CASE OFFICER'S REPORT

Application Reference:	PL/2023/05998
Application Type:	Listed building consent (Alt/Ext)
Site Inspection:	
Consultation ends:	25 August 2023
Case officer:	Alex Marsh

Site Address:	Lacock Abbey, High Street, Lacock, Chippenham, Wilts, SN15 2LG
Proposal:	Installation of conventional lightning protection system employing a Faraday Cage involving network of air terminations and down conductors over roofs and elevations
Recommendation:	Approve with Conditions

Relevant Policies

From the point of view of the historic environment the main statutory tests are set out within the Planning (Listed Building and Conservation Areas) Act 1990. Sections 16 (LBC) and 66 (PP) require that special regard be given to the desirability of preserving listed buildings, their settings or any features of special architectural or historic interest which they possess.

Section 72(1) of the Planning (Listed Building and Conservation Areas) Act 1990 also requires the Council to pay special attention to the desirability of preserving or enhancing the character or appearance of designated Conservation Areas.

The NPPF outlines government policy, including its policy in respect of the historic environment. Section 16 of the NPPF 'Conserving and enhancing the historic environment' sets out the Government's high-level policies concerning heritage and sustainable development.

Paragraph 197 requires local planning authorities should take account of the desirability of sustaining and enhancing the significance of heritage assets and of new development making a positive contribution to local character and distinctiveness.

Paragraphs 201-3 of the NPPF require a balanced approach with any harm which would be caused being weighed against the potential public benefits which might be achieved.

Planning Practice Guidance Historic Environment provides context to the NPPF.

The Council's Core Strategy Policy CP58 'Ensuring the conservation of the historic environment' requires that "designated heritage assets and their settings will be conserved, and where appropriate enhanced, in a manner appropriate to their significance."

Relevant Heritage Assets:

Lacock Abbey, Lacock, Chippenham grade I
Lacock Conservation Area

Site Description:
Lacock Abbey is situated between the village of Lacock 250m to west and the River Avon 100 m to the east.

The Abbey was founded in the 13th century by Ela, Countess of Silsbury as a house for nuns. After the dissolution 1539 the Abbey became a country house with alterations including the octagonal tower in the renaissance style and two timber frames ranges for stables, haylofts and grooms' accommodation.

In the 18th century John Talbort rebuilt the front entrance to create a new hall and dining room with external stairs in Gothic style (1754-56) and added battlements.

In the 19th century William Henry Fos Talbot extended in the late Gothic style taking the centre part outwards and adding details like oriel windows. Fox Talbot also invented photographic negative process in 1835. Descendants of the Talbot family owned Lacock Abbey until it was entrusted to the National Trust in 1944

The Lacock Conservation Area takes in both the village and the Abbey and the surrounding open countryside to assist in preserve the wider setting.

Proposal:
The proposal is to install a conventional Lightening Protection System (LPS) employing a Faraday Cage. This involves a network of air termination and down conductors over roofs and elevations at Lacock Abbey.

Relevant planning history:
ENQ/2021/04585 A pre application for a Lightening Protection system. This advised that there is no existing lightening protection on Lacock Abbey. There are various types of protection as described by Historic England guidance and they should be consulted and inform a decision for an appropriate system.

A Faraday system is proposed but no alternative options are considered this comparison is needed to support the Faraday system. The impact of any proposed system should minimise impact on fabric and should be reversible. The proposal will need Listed Building Consent.

Issues:
The impact of the proposals to the significance of the listed building, and character and appearance of the Conservation Area.

Information considered:
The application includes existing and fully detailed annotated proposed floor plans, elevations and sections, a Heritage Design and Access Statement. Ecology Survey. Archaeological Report.
Lightening Protection System
A Lightning Protection System (LPS) review for Lacock Abbey was undertaken by the designer Max Fordham.
Options considered were Tower only, Early Streamer Emitting Protection System and Faraday Cage. The later was considered most appropriate for the set of circumstances.

Archaeological Report
The Archaeological Report by Absolute Archaeology was commissioned by the National Trust at Lacock to carry out a series of test pitting within the precincts of Lacock Abbey. Thirty one test pits were selected adjacent to exterior main walls prior to conductor rods and pads installation.

Nine pits were initially excavated in May 2022. The results of these test pits resulted are that no archaeological features or layers are being disturbed by the works. The archaeologist will complete the remaining pits with a watching brief during the installation phase.

Bat Surveys
A number Bat Surveys have occurred since 2016. An extensive survey was undertaken in September and October 2019 and activity survey in2021 and 2022 targeting sensitive areas where work were proposed. The Faraday system is considered to reduce the potential impacts to bats roosting in the property.

The activity survey aimed to provide sufficient information for the design development process and to satisfy the Wildlife and Countryside Act 1981.

11 Bat species have been recorded around Lacock Abbey and a colony of over 1000 Soprano pipestralle bats are located in the tower. During the 2022 survey no bats were confirmed emerging at the seven designated areas although bats were recorded in flight. The bats identified in the 2022 survey were Common Pipistrelle, Soprano Pipistrelle, Long Eared, Noctule, Serotine Natterer.

With the exterior nature of the LPS works no bat licence would be required however any works into the roof spaces would require a watching brief and no works during the breeding period May – August. The LPS installation works will be undertake in accordance with the Regulation and recommendations of the Consultants.

Consultations: Historic England were consulted and advised on 3rd August 2023

Thank you for your letter of 28 July 2023 regarding the above application for listed building consent. We refer you to the following published advice which you may find helpful in determining the application.

https://historicengland.org.uk/images-books/publications/lightning-protection/heag182-lightning-protection

It is not necessary for us to be consulted on this application again, unless there are material changes to the proposals. If you would like detailed advice from us, please contact us to explain your request.

Significance
The NPPF defines significance as the “value of a heritage asset to this and future generations because of its heritage interest.

The interest may be architectural, or historic as set out in the Town and Country Planning (Listed Building and Conservation Areas) Act 1990 S 1.

Significance derives not only from a heritage asset's physical presence, but also from its setting." Historic England assesses significance in a similar manner, referring to evidential, historic, aesthetic and communal values of a place.

In this case the significance of the listed building is its architectural and historic interest, and its prominent position in respect to the Lacock Conservation Area's character and appearance.

Discussion of impact of proposals on the identified significance
A Faraday cage system chosen in this instance is a network of air termination and down conductors over all facades of a building so when lightning strikes the current is discharged around the building and prevents it from penetrating the interior. This system has been commonly used for many years to protect buildings with large plane surfaces and provide a greater protection than the Tower only systems.

However, this is balanced against the Faraday system more intrusive appearance and a careful attention has been taken to the siting and colour of the conductors. It is considered that this more visual apparatus is balanced by the Faraday cage systems evident extra protection.

The Air Termination Network (ATR) is the point of connection for a lightning strike and typically consists of a meshed conductor arrangement covering the roof of the building. It is in turn linked to down conductors located at the corners/changes of direction of the façade. The ATN and down conductors will be run in an unsheathed, aluminium, circular conductor with a diameter of 8mm which is the least visually intrusive method by Heritage experts due to the colour variations within the stonework.

Due to the historic nature of the building the working of the conductor to achieve the tightest route following the façade elements must not impose any significant working force to the building elements. Where the tape and elements may meet the lead, copper is the preferred material as it is closer to lead galvanically.

There is no single fixing method that will be employed for a heritage setting for the ATN at roof level as roof finishes are rarely homogeneous in historic buildings. Fixing intervals vary but are generally in the 600mm to 1200mm range depending on contouring and/or flatness of the surface along which the ATN is running and fixed.

The pitched stone slate roofs will mean that it is necessary for the conductor to run along the ridge at the highest point, ridge clamps are used to secure the ridge conductor in place which are reversible as they can easily be removed later if required. The stone slates mean that hold fasts are the preferred method for fixing the ATN across sections of the pitched roofs. These can be installed without having to remove slates or with only very localised removal.

The routes will then take the network down the Stone Walls. The Down Conductors are used in an LPS to transmit the lightning strike from the Air Termination Network to the Earth Termination Network. Typically, down conductors are installed at corners of buildings and changes of direction. The Appendix C with the application – Schedule of Down Conductor Positions, shows

the locations chosen. The installation will be fixed in accordance with Historic England's 'Lightning Protection: Design and Installation for Historic Buildings' (HEAG182) which illustrates a neat installation showing the principles and level of workmanship that will be expected of the installer and required by the specification.

The aluminium down conductor is to be 'cold' worked to dress to the individual contours of the route, no force to be imparted on the building façade to dress the conductor and all push in clips are to be secured using stainless steel screws secured into the mortar joints not into the stone itself. This method of installation is also considered to be reversible with minimal 'making good' to mortar joints.

The end of the system is the Earth Termination Network. These are formed from Earthing Pits where earth electrodes will be installed at the base of each down conductor. These are usually copper rods of 16mm diameter and usually 2.5m to 4m in length.

They are driven in sections, the exact length is a function of the resistance but the rods will be a minimum of 2.4m. The earth rods are to sit within 3 metres of the face of the building and, for Lacock, the earth rods will be in the perimeter flower beds and lawns. If for any reason it is not possible to install an earth rod, then lattice earth mats would be installed. These are 900mm x 900mm copper mesh mats.

A lightning strike can give rise to damaging surge through electrical equipment and relative surge suppression measures will be installed at each of the main switch panel positions of the building. In addition, LPS components pass within a certain distance, of conductive building components these components must be bonded to the LPS. Normally this includes metallic gutters, downpipes, roofs and other metallic fixtures. Spark Gaps are also employed as required to separate electrical supplies from the annex and the main house to prevent jumping between the separate systems, a potential fire risk.

The National Trust's historic building experts' nationwide approach is to protect and maintain our historic buildings and collections for future generations. The risk to human life, loss of public services, loss of cultural heritage, loss of economic value has been considered when designing the proposed Lightning Protection System (LPS).

The Trust with its national portfolio of complex properties has specialists with experience and knowledge to understand the demands of the Abbey's individual character and complexities.

The National Trust ensures the LPS installations are risk assessed, designed and installed in a bespoke manner by specialists to provide an LPS that meets as practicably as possible BS EN 62305, given the listed nature of the building, available routes and significant historic fabric such as the statues and gargoyles.

The Bat Report and Survey have provided sufficient information to design and implement the LPS scheme without impact to resident bat population. The conclusion is that with the exterior nature of the LPS works no bat licence would be required however any works into the roof spaces would require a watching brief and no works during the breeding period May – August. The LPS installation works will be undertake in accordance with the Regulation and recommendations of the Consultants.

In respect to Archaeological impacts these have been assessed and some trial pits have been dug at points where the LPS conductor go to earth and no archaeological features or layers were found to be being disturbed. The archaeologist will complete the remaining pits with a watching brief during the installation phase.

Heritage Conclusion and Balance:

The NPPF confirms 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). It makes clear that any harm to a designated heritage asset requires clear and convincing justification.

The NPPF paragraph 202 allows that a level of harm may be offset by public benefits, which could include conservation benefits.

The proposal identifies the most appropriate Lightening Protection System for the Abbey and has considered design process that incorporate Bat Surveys and Archaeological assessment as well as historic building consideration to minimise harm to significance of the historic fabric.

The harm of the LPS is limited to the impact of the installation of conductor rods and associated earth pits installation and associated equipment, and their appearance. It is considered that this minor physical impact to fabric and visual harm has been considered and is justified to safeguard the Abbey for future public benefit and to lessen the risk of irreplaceable risk and potential damage including fire form a lightning strike damage to historic fabric and collections.

The proposals have no impact on the character and appearance of the Conservation Area.

This proposal is therefore in line with the National Planning Policy Guidance advice on the Historic Environment which advises public benefits can include securing the future use of a heritage asset in support of its long-term conservation.

Conditions: (3)

1 The works for which Listed Building Consent is hereby granted shall be begun before the expiration of three years from the date of this consent.

REASON: To comply with the provisions of Section 18 of the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended by the Planning and Compulsory Purchase Act 2004.

2 The development hereby permitted shall be carried out in accordance with the following approved plans and documents: Dwg No's W(52)000/REV B (Courtyard Cloister) Nov 19, W(52) 100/REV B (Roof Layout) Nov 19, W(52) 200/ REV B (Outer Facade Elevation's) Nov 19. REASON: For the avoidance of doubt and in the interests of proper planning.

3 No development shall commence to install the hereby consented Lightening Protection System (LPS) at Lacock Abbey until: a) A written programme of archaeological investigation (WSI) , which should include on-site Test Pit locations and off-site work such as the analysis, publishing and archiving of the results, has been submitted to and approved by the Local Planning Authority; and b) The approved programme of archaeological work has been carried out in accordance with the approved details. REASON: To enable the recording of any matters of archaeological interest.