a dynamic nature that is very different to the more static and recessive nature of a lead roof. The proposal would, in effect, lay a reflective screen across the greater part of both roof slopes. The visual impact of the panels would vary according to viewpoint and brightness. There is concern that the panels would not appear recessive in the way the light toned, existing lead covering does, would be a shinier surface, and would be capable of detracting from the appearance of the building.
- 10.24 With the PV panels in place, the roof would become a more prominent feature of the building, with the roof attracting attention. Officers consider that this alteration of the balance of architectural composition, from the lesser role played by the roof covering to the significance of the overall building, to a more prominent role would harm the architectural significance of the building. The 'colour' of the roof would change with the panels reflecting the light and dark of changing skies. The PV panels would produce a livelier and more animated roof slope, which is likely to draw the observer's eye away from appreciating the building as designed as a whole, with all its architectural features in unison and complementary. The changing tone and colour of the panels would attract attention, detracting from the architectural character the roof and skyline, which together make an important contribution to the Chapel's architectural interest and, therefore, to its significance.
- 10.25 The PV panels would not extend across the full roof length with an area of lead roof towards the corner turrets. The two different types of surface material on the roof slopes will be distinguishable. A contrast would exist between the majority of the roof covered as it would be by PV panels and the ends left clear of panels, where the lead covering would be visible. The new lead will be dark grey at first but as the lead lightens/weathers or the panels reflect light, the contrast would be apparent.

- 10.26 The applicant argues it is in any case not true to say that a lead roof appears precisely the same in all weather conditions, nor is it a homogenous surface where patched or weathered. The appearance of a lead roof looks different when it is wet: the patination of the roof will not be even, and there is often 'distraction' when the sun casts shadows from the pinnacles and turrets across the lead roof. This could be argued to be just as conspicuous as any change in tone of sky picked up by the solar panels, which has been raised as harm to the detriment to the heritage significance.
- 10.27 Officers note these comments, however, consider there would be a perceivable difference between the shiny appearance of the PV panels and the duller appearance and patina of the lead covering where the shadows cast by the clouds would not have a comparable impact. The concern is that the PV panels would not have the same neutral/benign background appearance as the lead roof material but would instead have a stronger tone and a more reflective surface and that this would have a harmful impact on the appearance of the chapel. The new roof covering would visually distract and would not be muted, constant and uniform.
- 10.28 Officers consider that on account of their reflective quality the solar PV panels would become a conspicuous part of the view of the north slope of the Chapel from Garret Hostel Bridge and Trinity Lane. They would be conspicuous part of the view of the south slope from within Great Court which provides the best frontal view of either of the long elevations and in that from the southern end of King's Parade. A section of the roof would also be seen and highly visible from Queens Lane to the south.
- 10.29 The concern is that the PV panels would detract from the Chapel's architectural qualities. The roof of the Chapel features prominently in the view from the tower of Great St. Mary's Church, which affords the best opportunity to appreciate the boldness and richness of the Chapel's skyline as well the unity of the architectural composition dating from the Middle Ages which is of high significance. In this view, the exceptional prospect of the Chapel's roofscape and skyline would be transformed by the application of this contemporary material, forming a reflective screen would be discordant with the unity of the architectural composition. The full extent of the north roof slope would be visible from this elevated viewpoint which is important to the appreciation of this building.
- 10.30 The contrast between the lead roof and the PV panels would also be apparent from higher vantage points. Although there would be limited opportunities for seeing it, from this vantage point this would also be potentially a somewhat detrimental one.
- 10.31 In the views of the Chapel in which the lead roof covering cannot be seen, or plays little part, the solar PV installation would have no or little impact. These include distant views from the surrounding countryside and the most celebrated view of the Backs, as well as oblique views from the Market Square and the direct view of the east end of the Chapel from King's

Parade. The prospect over Cambridge from Castle Mound would be less obviously affected.

- 10.32 Although it is not established planning practice to take into account aerial or drone views, today, these are another way the chapel and its setting are experienced publicly via for example, online videos with thousands of viewings. As this building is so emblematic of Cambridge, Officers consider this ought also to be taken into account - clearly, in these the roof is more visible and seen along with the roof of other college and city centre buildings.
- 10.33 When the full significance of the Chapel is considered, the degree of harm to the sum of the Chapel's significance is considered to be modest.
- 10.34 To conclude, the proposed solar PV installation would harm the significance of the Chapel as wherever they would be visible, the solar panels would be discordant, and the application of this contemporary material would detract from the Chapel's appearance and erode its authenticity and integrity.
- 10.35 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. In every view, they would form part of a much larger composition. Their presence would nevertheless damage the viewer's appreciation of the Chapel's architectural interest.
- 10.36 The proposed installation would also cause some, very limited, harm to the significance of the historic buildings surrounding the Chapel, and to the townscape of central Cambridge. Apart from the impact on the chapel itself, the core of the conservation area will also be affected in that the panels will be a stronger colour black than the majority of lead roofs on nearby buildings. More generally, the comparison with other lead roofs nearby would be seen from higher level vantage points.
- 10.37 Officers and Conservation advisors are satisfied that any harm to the building's historic fabric would be minimal, as the lead roof is already to be re-laid, and careful consideration has been given to the method of fixing the panels in order to minimise impact and the works are reversible.
- 10.38 The proposal does not comply with policy 61 of the Cambridge Local Plan 2018.

### **Carbon reduction**

- 10.39 National government has set a target of carbon neutrality by 2050, Cambridge City Council have declared a climate emergency whilst the University has set clear and ambitious targets on its pathway to absolute zero carbon by 2048.

- 10.40 The Council's Sustainable Design and Construction SPD (2020) sets out a framework for proposals to demonstrate they have been designed to minimise their carbon footprint, energy and water consumption and to ensure they are capable of responding to climate change.
- 10.41 Policy 28 states development should take the available opportunities to integrate the principles of sustainable design and construction into the design of proposals, including issues such as climate change adaptation, carbon reduction and water management.
- 10.42 Policy 29 supports proposals which involve the provision of renewable and / or low carbon generation provided adverse impacts on the environment have been minimised as far as possible.
- 10.43 The application has been subject to formal consultation with the Council's Sustainability Officer who raises no objection to the proposal from a carbon reduction point of view.
- 10.44 The scheme seeks to reduce carbon emissions associated with energy use in response to the climate emergency and as part of the College's transition to net zero carbon. While it will be difficult for the college to fully decarbonise using onsite measures due to the nature of the immediate College's estate, the Decarbonisation Report prepared by Max Fordham does identify a range of measures that the College can implement, from fabric improvements, energy efficiency measures, renewable heat, and energy generation in the form of photovoltaic panels.
- 10.45 The College's strategy is explained in the supporting statements from Caroe and from Turley and a Decarbonisation Report commissioned for the College from Max Fordham. The latter report shows chapel roof slopes "Moderately Suitable" and "Slightly Suitable" (North) for solar panels. This information suggests that although the PV panels will contribute to carbon reduction it will be a very small percentage reduction.
- 10.46 The proposed solar panels would provide public benefits through generation potential of 105,864 kWh/year with a carbon saving over approx. 23 tonnes of carbon per year for the next 30 years.
- 10.47 However the Max Fordham Decarbonisation Report suggests that the installation would secure a reduction of about 1.4% in the College's carbon emissions. The calculations presented suggest that the north side array will produce only 60% of the electricity of that of the south side.
- 10.48 Any increased provision of renewable energy is to be taken as a public benefit. The National Planning Policy Framework's policy in respect of the determination of applications for renewable energy generation states this clearly (NPPF, 158, a), and it accords with the Government's target for the United Kingdom to reach net zero carbon by 2050.

- 10.49 There is no evidence put forward in the application or elsewhere that the College has an adopted and funded sustainability strategy. Officers consider that in order to provide the clear and convincing justification of carbon reduction required, 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 that will be taken to reduce the carbon footprint.
- 10.50 Although this planning application is to be assessed on its own merits, it is considered that there may be other suitable areas for renewable and low carbon energy sources/alternative means of energy generation or saving, and supporting infrastructure, elsewhere in the college's wider ownership, that would be less harmful than the impact of the PV on the Chapel roof. There are many measures that can be taken to reduce carbon emissions that will cause low, or no, harm and that should be adopted before more harmful interventions are contemplated. Therefore, whether there is sufficient justification for the panels is in question.
- 10.51 The application has not demonstrated how this marginal benefit could be achieved elsewhere with similar or greater benefit which is less harmful than the proposed PV panels on the chapel roof. The College is a supporter of the emerging option for sustainable energy generation in central Cambridge through the District Heat Network. It is still in early stages and could provide an alternative to the PV panels.
- 10.53 It is considered that the proposal to install solar panels to enhance the environmental performance of the heritage asset would be an inappropriate intervention to the Grade I listed building and would result in the significance of the listed building being compromised. The proposal would not accord with Policy 63 of the Cambridge Local Plan 2018.
- 10.54 The proposal to install solar panels would have an adverse impact on the historic environment and the harm caused is not outweighed by wider environmental benefits. The proposal would not accord with Policy 29 of the Cambridge Local Plan 2018.

## **Conclusions**

### **10.55 Summary of harm**

- 10.56 King's College Chapel, a masterpiece of the Perpendicular style, is one of the most exceptional of England's buildings and emblematic of Cambridge. The proposed solar PV installation would harm the significance of King's College Chapel.
- 10.57 The harm would be caused by the visibility of the solar panels, the difference between their character and that of lead, and their consequent effect on the architectural interest of the Chapel. Indirectly, this would also affect the Chapel's historic interest.

- 10.58 The concern is that the PV panels would not have the same neutral background appearance as the lead roof material but would instead have a stronger tone and a more reflective surface that would detract from the Chapel's architectural qualities.
- 10.59 The presence of PV panels on the north and south roof slopes, would be harmful to the architectural significance of the Chapel and, to a lesser extent, to the setting of listed buildings nearby.

### **10.60 Summary of benefits**

- 10.61 Any increased provision of renewable energy is to be taken as a public benefit. The National Planning Policy Framework's policy in respect of the determination of applications for renewable energy generation states this clearly (NPPF, 158, a), and it accords with the Government's target for the United Kingdom to reach net zero carbon by 2050.
- 10.62 The proposed solar panels would provide public benefits through generation potential of 105,864 kWh/year with a carbon saving over approximately. 23 tonnes of carbon per year for the next 30 years. In this instance there are public benefits in terms of sustainability, the proposal would result in a cleaner environment in the city centre through the reduction in carbon emissions.
- 10.63 The proposal would provide environmental objectives as described in the National Planning Policy Framework (paragraph 8).

### **Planning Balance**

- 10.64 In this case, Section 66 and 72 of the Planning (Listed Buildings and Conservation Areas) Acts requires that the LPA to have special regard to the desirability of preserving the special architectural or historic interest of buildings or their setting and to the conservation area.
- 10.65 Para 199 of the NPPF states 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.
- 10.66 As harm has been identified, to the significance of the Grade I listed chapel, and by extension the park/garden and conservation area, any harm or loss requires clear and convincing justification in accordance with paragraph 200 of the NPPF. In this case, Officers have concluded that the proposals give rise to less than substantial harm of moderate significance – engaging paragraph 202 of the NPPF which requires that the identified harm should be weighed against the public benefits of the proposal.

10.67 The Planning Practice Guidance Paragraph: 020 Reference ID: 18a-020-20190723, Revision date: 23 07 2019 states:

*Public benefits may follow from many developments and could be anything that delivers economic, social or environmental objectives as described in the National Planning Policy Framework (paragraph 8). Public benefits should flow from the proposed development. They should be of a nature or scale to be of benefit to the public at large and not just be a private benefit. However, benefits do not always have to be visible or accessible to the public in order to be genuine public benefits, for example, works to a listed private dwelling which secure its future as a designated heritage asset could be a public benefit.*

10.68 Increased provision of renewable energy is a public benefit and an important part of reaching net zero carbon targets and responding to the climate emergency. Determination of whether to grant planning permission should involve consideration of the scale or quantity of this benefit and any other benefits in relation to guidance in the National Planning Policy Framework (NPPF).

10.69 Clearly, the aim of supplying more energy to the College sustainably is a beneficial one. The PV panels to the chapel roof would contribute a 1.4% reduction in carbon consumption across the entire measures proposed for the estate. This is considered a marginal benefit which ought to be achieved elsewhere with similar or greater benefit which is less harmful than the proposed PV panels on the chapel roof. The harm to the significance of the Grade I Listed Building is therefore not outweighed by the sustainability improvements that would arise.

10.70 Officers consider that on balance owing to the limited contribution that the proposals would make to the reduction of the College's carbon emissions, against the unacceptable impact the proposal would have on the significant special interest of the Grade I Listed chapel, the public environmental benefits of carbon reduction are not sufficient to outweigh the identified harm to the Chapel.

10.71 As such the proposal does not accord with policies 29, 61 and 63 of the Cambridge Local Plan 2018.

## **11.0 Recommendation**

11.1 **Refuse** planning permission for the following reason:

1. By virtue of the addition of PV panels, the proposal would apply a roof covering of a radically different character and appearance than the traditional lead roof. The application of the PV panels would visually detract from the architectural character of the roof and skyline and be discordant with the architectural composition of this exceptional and historically iconic medieval building. Important views of the Chapel would be harmed, damaging the appreciation of the Chapel's architectural interest, and

eroding its authenticity and integrity. In doing so, the proposal would result in less than substantial harm to the significance of the Grade I listed Chapel, particularly its aesthetic and historical values but also its setting. The proposal would thus also harm the character and appearance of the Central Conservation Area, through harm to the appearance of the listed building and its impact on important views of the Chapel, the setting of the Chapel and other nearby listed building.

The public benefits from the proposal arising from its carbon reduction potential and thus its wider environmental benefits to the sustainability of the College Estate are not sufficient and are without clear and convincing justification to outweigh the identified less than substantial harm to the Grade I Listed Chapel which would arise.

The proposal is therefore contrary to policies 29, 61 and 63 of the Cambridge Local Plan 2018 and the NPPF, paragraphs 199 – 200 and 202 of the National Planning Policy Framework 2021.

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#### Background Papers:

The following list contains links to the documents on the Council's website and / or an indication as to where hard copies can be inspected.

- Cambridge Local Plan 2018
- Cambridge Local Plan SPDs