Government Property Agency

Historic Building Annex

A Technical Annex for Historic Buildings

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Contents

Preamble - Using the Historic Building Annex

Much of the built fabric of this country dates from before the era of modern construction. It tells the story of our society and its aspirations, of what we have learned about materials, and how to live safe, healthy lives. All of it has something to tell us. All of this can be seen as heritage.

For practical purposes, what we call 'heritage assets' are a subset of this huge number of structures and land features, with a particular significance. This may or may not have been recognised by a specific designation: if it has, they are collectively called '*designated heritage assets'*. In some circumstances, planning authorities need to take account of '*undesignated heritage assets*', this applies particularly to archaeology which may be known to be of interest (or suspected) in areas not formally designated.

However, '*designated heritage assets'* have specific regulations governing how they can be altered or demolished, and these apply in every case where the work would go beyond simple repair. The relatively small numbers of scheduled monuments come under their own legislation the '**Ancient Monuments and Archaeological Areas Act 1979'**, while listed buildings come under the '**Planning (Listed Buildings and Conservation Areas) Act 1990'**.

This Annex deals with '*historic buildings'*, which could be listed under the 1990 Act (hence 'listed building') or are seen as of '*historic interest*' even though they are not designated. If you are unclear about the status of the building you are dealing with, you can search the National Heritage List for England: https://historicengland.org.uk/listing/the-list/

Historic buildings are unique and must be assessed on a 'building-by-building' basis, creating difficulty in providing prescriptive requirements when dealing with buildings or assets of this nature. With this in mind, this Annex seeks to bolster decision making by offering both guiding principles and direction to further information.

If you have reason to believe the building has some historic interest even though it is not listed, you will still find the advice in this Annex useful. Historic England may also be able to advise on its treatment.

A - What are Heritage Assets?

A.1 - What is a Heritage Asset?

Historic buildings are '*Heritage Assets*' – assets in the sense of buildings worth retaining for their character and significance. They have cultural value. Strictly speaking, they are irreplaceable. This should not prevent reasonable change, but it should always provoke the question: how much do we have to change this building, to achieve what we need to do?

Just what is it that could make the building of interest?

- Structures can be listed for architectural and historical interest (or both), or what today is often called significance. As a result, specific permission is usually needed from the local authority to alter or demolish the building, called listed building consent (see below).
- Civil Service buildings, if purpose-built, may embody the ethos of the service – an aspect of their historical value. The Civil Service should maintain that special interest under The Protocol for the Care of Buildings on the Government Historic Estate.
- Conservation of materials and energy is a principle found throughout history, and traditional construction has much to teach on this.

When work is proposed to a heritage asset, those responsible need to think about how that might impact what is remarkable or unique about the building; if it is old enough to have the possibility of concealed interest. In that case, it is best to remember that 'something might turn up', and consider how interest can be preserved in the course of work, ideally restored and presented if discovered. Existing information may not give sufficient warning of this possibility – list descriptions usually only cover what was known at the time of listing – so it is essential to get an up-to-date expert assessment, often called a Heritage Impact Assessment or Statement of Heritage Significance.

It is crucial to understand what you have. The most significant value of this information will be to yourselves as owners and operators. Still, if permissions are required, the authorities will be looking for proof that the significance of the building has been fully taken into account in any proposals for change.

'*Significance*' is defined as the meaning of a building for the present and future generations. One way to consider this is by subdividing it into values (evidential, historical, aesthetic, and communal). Just as these values are different, so the ways to preserve them may also differ. Historic England has published advice on how to view these values and how to approach proposals for change: Conservation Principles.

A.2 - Heritage as a contributor to Well-being

Old buildings convey stability and familiarity, with the sensory stimulation of distinctiveness and, on occasion, intellectual challenge. Social prescribing now envisages the greater richness of a varied environment as having a role in the well-being of the working population and those who simply use the centre of a town or city. Government buildings are often

prominently situated, and so in themselves contribute to the character of an area and, we hope, the sense that it is a good place to belong.

Historic England has commissioned research on this subject, and is reflected in DCMS's broader research:

Wellbeing & The Historic Environment + Heritage & Wellbeing PDF they outline the firm belief that the variety of historic environments contributes to the population's well-being.

In the case of working buildings, the effort to preserve an element of difference, or the sense of a previous life, will contribute positively to this soothing effect. In the case of listed buildings, this is likely to be in the minds of those who are consulted during the pre-application process (see Section B).

B - How Heritage Assets are Protected

B.1 - Heritage Assets and the Law

Historic buildings are not all protected by law. Those chosen for listing are a minority of those built before 1919, and a tiny minority of those built since. Compromise and ingenuity may be necessary to preserve the significance of this minority.

Historic Listing, and other forms of designation, are explained by Historic England in its web pages at https://historicengland.org.uk/listing/what-is-designation/listed-buildings/#WhatCanIDo. You will find the reasons for listing further explained in a series of advice notes called 'Principles of Selection' (there is one on 'Law and Government': https://historicengland.org.uk/images-books/publications/dlsg-law-government-buildings/). The process of assessment is carried out by Historic England (who also deal with requests for revision). Still, the actual listing authority is the Secretary of State for Digital, Media and Sport. If the evidence is clear on the historic or architectural special interest, the Secretary of State has no choice but to list the item.

Listing began in the 1940s, and now has three grades:

- Grade I buildings are of exceptional interest; only 2.5% of listed buildings are Grade I
- Grade II* buildings are particularly important buildings of more than special interest; 5.8% of listed buildings are Grade II*
- Grade II buildings are of special interest; 91.7% of all listed buildings are in this class.

As the numbers show, the distinction between the two upper grades is quite small, and they tend to be treated as having similar implications for management purposes. However, the lower grade, Grade II, is wide and encompasses buildings from those which only just fall short of high merit down to those of simple, 'special interest'.

B.2 - Listed Buildings: some Myths, and Truths

The listing system covers a small minority of the buildings of this country, but it has been around for long enough, and touched enough lives, for some enduring myths to arise.

The following are NOT generally true:

- Once listed, a building cannot be changed.
- Only the outside of the building is listed.
- Conservationists are only ever interested in the fabric of the building and do not care what goes on in it.

The last of these gives a clue to a more useful way of looking at listed buildings. They are listed for the physical evidence of past times or enduring architectural qualities. Naturally, therefore specialists in this area will pay close attention to the physical impact of any change or loss. But they should also be (and usually are) very interested in how the building is used or could be used because it is by being used that their continued existence is going to be justified. They will want above all to know how compatible those uses are with the survival of the significance.

B.3 - Listed buildings in the Planning System

Because listed buildings are selected for their intrinsic interest, Parliament has placed restrictions on what can be done to demolish them or to alter them in such a way as to affect their special interest. Since 1971 owners have usually been required to obtain a separate form of permission under the Town and Country Planning Acts, called listed building consent, to cover demolition and alteration (but not repair, which does not need consent). Since 2006, the Government Estate has not had an exemption from these rules.

In the process of judging whether consent should be given, the local government has a far more important role than the central government, because the local authority (District or Unitary) is the planning authority. It is their responsibility to satisfy themselves that the application is adequately supported and justified under the National Planning Policy Framework. The NPPF has a section on 'Conserving and Enhancing the Historic Environment' (Paragraphs 184 to 202). The paragraphs that are most relevant form a sequence which in aggregate covers the main questions:

- Has the proposal been appropriately illustrated?
- Has harm to areas of significance been minimised?
- Has residual harm been clearly and convincingly justified?
- Are the public benefits (including the heritage benefits) such as to outweigh this harm?

A scheme where the answers to all these questions are 'yes' is almost bound to receive consent. The local authority's decision on a listed building consent, if negative, can be appealed to the Planning Inspectorate (which reports to the Secretary of State for Communities and Local Government, in his judicial role). The ensuing recommendations and decisions could be judicially reviewed.

Although Historic Listing is easily the most typical form of designation, there are several others which are national designations (whereas Conservation Areas are the responsibility of each local authority). On the Government Estate, the most relevant one is scheduling as an Ancient Monument, a separate process to Historic Listing. Again Historic England makes the assessment, but the Secretary of State for Digital, Media and Sport takes the decision, but in this case, it is discretionary. The majority of scheduled monuments are much older than listed buildings, and they are more likely to have 'evidential value'. Evidential Value means that they could reveal things we do not currently know (below-ground archaeological interest is the most obvious form of this). Scheduled monuments also have a distinctive type of permission, 'Scheduled Monument Consent', which covers demolition, alteration of any kind and, distinctively, repair as well.

B.4 - Archaeological Interest

It is essential to bear in mind that listed buildings could have archaeological interest even though they are, generally, from more recent centuries. This could be beneath them or in their own upstanding fabric. It is not possible to plan for everything that might be discovered, but the project team should assure themselves that they have had the best advice on the likelihood of discoveries and, where appropriate, to allow for time in which they can be investigated and their future settled. Planning for this is the responsibility of the project team and not of the local authority, Historic England or the Greater London Archaeological Advisory Service. Sometimes preservation is appropriate, and at other times a record will suffice. The local authority will usually wish to condition any consent to this effect.

B.5 - Contested Heritage

People care about the past and its influence on the present. Memorials, or buildings which have a didactic character expressed by statuary or paintings, can become controversial. Historic England has stated on this and will issue further guidance. "Contested Heritage".

A significant effort is made to ensure that list descriptions provide information on individual cases. We believe in leaving the memorial in place and providing additional interpretation to explain the current position.

B.6 - Historic Contents: are they listed?

Contrary to what believed, Historic Listing does not extend to the contents of a historic building, unless they are fixtures. There is case law on this, which for example has usually excluded pendant light fittings from control under this legislation. Moveable items (in law 'chattels') will not usually qualify for protection unless they are fixed by their own weight (as are many statues). If in doubt, a legal opinion should be sought.

There may well be other restrictions on the use and position of contents, such as their inclusion in the Government Art Collection, or even covenants: again legal advice may be needed if so.

B.7 - Heritage and the Environment

Old buildings embody energy as well as significance. They do not stand to one side of the arguments on climate change and energy conservation, although they are usually valued primarily for other reasons. There needs to be a 'Whole Building Approach' which respects their character as structures and draws on their strengths. The complexity of choices in retrofit needs to be recognised.

See Section "D" below.

B.8 - Condition Surveys & Investigations in Heritage Buildings

Surveys assist in revealing the history of how the building worked in the past. As well as being architectural assets, existing services may be of historical interest, and may even be included in the listing schedule for the building; or you may uncover a piece of engineering heritage that deserves to be reused or recorded. "Recording and Conserving Historic Building Services" & "CIBSE Building Services for Historic Buildings" explains more on this.

For a building with known heritage assets, it is crucial to understand the existing maintenance and heritage conservation strategy, as well as the listing schedule for the building. This informs both future condition surveys and quadrennial surveys and can also provide a more in-depth understanding of heritage asset degradation alongside any works planned to rectify this.

When engaging with external contractors, ensure they utilise this existing information to bolster and streamline their approach toward future surveys and investigations.

If acquiring a building without known heritage assets, early engagement with heritage consultants is crucial to ensure any heritage assets are captured in the new conservation management and maintenance strategies. All proposed strategies must adhere to the guidance set out in **BS 7913:2013** & **BS EN 16096:2012** alongside any other guidelines set out by the appointed Heritage Consultant.

Further guidance can be found at "Condition Surveys & Investigations"

C - How to Approach Change Management

Working with the grain of the building is the key to the successful management of change in a historic building. The fact that a building is listed does not mean it cannot be changed, just that any change needs to be managed to avoid unnecessary damage to heritage values and significance. An unlisted building may also have a historic quality which deserves to be respected in a refurbishment: its quality may be a material consideration in any planning permission which is needed.

Frequent mention is made here of the need to obtain specialist advice. Listed buildings are all different, and it takes experience and knowledge of their significance to understand what

can and cannot be done. The broad indications in this Annex are not enough to guide a project manager through the process. Project Managers should seek a specialist professional assessment, usually called a Statement of Significance, on which to base their approach to the building as one of special interest. When the scope of the work is clear in outline, a Heritage Impact Assessment should follow. Specialist advice may be required throughout the process.

This sequence should be followed:

1. First, identify and understand the significance of the building.
2. Undertake any surveys that you need to be clear on its physical construction and behaviour.
3. Analyse what you truly need to do. See Making Changes to Heritage Assets https://historicengland.org.uk/images-books/publications/making-changes-heritage-assets-advice-note-2/
4. Proposals can then be designed or moderated to minimise harm to the significance where possible. See Managing Significance in Decision Taking *(although this advice from English Heritage cites an earlier version of the NPPF)*
5. Early pre-application advice should be sought from Historic England and the local planning authority, which will help to streamline the approval process. See this link for the range of services provided by Historic England on a cost-recovery basis: Our Pre-Application Advisory Service.

The point of consultation should be reached before ideas are too entrenched, particularly ideas about how much development the site can bear. Many aspects of the building could be considered essential to its character as a listed building. These might include the historic plan form and fenestration, for example, which might set limits to the amount or type of accommodation it could afford, or even to the actual use. But most old buildings are still with us because they can be used, and the trick is to find out how.

D - Frequent Issues

D.1 - Accessibility

The legislation on providing easy access to historic buildings is the Equality Act 2010, which requires 'reasonable adjustments' to be made where the physical form of a building would put a disabled person at a substantial disadvantage (Section 20 (3)). This legislation does not set aside the legislation for the protection of listed buildings, or remove the need to obtain consent for any works. Nonetheless, the need to make buildings usable and inclusive is well recognised: See https://historicengland.org.uk/images-books/publications/easy-access-to-historic-buildings/. This applies of course to workplaces as well as public areas. In a case, for example, where a small difference in floor levels arises from the linking of two buildings a simple and elegant solution involving ramps or a platform lift will usually be approved, even if some material were to be lost, because it would give the combined building a more viable future. A historic wall might need a single opening, which could unlock a whole new use. If disturbance was

kept to a reasonable minimum, this also would need consent but it would not usually be opposed.

D.2 - Fire strategy

In buildings of special architectural or historical interest, the application of the current building regulations might prove too damaging to the significance. Some variations of the provisions of the document may be appropriate.

The fire safety risk assessment guides available from gov.uk Fire Risk Assessments also recognise the special status of listed buildings

This guidance states '*Fire risk assessments conducted for a [premises] which is within a listed or historic building will need to endeavour to strike a balance between ensuring sufficient fire safety measures are in place for the safety of people, yet avoid extensive alterations and helping to maintain the character of the building.*'

The 'Heritage Impact Assessment' or 'Statement of Heritage Significance' conducted as stated above will provide a list of those areas where there may be a conflict between the building regulations and fire safety guides and the unique characteristics of the building.

Suppose a listed building is to be converted, refurbished or modernised. In that case, we recommend that the responsible person for the building engages the services of a conservation architect from the outset and that the future fire risk management of the building is taken into consideration from the initial planning through the building works to occupancy.

Where variations from standards are proposed, an enhanced fire risk management system should be adopted, such as that outlined in BS 9997 (2019).

The building regulations and fire safety guides provide a minimum standard of fire protection for life safety. The heritage value of the building should also be taken into account when designing the fire safety systems in the building. It may be desirable to install enhanced fire safety provisions in the building in compensation for variations to standards and to enhance the protection of the heritage value of the building.

For example:

- The use of an automatic fire suppression system could help to compensate for variations in fire compartmentation from the regulations and would also enhance building protection for both business continuity and the preservation of the significance.

- Upgrading doors to the current standards of fire resistance may be advisable, as well as including them in any updated fire risk assessment. This assessment should take into account factors such as; fire loading, ceiling height, room size and distance between fire loads. These factors can inform decision making on whether a door should be upgraded or if a reduced standard may be acceptable. The use of an

automatic water suppression system could also be a significant factor in determining if the door will need to be upgraded.

- The use of an enhanced fire detection system linked to adaptive escape signage may be able to assist with the fire risk management of the building by indicating escape routes away from where the fire detection system has identified the outbreak of a fire.

Fire Safety Management in Traditional Buildings- a guide for practitioners, published by Historic Environment Scotland is a useful guide when considering the identification and assessment of fire risk with advice on its management and appropriate technology consistent with accepted conservation principles.
https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=7300097e-415f-4d27-a5fe-a5ad00ab8501

Suppose variations from the standards are proposed due to constraints imposed by the listing of the building. In that case, early consultation between regulators, planners, designers, owners and future occupiers should be instigated to ensure that an acceptable level of fire safety and a fire strategy plan is designed. This ensures that all parties, including by the future occupiers of the building, can sign up to a realistic and achievable fire risk management system. In respect of Crown premises, the fire authority is the **CPFSI (Crown Premises Fire Safety Inspectorate)**.

Once the building is occupied a fire risk assessment should be undertaken by a suitably qualified fire risk assessor who has experience with fire risk assessments in listed buildings. The fire strategy plan and any agreed variations from standards should be taken into account. We recommend that a robust fire risk assessment method is used, such as that described in "***PAS79 (part 1 dwellings or part 2 commercial)***". **[1]**

Any significant findings of the fire risk assessment should be fed back into the fire risk management system, which should be updated as required.

D.3 - Lightning Protection

Historic buildings frequently have complicated roof lines or terminal features, and modern lightning protection can be obtrusive both at the top of the building and in its path to the ground. A risk assessment in line with BS EN 62305 would have to be carried out on any building considering installing a Lightning Protection System, which in turn would guide the extent of the system needed.

Instead as with fire protection more generally, Historic England looks for intelligent solutions to putting a Lightning Protection System on a listed building. If the building is listed or scheduled, then we recommend that the protection is installed in line with our guidance **[2]** Lighting Protection

D.4. Security measures

In recent years the level of security required for government buildings has tended to rise. Historical buildings of substance often have raised entrances, but ones that lead directly into the operative areas, and thus present problems both for ease of access and for the prevention of the wrong sort of access. Comprehensive renovation provides the opportunity to address these issues holistically. Excellent advice is available from the **Centre for the Protection of National Infrastructure** at https://www.cpni.gov.uk/building. A subjective agreement exists between CPNI and Historic England that most security measures should be unobtrusive, and in that way detract as little as possible from the historical significance of the building as well as the experience of users. For buildings to contain detection equipment, pose significant problems for the appearance of most main entrances, and the combination of difficulties will often argue for a re-thinking of the circulation to use a less imposing, but more practical entrance. Although this would change the historical pattern of use, it might be more desirable than drastic change to the main entrance. However, this level of change must be considered alongside client expectations. Questions of this sort underline the need for a heritage assessment and early consideration of the heritage aspect of the project, and especially for security to be integrated into that discussion (when too often it is treated as another, separate specialism).

Security concerns have also increased the requirement for mechanical ventilation, and impermeable fixed glazing. We acknowledge these imperatives and will work where possible with project teams to deliver an elegant and convincing solution. There will be places where this will have to be 'defence in depth', with the impermeable layer as secondary glazing on the room side of the window, to preserve the historic glazing.

D.5 - Wayfinding

Signage is meant to be seen. Delicate historic interiors might be unsuited to wall-mounted signs, in which case your advisor will want to discuss whether free-standing signage is feasible. But in many cases, this will not be possible, especially on fire escape routes. In that case, locations for conventional fixing may need to be found. This is not something which can be decided on without specialist advice related to the actual situation.

D.6 - Managing Hazardous Materials in a Heritage Environment

Historic buildings have been constructed and amended over time, utilising a variety of materials. Subsequently, some of these materials have been identified as representing serious health hazards.

Presence of ACMs in listed buildings

It is a misconception that a building can be too old to have any ACMs present within, as it has been utilised as a building material for millennia. The primary use of asbestos arrived during the industrial revolution, and though many 19th century buildings may not contain

ACMs, they may have later been modernised with ACM's. Generally, any building pre-2000 should be treated as though it contains ACMs.

Examples of these types of work include:

- M&E Systems
- Electrical Installations
- Plasterwork
- Fire Doors
- Fire Batting & other fire prevention measures

Damage to assets can occur alongside the risk of disturbing ACMs. Degrading sites increase the risk of ACMs exposed/disturbed. Modernisation can come in the form of:

- Maintenance and management
- Fabric renewal
- Sustained damage repair
- Supervised restoration and alterations
- Further development or demolition
- Investigative intervention, to increase knowledge about the asset.

Where it is not possible/practical to replace a heritage asset due to ACM's, a like-for-like utilising another material in a matching size, design, colour and thickness should be implemented alongside consultation with Heritage Assessors. Managing the inherent risk of ACMs alongside the loss of heritage assets are important and though they both have their challenges to work in unity with each other, it is possible to manage these aspects together if there is a strong partnership between site management, heritage and health and safety experts.

Management of other hazardous materials such as lead, CFC's, PCB's and Heavy Metals where Heritage Assets are involved should undergo similar consultation exercises prior to works being carried out.

D.7 - Sustainability & Environmental Accreditations

The Sustainability Annex of the Design Guide outlines the approach to meeting ambitious targets and carbon reduction plans for the government office estate. The aim is to achieve Net Zero by defining technical requirements and providing guidance to support the delivery of Net Zero carbon buildings.

Historical buildings present a unique challenge, as they are unable to undergo substantive changes to the building fabric. Therefore when attempting to apply the Sustainability Annex

to historic buildings, guidance is to avoid adding to the embedded carbon of the building, minimising the use of operational energy and introducing renewable sources of energy where possible.

In most instances, the requirement for refurbished buildings to meet a BREEAM Very Good rating is therefore not possible. Where this is the case, a case by case assessment should be conducted, determining whether derogations from the DG standards are applicable whilst minimising the environmental and social performance of the building.

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[1] Currently, an update is out for comment and the new version has yet to be published.

[2] This discusses the 2011 document BS EN 62305 Protection against lightning. Physical damage to structures and life hazard

E - Energy Conservation

A true 'whole building approach' is one that uses an understanding of a building in its context to find balanced solutions that save energy, sustain heritage significance, and maintain a comfortable and healthy indoor environment.

A True Whole Building Approach, Comfortable and Healthy Indoor Environment.

It is important to understand how a building works as an environmental system. Traditional construction consists of permeable fabric that both absorbs and readily releases moisture by evaporation. In contrast, most modern buildings depend on impermeable barriers to control the movement of moisture and air through the building fabric. A further difference is that traditional buildings tend to heat up and cool down more slowly than their modern counterparts. Their capacity to even out changes in temperatures and humidity can be beneficial in terms of both energy efficiency and comfort.

It is worthy of note that old buildings embody carbon. Buildings contribute to greenhouse gas emissions over their whole lives – during construction, maintenance and repair, use, refurbishment, conversion and demolition – but the focus of carbon reduction strategies often concentrates just on emissions that occur when buildings are used – known as operational emissions. A ‘whole life approach’ measures carbon emitted at all stages of a building’s lifespan and demonstrates the importance of embodied carbon emissions. This is described in the Historic England publications Energy Efficiency and Historic Buildings: How to improve Energy Efficiency and Historic England Advice Note 14: Energy Efficiency and Traditional Homes

Recent research commissioned by Historic England shows that demolishing a historic building and replacing it with a new building can result in greater total carbon emissions by 2050 compared to refurbishing the original building Re-use & Recycle to reduce Carbon.

Old buildings and the heritage protection system are cast as a contributor to rather than part of the solution to climate change. However, as well as their low embodied energy, old buildings have other important roles to play in contributing to a reduction in greenhouse gas emissions.

Old buildings are naturally resilient, which is why they have lasted for centuries; they buffer extremes of temperature very effectively and can get damp and dry out again often without suffering significant damage. When elements deteriorate, they can usually be repaired or partially dismantled, and the damaged or decayed part replaced piecemeal. This contrasts markedly with most modern buildings, which are at risk of overheating, often suffer considerable damage from water penetration or flooding. If one component of a system fails (e.g. the seals on a double-glazed unit) the entire element has to be replaced.

Secondly, old buildings can demonstrate ways of adapting to the problems caused by extremes of climate that are often overlooked in a rush to 'do something' to improve energy efficiency. Traditional external surface finishes, such as lime render or limewash, provide ideal protection against driving rain penetration through solid masonry walls, but these finishes have often been removed in an ill-advised quest to 'expose the natural stone'. Subsequently, the wall becomes damp and cold, further modern solutions, such as internal tanking, colourless water-repellents or modern impermeable paints, often follow; these invariably fail to tackle the original cause of the problem and in turn usually lead to further problems and damage to historic fabric. Another example is the various passive means by which the occupants of old buildings stayed comfortable, according to the season, without recourse to air conditioning or central heating; features such as sash windows, shutters, blinds and awnings, and radiant heat breaks such as timber panelling and floor coverings are largely overlooked when considering energy efficiency today but could play an essential role in mitigating the effects of climate change.

Maintaining and repairing an old building using traditional materials (e.g. earth, stone, lime, clay and timber) can incur a much lower environmental cost in terms of reduced embodied carbon compared to imported materials or modern manufactured or composite materials. When considering sustainable options for repair or adaptation of any building, as well as thinking about the whole-building approach, the carbon footprint of the materials and labour also need to be considered in the round – from their manufacture, transportation, installation, durability, reparability and end of life recyclability. Some energy-saving measures that reduce operational carbon may in fact increase the whole-life carbon of the building if more carbon is created in production and disposal than is saved in operation.

Heritage and Economy & Heritage and Society

F - Building Services

The design and installation of building services systems in historic buildings need to be considered carefully. Successive installations can undermine the historic interest of a building. Work should aim to protect the building and its setting with no loss of historic fabric, and follow the principle of reversibility, considering and detailing every hole and fixing. The installation work should not only include a plan on how the services are to be installed but a plant replacement strategy as to how they will be removed at the end of their useful life to minimise damage to historic fabric.

For internal service routes, it is best to avoid running services in panelled or historically decorated rooms and use adjacent less significant rooms, trying to reuse existing service runs, voids, particularly those under floors. It is preferable to hide services, where they cannot be avoided and need to be surface-mounted; it is generally better to colour-match the services to the surface to which it is attached, or for them to be painted or powder-coated an appropriate colour.

Where possible re-use existing plant rooms and avoid using rooms with highly decorative finishes. If rooms are used where they have significant walls, floors or ceilings, they will need to be protected by mounting the plant off frameworks to minimise the fixings to these surfaces.

For external services and penetrations, for example, boiler flues, or where the plant needs to be located outside, it is advisable to avoid prominent elevations or highly visible locations but instead uses secondary or hidden elevations. Where new services are to be installed, we recommend that the project manager engages the services of a building services engineer from the outset, to carry out options appraisals for the services and to liaise with the appropriate specialist on how they impact the historical interest and significance of the building.

G. The RIBA Stages - Conservation Actions