GUIDANCE FOR REPAIR GRANTS

ADVISORY STANDARDS FOR GRANT-AIDED REPAIR PROJECTS (November 2022)

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

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USING THIS GUIDANCE

This guidance is for anyone applying for, or in receipt of, funding to undertake work to an historic environment asset supported by a grant from Historic Environment Scotland (HES). This includes owners of historic environment assets, or others taking responsibility for them, and their project team including their Professional Adviser and contractor.

It sets out our professional approach to repair and consolidation of historic environment assets, and what is likely to qualify for HES grant assistance unless stated otherwise.

Professional Liability

The following advisory standards are intended to inform the applicant and guide the Professional Adviser and design team in development of project details, specifications, and methods. They should not be considered of adequate detail to be used as specifications and method statement in themselves.

Please note that the following guidance is for grant-aid purposes only and does not imply any professional liability upon HES for the project design, specification or works on site. Professional liability remains solely with the Professional Adviser and design team as per terms of engagement between individual practitioners / firms and their clients. Liability for works of site will be as per building contracts in addition to the terms of professional engagement.

These advisory standards are set out in the following sections:

- Introduction and Overview
- Further Sources of Information
- Section 1: Project Development
- Section 2: Interim Works
- Section 3: Repair Work to Buildings
- Section 4: Ancillary Work to Buildings
- *Section 5: Masonry Monuments (guidance available 2023)*
- *Section 6: Other Forms and Parts of Monument (guidance available 2023)*
- *Section 7: Carved Stones (guidance available 2023)*

This guidance may also be used to guide the repair of traditionally built structures where best practice is sought out with HES grants programmes.

This guidance replaces our previous 'Advisory Standards of Conservation and Repair' document for use on our new grant programmes from 2022 and is a working document that will be reviewed and updated as required.

INTRODUCTION AND OVERVIEW

These advisory standards are intended to assist in the execution of works to historic environment assets in Scotland.

If you are applying to HES or have been awarded any HES funding for repair or consolidation works under any of our new funding programmes from 2022, this document provides guidance on the materials and standards we require to be used in a grant-aided scheme. Management of the works must also meet the current requirements of Health and Safety legislation.

We will expect you to work with your Professional Adviser to develop proposals to a high standard of conservation practice. It is equally important that the subsequent works on site are also managed by your Professional Adviser to ensure these high standards are continued during the works to deliver the completed project.

Proposals to undertake any works to a historic environment asset may require statutory consents (Scheduled Monument Consent, Listed Building Consent, Planning Permission and Building Warrant) which do not form part of your grant application i.e., an award of grant does not give any statutory consent. Receipt of statutory consents does not mean that your proposals qualify for HES grant funding, or that the proposed work will meet our expected standards for grant-aided works. Be aware that the requirements of statutory consents may vary from the standards required by this guidance.

For scheduled monuments, where the consent process is handled by Historic Environment Scotland (HES), we aim to work internally to ensure our consent and grant advice aligns. However, please note that the grants and consents systems remain separate and receipt of one does not guarantee the other.

In addition to the above consents for the historic environment asset, you may need other types of consents which relate to its site and natural habitat. Planning for work should include assessment and survey, if required, to protect the natural diversity within the area, for example Sites of Special Scientific Interest, and to account for protected species such as bats and nesting birds. This may require monitoring or survey work prior to the works and, depending on the outcome, this may affect your project schedules. Further information should be sought from NatureScot, SEPA and other nature protection groups.

FURTHER SOURCES OF INFORMATION

Historic Environment Scotland

Historic Environment Scotland (HES) publish national policy for the protection and management of the historic environment including the Historic Environment Policy for Scotland (HEPS) and the Scheduled Monument Consents Policy.

HES also has many publications providing guidance and information on a broad range of subjects for a variety of audiences, the different series of which are linked below. Please note that not all aspects of these publications will be grant-eligible, and you should refer to Sections 2 to 4 of this guidance for further information on what is grant-eligible.

All Publications

Technical Advice Notes: a series of older publications giving detailed technical advice on traditional repairs and recommended building processes.

Short Guides: a series of free and downloadable documents providing advice and practical guidance on a range of topics in relation to traditional buildings and skills. The series is aimed at practitioners and professionals but may also be of interest to other contractors and property owners.

INFORM Guides: a series of free and downloadable A5 leaflets giving an overview and key information on a range of topics relating to traditional skills and materials, building defects and the conservation and repair of traditional buildings. The series is largely aimed at homeowners and has over 50 titles covering topics such as: ventilation in traditional houses, maintaining sash and case windows, domestic chimneys and flues, damp causes, and solutions, and improving energy efficiency in traditional buildings.

Guides for Practitioners: these publications provide technical advice and guidelines to practitioners and developers in the conservation field, as well as to local authorities, regarding specific building and conservation matters, such as Fire Safety and converting traditional buildings.

Technical Papers: this free and downloadable series of documents disseminates the results of research carried out or commissioned by HES. They largely focus on topics related to energy efficiency measures but also cover topics such as indoor air quality, historic masonry finishes, architecture and health, or other specific research topics.

Refurbishment Case Studies: a series of free and downloadable case studies that detail practical applications concerning the conservation, repair, and upgrade of traditional structures. The Refurbishment Case Studies seek

to show good practice in building conservation, and the results of some of this work form part of the evidence base of our technical guidance.

Managing Change in the Historic Environment: a series of free and downloadable guidance notes about making changes to historic environment assets.

Ancient Monument Guidance:

- Fawcett R: *The Conservation of Architectural Ancient Monuments in Scotland* http://openarchive.icomos.org/id/eprint/1719/1/conservation-ancient-monuments.pdf,
- The Scottish Executive: Carved Stones Policy and Guidance http://www.carvedstones.scot/uploads/4/4/0/3/44032535/_carved-stones-scottish-executive-policy.pdf

Third party funders

HES grant funding can also be distributed by third party organsiations through our Heritage & Place Programme (H&PP) and City Heritage Trusts (CHT). Whilst all grants awarded by other organsiations using HES funds should meet the requirements of these Advisory Standards, the type of projects which are eligible for funding may vary.

HES funding support for Scotland's cities is managed by CHT's and can cover a broad range of historic environment assets as identified through individual Trust strategies and grants programmes. We advise you check with the individual delivery organisation for more information on what grants are available.

- Aberdeen CHT (https://www.aberdeenheritage.org.uk/)
- Dundee Historic Environment Trust (https://dhet.org)
- Edinburgh World Heritage Trust (https://ewh.org.uk/)
- Glasgow CHT (https://www.glasgowheritage.org.uk/)
- Inverness CHT (https://invernesscityheritagetrust.org/)
- Perth and Kinross Heritage Trust (https://www.pkht.org.uk/)
- Stirling CHT (https://www.stirlingcityheritagetrust.org)

SECTION 1: PROJECT DEVELOPMENT

1.1 Approach and principles

At the commencement of any proposed works to a historic environment asset, the owner and design team should discuss their approach to the project and adopt the principles that will guide repair and intervention of its historic built fabric. Broadly we seek an approach of conservative and respectful repair. It is important that proposed works adopt a cautious, studied approach as set out in various international conservation charters, Historic Environment Policy for Scotland (HEPS) and the Scheduled Monument Consents Policy. Further reference can also be made to BS7913: 2013 Guide to the conservation of historic buildings.

1.2 Significance

Your approach should begin with an understanding of the historic environment asset's history and significance, the behaviour of its materials and construction, its historic evolution, and former uses, and how it currently functions alongside the implications of any proposed change. The cultural significance of the asset should not be compromised. Depending on the significance of the historic environment asset, and the scale of works proposed, you may consider preparing a statement of significance or a conservation plan.

1.3 Repair

When we use the term 'repair 'in this guidance, we are generally using this in connection with works to buildings. For buildings, our main objective of repair works is to bring a building into a satisfactory condition, without compromising its significance. Refer to **Section 3** for further information. Ancient monument work will generally use various methods of consolidation and careful conservation to ensure minimum intervention to secure the longer-term survival of the monument in the form it survives today.

1.4 Reinstatement

We do not normally give grants for speculative reinstatement. We would expect any reinstatement to be based on sound physical and/or photographic evidence and to retain any remaining significant historic fabric, for example historic elements of an existing shopfront. However, this evidence may not be available in every case. In those exceptional circumstances, new works designed by the Professional Adviser, based on local precedent, and using appropriate traditional materials may be considered. We will ask you to explain the case and provide justification for the reinstatement, and the proposed design. Refer to **Section 3** for further information.

1.5 Demolition and removals

The removal of any part or element of a building or ancient monument, or the removal of complete structures, is not normally grant-eligible. There may be exceptional circumstances where removal is appropriate, for example: the work is essential to protect historic fabric and/ or where there is a structural need; the removal of later work which significantly obscures the original design of the asset; careful dismantling of fabric or elements at risk to allow reconstruction/ reinstatement; the careful dismantling of a structure that poses a risk to surrounding historic assets. Any measures that propose demolition of an asset, or partial removals of historic fabric, must be carefully assessed and receive necessary consents prior to any grant award. There may be opportunities to salvage materials where demolition is involved.

1.6 Assessment of risk

An assessment of the historic environment asset's condition is essential to identity risks, such as any fabric defects, and to determine the asset's appropriate conservation including repair and/or consolidation works. The scope and scale of a condition survey should be tailored to suit the individual historic asset. For buildings, we would expect the Professional Adviser to undertake an initial condition assessment. For ancient monuments, this assessment will normally be dealt with through pre-application advice and on-site meetings with HES.

The initial assessment may identify other investigations required to evaluate the asset in more detail. This may include, for example: structural survey and monitoring; environmental monitoring; specialist surveying including thermal imaging and endoscopy; archaeological analysis and investigations; dendrochronological, stone, mortar, or paint analysis. Requirements for further investigation should be agreed with HES, if your grant application is progressing, and some may be grant-eligible.

1.7 Health and safety practice

We expect that statutory duties owed by clients, advisors, and contractors relative to health and safety will be delivered. This includes but is not limited to the Health and Safety at Work Act, Management of Health and Safety at Work Regulations, and the Construction Design Management regulations. We expect and support exemplary best practice in relation to the management of materials hazardous to health and more specifically silica dust and respiratory impacts.

1.8 Management and maintenance

Depending on the significance of the historic environment asset, its condition, current management, and the level of grant award you receive, we may ask you to prepare documents to assist in the future management and maintenance of the asset. This may include a conservation management plan and/ or a maintenance plan. Even where we do not require you to submit

such documents, you should consider these issues and commit to good management and maintenance of the asset after the completion of the project works.

1.9 Use of traditional materials and methods

Works to the existing fabric should adopt the traditional materials, craft skills and construction techniques found in the original building where appropriate. Where circumstances allow local materials should be used and sustaining sources of indigenous materials is encouraged. In repair work, an important consideration is matching the new material with the existing. Incorrect selection of material, often for perceived reasons of improved durability and lower cost, can often result in a shorter lifespan of repairs and accelerated damage to existing fabric. The procurement of traditional materials such as stone, slate, suitably dimensioned timber, lead and iron work should be considered at an early stage.

1.10 Sustainability and climate resilience

The resilience of historic environment assets is affected by an increased frequency of unusual weather events such as rapid and significant temperature changes, storm conditions with severe wind forces, and intense and prolonged rainfall. In preparing your project proposals, the opportunity should be taken to assess the asset's climate resilience and consider if measures to mitigate the effects of climate change, which would not harm the significance of the historic environment asset, could be undertaken. For buildings, alongside regular maintenance, appropriate repair, and detailing will prolong a building's lifespan and ensure its sustainable future. Refer to HES Short Guide 11: Climate Change Adaptation for Traditional Buildings for further information.

In the case of ancient monuments, increased rainfall, and more rapid change between hot/cold and dry/wet conditions, can increase risk especially around wall heads, drainage and water shedding, and possible movement, for example of carved stones. Where ancient monuments are judged to be under threat, climate mitigation measures may be considered including appropriate repair and consolidation works, new shelters, structural support, and ground consolidation.

1.11 Circular economy

The repair and re-use of a historic building is an inherently sustainable practice and works to retain the building's embodied energy, supporting the circular economy and Zero Waste strategy. Most traditional materials are by their nature of low embodied energy and low toxicity and their increased use is a specific objective of HES Grants programmes.

1.12 Energy efficiency and the retrofit of buildings

The appropriate thermal upgrade of buildings is now necessary for many reasons. When planning conservation work, improvements in the

performance of the fabric should be made where the nature of the construction permits. Such improvements can be part of grant-aided works on eligible elements in a project. This might include for example: roof insulation during slating works, or window / glazing upgrades where replacement is necessary. Possible measures are described in the HES Guide to Energy Retrofit of Traditional Buildings. Not all energy efficiency measures will be grant-eligible, and measures will only be grant- eligible where they do not put the asset's cultural significance or fabric at risk. Where appropriate, you may consider other ways to reduce the building's operational energy use through the installation of zero or low-carbon heating systems, as well as the reinstatement of passive measures. Refer to **Section 4** for further information. Any measures that propose a change to the character and appearance of the historic environment asset, or loss of original fabric, must be carefully assessed and receive necessary consents prior to any HES grant award.

1.13 Ventilation of buildings

With a proper understanding of the principles for ventilation, the performance of historic buildings can be improved considerably for both buildings and occupants. Retention and repair, or reinstatement of traditional passive ventilation, is favourable to the installation of new mechanical systems with potentially high operational and embodied carbon impacts.

1.14 Access to Ancient Monuments

Ancient monument projects should primarily focus on conservation repairs. However, in some cases it may be appropriate to also consider how public access may enhance the enjoyment of a monument and how it is experienced and appreciated. This may include paths, new floors/surfaces, viewing platforms, high level access, etc. Direct impacts on a monument's historic fabric should be minimised.

1.15 Archaeology

Works which may require 'groundbreaking 'to take place, may impact upon archaeological earthworks and/or sub-surface archaeological structures and deposits. Examples of necessary works might include establishing site facilities to carry out the works; underground services for drains, heating installations and lightning conductors; external landscaping or foundations. Explorations, to understand phasing/construction/structural issues, may also have potential archaeological impacts. This may equally be relevant for changes to upstanding archaeological stonework and masonry, depending on the specific project.

Where it is likely an assessment of the archaeological impacts will be required, this should be highlighted at the earliest stages to put measures in place to identify and ideally retain significant archaeological features. Where identification and retention are not achievable, then proposals for mitigation,

avoidance of damage, and recording will require to be discussed with HES. Any proposed groundworks, including investigations, within sensitive areas may require an archaeologist. An archaeologist may also be required where change is proposed to sensitive upstanding historic features, stonework, or masonry.

1.16 Contractor selection

Carefully consider the selection of suitably skilled contractors and craft persons to be engaged on the project. This includes the consideration of relevant working experience on similar historic buildings, ancient monuments, or other historic environment assets as applicable to the project. Also, consider their experience in the work methods and materials to be used, for example the National Progression Award (NPA) in Traditional Masonry for stonemasons and other relevant SCQF (Scottish Qualifications Framework) qualifications.

SECTION 2: INTERIM WORKS

2.1 Principle of interim work

The principle of interim work is to protect an historic environment asset that is at risk from deterioration, damage, or collapse, and to mitigate risks which could lead to the loss of the asset. If risks are addressed early on, the historic fabric can be preserved both in relation to its cultural significance, and within an acceptable economic framework for future works.

The type of suitable interim work measures will vary depending on the specific asset but may include:

- Urgent / emergency fabric repairs to protect and/or stabilise an asset.
- Repairs to make an asset safe and usable for temporary 'meantime' or exploratory uses.
- Temporary repairs and/or protective works to safeguard an asset such as roofing and drainage to shed water, structural propping and shoring, temporary weatherproofing, protective structures, and removal/control of damaging plant growth.

2.2 Repair in interim works

Interim work may be delivered using less substantial materials than a full conservation repair or consolidation project would require and a different working specification to those outlined in Sections 3 and 4 of this guidance. In some cases, selected temporary reversible repairs, delivered using non-standard materials in key areas of building failure, can prevent significant decorative and structural damage, 'buying time' while resources are found for a more holistic repair. However, the application and the detailing of interim works should be of a reasonable quality and suitable for the anticipated lifespan of its use.

2.3 Materials in interim works

For interim works, the objective is to protect the historic fabric for the short to medium term and often in a short timescale. Therefore, materials that are quickly worked and of modest cost are likely to be most suitable. Materials may be more temporary in nature and might include for example: mineral felt or profiled sheet materials for roof repairs; temporary plastic rainwater goods; tarpaulins weighted with sandbags for exposed wallheads. Such works should generally be designed to be reversible and cause minimal damage to the historic fabric of the existing asset. However, durability remains important and in some cases the replacement of traditional materials 'like for like' may be possible, especially if they may be retained in the future repair.

2.4 Priorities

Interim works can never address all pertinent issues. Activity should be resourced, and primary considerations should be given to the following areas when planning interim works.

1. **Ensure structural stability**. Legacy damage may continue to affect the stability of the asset and therefore additional supports may be required. This might be in the form of adjustable props, timber baulks or piers built up in engineering brick. Appropriate vegetation removal may also reduce risks of structural instability.

2. **Prevention of water ingress**. Any interim work should focus on shedding water from the asset and preventing water ingress into its fabric, and its interior in the case of enclosed buildings and structures. This might include for example: the use of temporary, short-life materials such as lead substitutes for valleys and gutters; mineral felt over areas of missing slate; temporary protection and capping of wall heads; areas of wall core and face consolidation in ancient monuments. Abbreviated details may be appropriate, such as the use of simplified rhones or downpipes. Prevention may also include the boarding of windows and other openings on exposed elevations.

3. **Improve security**. This is likely to involve the securing of doors and window openings with particle board; steel is only to be used in areas of extreme risk. Where there is sensitive or fragile material, such as window frames, boarding should be fixed in place using timber wedges. Where there is less significant material, standard fastenings such as security screws into existing timber surrounds, jambs or window frames may be suitable. Fixing into masonry with nail guns or other penetrating devices causes long term damage and is not advised.

4. **Maximise ventilation**. Any interim measures should ensure that ventilation is maintained, or even in the cases of saturation, enhanced. Timber decay is significantly inhibited if bulk air movement is maximised within reason. In buildings, consider ventilation using open hearths and flues, and/or gaps at the tops of windows. Other structures may require bespoke arrangements.

5. **Minimise adjacent risks**. Works must also consider adjacent areas of hazard to the asset. This might include for example: a lack of, or defective ground drainage; surface water run off or pluvial flooding; inadequate ground conditions; dangerous trees close by, or flammable materials stacked nearby.

2.5 Temporary protective works

Where temporary structures are put in place, such as temporary covers, scaffolding or shoring, consideration must be given to their ongoing hire and maintenance costs, and monitoring for security and safety. This will likely incur ongoing costs and possibility the requirement for a temporary works coordinator or similar competent professional. Grant-eligible costs may include design (e.g., relevant professional fees), installation and subsequent maintenance costs of temporary structures for an agreed period.

2.6 Removal of temporary interim works

Where the interim works are of a temporary nature, consider at the design stage methods for, and timing of, the removal of any temporary interim works and compatibility with the final design.

SECTION 3: REPAIR WORK TO BUILDINGS

The following items relate to fabric repair of buildings generally (not ancient monuments) and will in most cases be grant-eligible unless stated otherwise. Our decisions on eligibility for each project will be assessed and set out in principle in our TAR1 report where you have applied and been successful to our Historic Environment Grant (HEG) Programme.

Repair can include a variety of conservation techniques as well as careful replacement of material which is decayed and is no longer functioning. If required and appropriate, replacement works should use the same traditional materials, if possible, or ones with very similar properties and characteristics. For example, localised timber repairs to a historic window rather than full scale renewal of a sash or entire window. Repair can on occasion include renewal and replacement of materials and elements when they have reached the end of their functional lifespan and retention would place the asset at risk.

Reinstatement is the restoration of lost or destroyed elements of a building or other structure. Our grants do not cover reinstatement except in some specific circumstances. Reinstatement works should represent efficient use of our funding and not be solely based on aesthetic reasons. We may consider grant for reinstatement where it is essential to protect historic fabric and/or where there is a structural need. Reinstatements may have environmental resilience benefits such as reinstatement of lost copes or chimneys, and where poor-quality repairs or alterations in the past are having a detrimental effect on the fabric of the building. Where a building has largely kept the integrity of its design, the reinstatement of lost elements of the design may be grant-eligible. In each case the potential architectural gain will be balanced against any likely loss of historic integrity. Whilst we do not grant-aid speculative reinstatement based solely on aesthetic reasons, we can for example consider reinstatement of shopfronts where there will be wider economic, place making and community benefits.

3.1 Scaffolding

3.1.1 Scaffold design

1. Design proposals for scaffold should aim to minimise any added load onto a historic structure or fixings into historic fabric.

2. When bracing scaffolding, avoid the use of damaging masonry anchors. Consider the use of ‘free-standing ’scaffold or self-supporting scaffold with kentledge, and make use of window openings, window jamb cramps, raking support, or fixing into mortar joints that are sufficiently wide to prevent damage to adjacent stone arisses.

3.1.2 Scaffold fixings

1. A strategy for the insertion and removal of fixings should be devised before scaffold is erected.

2. If anchors are required, they must not be fixed close to edges of carved decorative features.

3. Expanded ferrous anchor sockets left in masonry will cause staining and cracking as they rust and must be removed at the end of the work. Consider rubber sleeved anchors which can be more easily withdrawn on completion of the works.

3.2 Roof

3.2.1 Roof structure

1. Ensure the roof structure is sound. Where there are significant signs of movement in the roof structure, advice from a structural engineer experienced in the repair of historic structures may be required. When designing remedial structural repairs, adopt a minimum intervention approach.

2. Understand the original roof build-up and design the repair to suit the site circumstances. Consider if the use of modern breather membrane is necessary as it may compromise ventilation and cause the requirement for additional purpose-designed ventilation to the roof construction and roof space. Dark coloured membrane should be used where it would be visible at completion of works.

3. Clear sarking of old nails and lift the lowest sarking boards to inspect the rafter ends and the wall plate. Where new sarking is required use butt jointed boards set with small gaps to permit ventilation.

4. Inspect timbers for rot, insect attack and structural weakness. Repair damaged timbers using new preservative treated timbers run to the original profile and treat rot or insect attack locally as required. Refer to the section on Rot & Insect Attack Works.

5. Timber repairs should be spliced in-line rather than cheek bolted where appropriate to the structural design and the historic significance of the roof. Refer to the Internal Work: Joinery Work Repairs section.

3.2.2 Roof ventilation

1. Check there is adequate provision of ventilation to roof voids, in both pitched and flat roof constructions. Consider the risks of condensation, damp, and rot from both warm and cold roof constructions. Ensure natural ventilation and maintain traditional details. Where practicable allow for free ventilation to timber rafter ends and wall plates.

2. If additional ventilation is proposed for the roof void, a case should be provided as to the reason/defect this is addressing. It should be based

on building precedent wherever possible, located discreetly, and constructed using traditional materials e.g., lead. Bespoke solutions, rather than standard modern products, may be required.

3. Ensuring adequate passive ventilation to the building as a whole may assist in climate mitigation. This could include repair, reinstatement or introduction of traditional cupolas, roof, and skylights. As above, this should be based on building precedent wherever possible, and constructed using traditional materials. Repair of existing features will always be prioritised, followed by reinstatement based on building evidence, with newly designed works only where necessary. The passive ventilation strategy for the building should be clear, and may include other works to underfloor vents, chimney flues, etc.

3.2.3 Roof slating

1. Where different types of slate have been used across building phases, or ranges, as part of the building's natural evolution, these characteristics are to be respected.

2. Re-slate using sound original slates recovered from the site, together with matching slates brought in to make up the required number.

3. Slates to be laid to exactly match the original laying pattern using slates of the same shape as the originals. This includes the number of courses and their sizing. A survey record of the original slating may be required.

4. Re-used slates should not be re-dressed as a matter of routine.

5. Slates should be fixed with non-ferrous nails of appropriate lengths to suit the roof details.

6. Replacement lead flashings, secret gutters, ridges and other weatherings to be lead as described in **Roof: Leadwork**.

7. Mortar fillets at skews may be reinforced with expanded non-ferrous metal reinforcing lath and formed on top of code 4 lead soakers.

8. Where there is heavy moss growth it may be beneficial to consider the addition of copper strip.

3.2.4 Stone slab roofing

1. Record existing stone slab slating noting course heights, lap, and peg fixing.

2. Retaining all viable original fabric, re-grade slabs and make up differences in new stone slabs which match the source, colour and texture of the original, respecting original peg and fixing details.

3. Re-fix using newly made seasoned timber pegs of matching species (traditionally oak).

3.2.5 Fired clay roof tiles

1. Tiled roofs are normally laid on timber battens and counter battens (over roofing felt). Understand the original roof construction, batten sizes and configuration, and repair the timber substructure to match including any requirements for replacement of the roofing felt as appropriate.

2. Replace broken or unsound tiles with new tiles of the same material, colour, profile, size, and glaze (if relevant).

3.2.6 Leadwork

1. Consideration should be to be given to the retention and value of historic leadwork. Life expired and un-repairable weatherings and lead flat roofs should be renewed in new milled or cast lead to the codes set out below. Please note some of these codes may be higher than the minimum codes in the Lead Sheet Training Academy's Rolled Lead Sheet – The Complete Manual, for grant-aid purposes.
   - cupola astragal and rooflight cover flashings to be a minimum code 5.
   - flashings, secret gutters, dormer cheeks etc. to be a minimum code 6.
   - valleys to be a minimum code 7.
   - short gutters or small areas of flat roofs without foot traffic to be a minimum code 7.
   - all other flat roofs or gutters to be a minimum code 8.
   - ridges to be a minimum code 8, and fixed with clips of minimum code 8 lead, or terne-coated stainless steel.

2. Lead to be laid to follow the recommendations of the Lead Sheet Training Academy but also with respect of the original leadwork aesthetic. Complex and details unique to the building should be drawn at a large scale sufficient to illustrate how these areas are to be constructed.

3. Where renewal of 'flat 'lead roofs and parapet gutters is required, take the opportunity to assess the historic design of falls and outlets. Sensitive reworking of the substructure, and considered detailing of any abutting primary structure, may be required.

4. Flashings are to be inserted into raggles sufficiently sized to allow the raggle to be pointed with lime mortar. Typically, the raggle would be a minimum of 12-15mm wide, its depth twice the width of the raggle, or a minimum of 25mm, and square cut. Existing raggles should be used wherever possible. Lead should be isolated from lime mortar by a protective coating such as masking tape or bituminous paint.

5. The use of lead sacrificial flashings and weatherings is encouraged. For example, where slating discharges into valleys and parapet gutters; or inserting lead drips to copes and stone ledges. This enhancement of detailing can also be considered to mitigate any relevant climate impacts which are affecting the building fabric.

6. On flat roofs, hollow roll joints should not automatically be replaced with wood cored roll joints, consideration should be given to the historical context, the roof pitch, and any likely foot traffic.

7. Discreet dating of new repair work may be considered.

3.2.7 Other metal roofs

1. Repairs to zinc and copper roofs should replace metal trays by closely matching the original overall appearance but with details, gauge of metal sheet and underfelt as recommended by the International Zinc Association (IZA) or Copper Development Association (CDA) as applicable.

2. Where it is agreed that original zinc or copper roofing is to be replaced by lead, detailing should be as recommended by the Lead Sheet Training Academy and HES requirements listed in **Roof: Leadwork.**

3. Repairs to corrugated iron roofing, or wall cladding, should be with galvanised corrugated iron to the original profile and thickness and using fixings to match the original. Modern HEX type screw fixings would not be grant-eligible. Corrugated iron to have a suitably specified rust inhibiting primer and paint finish.

3.2.8 Security of metals

1. Consider appropriate deterrents methods where metal theft is a risk, for example alarms, anti-climb paint, security, or forensic marking such as SmartWater. Some methods may be grant-eligible.

2. Where metal theft deterrent measures are not appropriate or sufficient, additional securing methods may be needed.

3. In exceptional cases, for example in areas of repeated theft, the use of a substitute material may be considered eligible for grant. Substitutes could include other metals (zinc, stainless steel), single ply membranes or felt. The general appearance of the substitute material should follow the original detailing as closely as possible. Some materials may be grant-eligible.

4. Refer to HES Short Guide: Lead Theft – Guidance on Protecting Traditional Buildings for further information.

3.2.9 Asphalt roofs

1. Where an asphalt roof covering is damaged and leaking this should be lifted and replaced with new asphalt laid in coats strictly in accordance with the instructions of The Mastic Asphalt Council . A sand dusted surface is preferred.

2. Lead over-flashings are to be detailed in accordance with the recommendations of the Lead Sheet Training Academy.

3.2.10 Bitumen felt roof covering

1. Where bitumen felt roof covering was the original and historically correct roof covering on a flat roof, it can be renewed to match existing. Perimeter details should remain broadly the same as for the felt original.

2. Note that bitumen felt will not be considered as grant-eligible as a replacement for roofs that were originally finished in lead, zinc, copper, or mastic asphalt.

3.2.11 Thatch

1. There are many types of thatch and thatching techniques in Scotland and these roofs are now a scarce and highly valued historic resource. A Survey of Thatched Buildings in Scotland provides further information.

2. Maintenance of thatch extends its life and would have been standard practice traditionally, reducing the frequency at which a complete re-thatch was necessary. Maintaining and repairing traditional thatched roofs requires the most careful investigation and consideration.

3. Research for archival visual or photographic evidence of the building and its thatched roof will be necessary before works are proposed. This may help establish its thatch type and any detail including to use of cabers.

4. A record of the roof should be made including its primary and secondary roof structures and connections, the thatch type, substratum, fixings, and cabers.

5. Archaeological trenching through the thatch may help to provide invaluable information on the make-up of the roof and allow the sources of the thatch materials, including substratum layers, to be identified. Substratum usually consists to turf/straw underlayers.

6. The aim of the grant funding is to encourage the maintenance of types of thatch which are traditional to their local area. Consider if the proposed thatch matches the historic one, and if not, has every effort been made to source the matching type. If the historic type of thatch is not available, then the proposed type of thatch must be the closest match possible (type and geography).

7. Many thatches survive as an insulation layer under corrugated iron roofs. Existing corrugated iron on thatch should always be retained unless there is an exceptional reason not to do so. Repair of corrugated iron that is currently protecting thatch is grant- eligible. Refer to **Roof: Other Metal Roofs**.

8. Proposals for the repair of traditional thatched roofs should follow the original as far as possible and include repair or replacement as appropriate of the roof structure, substratum, fixings, and thatch.

9. Where a matching material is not in season, temporary protection may be beneficial for a vulnerable thatched roof prior to works commencing the following season. Temporary protection will be considered when part of a wider project, and its design and materials on a case-by-case basis.

10. Refer to HES Technical Advice Note 04: Thatch and Thatching Techniques and HES Technical Advice Note 13: The Archaeology of Scottish Thatch for further information.

3.2.12 Skylights/ Ventilators

1. Original cast iron skylights should be repaired and re-used rather than replaced.

2. Original cast iron and sheet metal roof ventilators should be retained and overhauled, or replicated where beyond repair.

3. Where replacement rooflights are required, replace with new rooflights to the same size, detail, and materials. Incorporation of thermal break alloy castings is acceptable.

4. Cast iron skylight and ventilator elements are to be painted as outlined for **Rainwater Disposal**.

5. Zinc and copper sheet metal should be painted or left as self-finish as appropriate to building.

3.2.13 Safe access

1. A strategy for maintenance beyond the completion of the works should be considered, and most projects in receipt of £25,000 or more of grant-aid will be required to produce a maintenance plan.

2. The opportunity should be taken to consider if there is adequate safe access for future repair and maintenance, and if not, can appropriately designed access be introduced. Refer to **Section 4: Ancillary Works**.

3. Where existing original features provide access, e.g., roof hatches, their safe continued use should be assessed, and repair undertaken as applicable.

3.3 Chimney stacks and flues

1. Ensure the fabric of the external chimney stack and roof flashings are in good repair.

2. Missing or defective chimney pots to be replaced to match the original form indicated by documentary or site evidence. Where there is no evidence of the original, use pots to match the pattern in use on buildings of a similar period in the vicinity.

3. Ensure that the number of pots accurately reflects the number of flues and where appropriate reflects historical variation in types used on the respective flues.

4. Mortar haunching of chimney pots should be specified which is suitable for the adjacent masonry, for example hydraulic lime mortars. Consider reinforcement using stainless steel mesh if required.

5. Chimney flue ventilation should be retained or reinstated where possible.

6. Retaining open fireplaces can be beneficial as part of a passive ventilation strategy. Consider the reopening of covered/ blocked chimney flues and reinstatement of dampers on hearths and insets. Whilst the repair of a damaged flue would be eligible for grant, the insertion of a flue liner would not be eligible. The pouring of cement down the sides of a liner to consolidate a flue, using the liner as form work, is also not eligible.

7. Chimney flues not in use should be cleared of debris and then terminated with a vented weathered top and a vent at the bottom of the flue to allow free air circulation.

3.4 Rainwater disposal and ground water management

3.4.1 Rainwater disposal

1. Check that the existing rainwater goods are adequate to control and discharge rainwater safely away from the building, particularly in respect of increased risk of extreme weather events.

2. Ensure that any perceived lack of capacity is not related to other defects such as poor later works, additions to the design, or a lack of repair and maintenance.

3. Review the overall size and cross section of gutters, outlets and hoppers, and the location, number and size of overflows and downpipes. Ensure that there is maintenance access at ground level and at key junction points above.

4. If the rainwater disposal system is felt to be inadequate, the Professional Adviser should submit their drainage capacity calculations

and proposals for reconfiguration of the existing installations. Consider the effect to the building appearance of any proposed functional improvements to rainwater fittings.

5. In the case of historic lead lined parapet gutters, pay particularly attention to under sizing of upstands, drips, roll cover laps, lack of adequate surge pits and overflows. Repair may often require a substantial reworking of the associated supporting substructures and considered detailing around the primary roof structures.

6. Where rainwater disposal elements are broken, damaged or missing, or in non-original materials such as uPVC, replace to match the original material e.g., cast iron, zinc, or lead. Either match sizes to original profile and detail, if design is adequate, or as agreed if design is to be altered.

7. The addition of trace heating may be considered in particularly problematic or inaccessible areas. Refer Section 4: Ancillary Works.

8. All cast-iron pipework and rhones to be prepared, primed, and painted using a high-performance paint specification. Paint new cast iron goods before site assembly and make good joints, chips, and fixings immediately after fixing. Particular attention should be given to preparation and paintwork at sharp arrises to fresh castings. The final colour may be selected using evidence gained in the repair process, or to match the background fabric.

9. On completion of the works, ensure that the rainwater disposal system is clear and flowing freely.

10. The project ‘as built ’information should include plans and methods of access to all drain routes and pipe runs that require maintenance.

3.4.2 Below ground drainage

1. Below ground drainage to be checked, recorded, and made fully operational to ensure rainwater is being conducted properly away from the building and its immediate vicinity.

2. Consider any consequent changes required to existing below ground drainage systems, including soakaways to the surrounding landscape drainage, where the current system is assessed to be inadequate. This should form part of the overall review of the rainwater disposal system.

3. Any proposed groundworks, including investigations, within sensitive areas may require an archaeologist. Refer to Section 1: Project Development.

3.4.3 External drainage and groundwater

1. Assess existing external drainage around the building perimeter and its effectiveness. Consider if the drainage system can cope with potential heavier rainfall events or if problems have occurred.

2. Consider any relevant drainage issues beyond the immediate building footprint, such as sloping ground or poorly drained hard surfaces.

3. If improvements to external drainage are felt to be required, the Professional Adviser should submit the evidence of need and their proposals. This may include a number of strategies such as reducing /re-establishing appropriate ground levels adjacent to the building; encouraging free-drainage using granular surfaces beside walls / reducing hard surfaces next to walls; introduction of below ground permeable pipe drainage.

4. Any new measures must, as applicable, include structural assessment to ensure no undermining of foundations, or risk to the building's stability; archaeological investigation; and be appropriate in terms of the visual impact and cultural significance of the building and its immediate surroundings.

5. Where intermittent or flood surge ground water is experienced, consider local intervention measures at vulnerable areas such as entrances, and the use of sump pumps. Alarm detection can be considered for difficult to access areas where there is a significant risk to building structure and historic interiors.

3.5 Damp conditions

1. Damp environmental conditions can cause significant damage to building materials and structure, and it is important to understand the source of the water, or condensation, when considering appropriate actions and treatment.

2. Appropriate measures to manage rising or penetrating damp, which cannot be mitigated by other means (for example work to **External Drainage**), and is damaging the fabric of the building, may be grant-eligible.

3. Use of cement or bitumen-based renders and surface applied tanking is not recommended or grant-eligible. Reversible membranes which allow the historic masonry to breathe may be grant-eligible in some cases for below ground historic masonry, if dealing with a fabric defect. These are not grant-eligible when their sole purpose is to make previously non-habitable space usable.

4. Avoid the introduction of impermeable solid floor construction at ground level which can increase the risk of water ingress and rising damp to adjacent walls.

5. Replacement of impervious solid floor constructions and materials or coatings to walls at and below ground level with permeable alternatives, such as lime-based products, may be grant-eligible in some cases.

6. Review the existing provision to adequately ventilate the building fabric to the underside of the ground floor construction. Ensure air movement around timber joist ends and sole plates. Where original vents exist ensure these are functioning.

7. If no ventilation is present, and/or felt to be inadequate, the Professional Adviser should submit the evidence of need and their proposals for improvements to under floor ventilation. Consider the effect to the building appearance of any proposed functional improvements to under floor ventilation.

8. Appropriate DPCs may be considered for situations such as separation of roofing timbers from masonry, or under copes, with due consideration of how to avoid slip planes.

9. Installation of a new chemical DPC is not recommended or grant-eligible.

3.6 Rot and insect attack works

1. Identify the cause of the rot or insect attack, such as a defect causing moisture to penetrate the fabric and rectify the defect. Where time permits, allow the fabric to dry out.

2. Where the defect cannot be rectified, take suitable measures to control the cause, and monitor the situation, to reduce the risk of reoccurrence.

3. Seek independent expert advice on methods of treatment, adopting a conservative approach including environmental controls and with green principles wherever possible.

4. Seek the advice of a suitably experienced structural engineer on decayed structural timber sections and repair requirements.

5. Carefully patch in new pre-treated structural timbers to match original.

6. The making good of internal finishes to match the original where these have been damaged to allow for the opening up for structural repairs will be grant-eligible, including secondary rooms. Any general repair/redecoration of historic linings to secondary rooms would not be grant-eligible. Refer to Internal Works section.

3.7 Masonry

3.7.1 Structural condition

1. Where significant structural movement, settlement cracking or other evidence of a compromised structure is identified, advice from a structural engineer experienced in the repair of historic structures may be required.

3.7.2 Removal of moss and algae from masonry

1. Where damp conditions have caused moss and algal growth on masonry, the area is to be scraped clean with wooden spatulas and cleaned down to remove all organic debris and soil prior to re-pointing. The source of moisture encouraging such growth must be addressed to prevent re-growth.

2. Seek specialist advice on biological growths such as algae, fungi, and lichens where the effect to the masonry may not be benign but removal could cause masonry damage.

3. It should be recognised, that biocide is unlikely to have a long-lasting effect and may damage the masonry. Consequently, the use of biocide is not grant-eligible.

3.7.3 Removal of vegetation from masonry and immediate vicinity

1. Consider the proximity of large and mature trees and the risk and likelihood of damage to historic fabric from root heave or fall, including affected foundations and drainage.

2. Carefully remove any invasive vegetation while avoiding damage to the masonry. Treat with suitable systemic weed killer.

3. Stones that are found to be loose are to be held in place by wooden wedges and suitably propped as required until repair work is undertaken.

3.7.4 Masonry repair

1. Proposed masonry repair works should be prepared, for example using marked up elevational drawings or photographs. Further detailed assessment can be made once the scaffolding is in place. Investigation may include brushing down loose stone (with bristle brushes, not wire) and tapping the existing surface to ensure the face of the stone is sound.

2. Where the stone face is eroded or crumbly, but this does not pose a threat to the weathering function (e.g., cills), the structural integrity, or the architectural interpretation of the building, it is advisable to leave for attention at some time in the future.

3. Where soft, cracked, or friable stones are identified as a threat to the structure or weathering, or significantly detracting from the

architectural composition and integrity of the building, they may be carefully cut out and indented with a matching stone that respects the existing stone joint pattern.

4. Where it is necessary to replace missing, broken, cracked or eroded stones with new stone, ensure that the new stone is a suitable replacement for the original in terms of colour, texture, porosity, crushing strength and weathering properties. Analysis services and advice on suitable new stone to match existing can be obtained from specialists including British Geological Survey. We ask that analysis data is provided to HES in a format that can be imported into the Building Stone Database for Scotland where possible.

5. Remove any redundant fixings, surface-mounted cables, television aerials and extraneous ferramenta, including redundant drainage branch pipework. Repair any damage appropriately. Where services cables or aerials are required, site and route these discreetly.

6. Exposed surfaces of new stone should be hand dressed to match the original face or tooling. Avoid the use of power tools on any exposed surface of stone. New stones should be oversized to allow for hand-dressing of exposed surfaces prior to tooling i.e., avoid droving or broaching a polished/sawn surface. Cut replacement stone on the correct geological bed for the circumstances of its use in different elements of the building.

7. Indented face stone should have a minimum bed depth of 150mm and extend to the full face of the stone in most cases.

8. New stone should not be distressed or toned down to match the original.

9. The use of pre-mixed restoration mortars in repair work is not recommended and would not be grant-eligible. Mortar made from lime, sand and graded matching stone, may be acceptable for fine cracks or small pocket repairs in otherwise sound stone, and where lying water and subsequent frost damage may be considered a risk. Use of proprietary restoration mortars in exceptional cases for damaged masonry may be acceptable. Refer to **Masonry: Damaged Masonry.**

10. Do not point open joints which were originally dry built.

3.7.5 Damaged masonry

1. The use of alternative or modern materials and techniques to repair damaged masonry can be appropriate in certain circumstances.

2. Very fine detailed repair will require the input of a specialist stone conservator and preparation of a conservation report.

3. Specialist stone conservator techniques and materials such as acrylic resins can be considered for delaminating, fissured, and cracked masonry and sculpture work. This type of work with acrylic resin will have a limited life and implies on-going condition monitoring.

4. Limited and localised use of proprietary restoration mortars may be appropriate for small key areas to retain building significance, extensive use is not appropriate.

5. Consider the composition of the restoration mortar and the compatibility with the masonry, as a difference in breathability will exacerbate erosion and loss of the masonry.

3.7.6 Removal of cementitious pointing

1. It is often better to avoid removing sound cementitious pointing as it can be damaging to the adjacent stone arrises to remove well-adhered cement mortar.

2. Where pointing is cracked and open, separating from the stone, or causing evident distress and erosion to adjacent masonry, carefully remove cementitious mortar using fine masonry chisels. The expert use of appropriate power tools to assist may only be considered in strictly controlled situations.

3. Pointing should be raked out to a minimum depth of 35mm and the joint flushed clean.

3.7.7 Joints in ashlar masonry

1. Where ashlar masonry is quite tight with few open joints, avoid re-pointing this masonry.

2. Re-point open ashlar joints by raking out loose or crumbly mortar by hand with bespoke tools and hose joints clean. The expert use of appropriate power tools to assist may only be considered in strictly controlled situations.

3. Wet joints and re-point using lime mortar with suitably sized fine aggregate, and colour to match original.

4. Protect ashlar to avoid staining.

5. Protect pointing while it is curing in accordance with best practice.

3.7.8 Joints in rubble masonry

1. Joints in rubble masonry should be finished to match the original pointing style of the masonry wall. Evidence on the building and/or photographic evidence should inform specification prior to works on site. This may include flush pointing, lining out of pointing and other finishing styles. Refer to HES Technical Paper 33: Masonry Pointing and Joint Finishing for further information.

2. Where mortar joints in rubble masonry are loose or crumbly, carefully rake out to a minimum depth of 35mm using fine masonry chisels narrower than the joint to avoid damaging the stone.

3. Thoroughly flush clean the joint and re-point with the mortar mix informed by analysis. Refer to **Masonry: Lime Mortars for Building and Pointing.**

4. Pointing to be well packed into the joint and where appropriate, incorporate pinning stones. Use the correct number, size, shape, orientation, and type of pinning stones to maintain the mortar/stone ratio, and original character of the wall evident in the original build.

3.7.9 Lime mortars for building and pointing

1. Lime mortars have significantly different working properties to cement mortars. Cementitious products, or inclusion of cementitious materials in lime mortar mixes, is not grant-eligible, except where there is historic precedent.

2. Advice on procedures and suitable mixes may be required and can be obtained from various specialist consultants.

3. Lime mortar specifications for repair should be informed by the existing. However, technical analysis of a historic mortar for a new specification can be ambiguous, given leeching of lime, and other decay mechanisms. It is also unlikely that a single mix prevailed through a large site. Nevertheless, mortar analysis will inform on matters of aggregate and additives. Visual mortar analysis can help understand the phasing of a historic building and identify where historic mortars survive. Consideration should be given to matching the various phases and retaining areas of surviving historic mortars where this adds to a building's character and will not undermine the overall conservation work.

4. Repair mortar specifications may include Natural Hydraulic Lime (NHL), 'hot' lime or gauged mixes. More than one specification may be required depending on the work required, its location and function.

5. Mortar specification for repairs should not adversely affect the weathering of adjacent masonry.

6. Ensure lime mortar work is undertaken in appropriate weather conditions and protected from sun, rain, and frost until cured in accordance with best practice.

7. In some cases, management may include elongated project timescales to allow for protection to be left in situ once works are completed. Protection and aftercare should form part of a method statement for lime work.

8. Quality and appearance of work to be determined and agreed by sample panels.

3.7.10 Earth mortars

1. Earth mortar exists in some early or rural buildings. Care should be taken to identify, analyse and carefully reproduce where repair is required.

3.7.11 Grouting

1. Where structures have been subjected to continual saturation and consequent loss of binder from the wall core, gravity grouting with an appropriate lime-based mix may be required to ensure the structural integrity of the wall core and the masonry skins.

2. Grout should not be fed under pressure and measures must be taken to prevent staining.

3. Grout specification and a detailed methodology should be prepared.

3.7.12 Brick

1. Note the character of the original brickwork including bond, brick type, sizes, and mortar pointing profile.

2. Survey and record location of, and types of decay to inform repairs required.

3. All brickwork repairs to accurately follow the original build, using brick of accurately matching colour, size, hardness, and porosity.

4. Following brickwork repair, re-point to match original using a pointing tool and application technique similar to that used originally with a mortar specification to suit the age of the building and the strength of the brick.

3.7.13 Concrete

1. Commission an independent investigative specialist report on the condition of the concrete and repair the structure accordingly. The report should include such techniques as use of a cover-meter to establish the depth of reinforcement cover and include core samples at strategic locations to enable analysis of the depth of carbonation, chloride content and quality of concrete.

2. Remedial works may include specialist treatment to enable retention of as much original fabric as possible.

3. Repair of concrete should replicate original shuttering patterns or similar surface textures.

4. The use of proprietary repair concrete mixes is common in the concrete repair sector and depending on the age of the structure may be suitable for use on historic concrete structures.

5. Many failures and decay of concrete structures. are a result of poor detailing; increased rainfall may require new detailing designs that do not excessively affect the architecture of the structure.

3.7.14 Lime harl/ Render

1. Site operations should ensure that flashings, rainwater goods and external joinery are fitted at the appropriate time to ensure a good finish to the harl/render.

2. Harl or render coats should be applied in accordance with traditional techniques. For harling, modern spray-gun applications can be considered in some cases, however as a minimum the final coat must be hand-cast (thrown). The new harl should replicate any local traditions.

3. Where a lined-out ashlar appearance is to be made, the surface should be pressed flat, and the lining out undertaken to a pre-determined pattern of joints. The ruling tool is to be appropriately shaped to provide lines of the correct depth, consistency, and cross-section.

4. Specifications should be designed following technical analysis of the original harl. This should identify the various constituents e.g., shell, aggregate, lime proportions etc.

5. Quality and appearance of work to be determined and agreed by sample panels.

6. Harling should be screened from rapid drying in accordance with best practice. Where the harling is exposed to drying winds or temperature, repeated wetting of the screens will be necessary.

7. Cementitious products, or inclusion of cementitious materials in lime harl mixes, is not grant-eligible, except where there is historic precedent.

8. Re-instatement of traditional harl or renders to improve the climate resilience of the masonry and energy efficiency of the external fabric may be considered. Reinstatement will require careful consideration, research, and technical analysis (where coatings remain) to establish the original harl or render composition, appearance and colour. This should inform a strategy for reinstatement. Note that introducing harl or render to a building where there is no historic precedent would not be recommended or grant-eligible.

3.7.15 Limewash

1. Specifications should be designed following technical analysis of the original limewash (if possible). Historic limewash can have several constituents ranging from natural pigments, tallow, and other organic additives. Where evidence of original / historic limewash is not present, proposals based on similar buildings, local area traditions etc. should be provided.

2. Quality and appearance of work to be determined and agreed by sample panels.

3. Limewash should be applied by brush in multiple coats, usually a minimum of eight coats, each coat sufficiently thin (usually the consistency of skimmed milk) to allow its carbonation. Burnishing coats may be applicable.

4. Limewash should be screened from rapid drying in accordance with best practice. Layers of limewash should not be applied if the appropriate attendance to control rapid drying is not possible.

5. Where the limewash is exposed to drying winds or temperature, repeated wetting of the screens will be necessary.

3.8 Cleaning and removal of finishes from masonry

3.8.1 Cleaning masonry

1. Cleaning masonry for purely aesthetic purposes is not advised and not grant-eligible. The historic patina of masonry should be retained. In exceptional cases, listed below, removal of surface coatings may be necessary and eligible for grant as part of a repair process.

2. Any removal must be informed by agreed method statements and sample test panels.

3. Consider the newly exposed masonry condition and appearance. In some cases, the masonry may require repair and/or a new applied finish such as lime paint, limewash and/or a lime harl/render.

3.8.2 Removal of graffiti from masonry

1. There are different methods to remove graffiti resulting from vandalism. It is necessary to analyse the paint, dye, or ink type to establish the least damaging removal method.

2. Removal of markings should be tested and agreed for use on that particular stone type before approval to proceed is given.

3. Chemicals used on stone are to be neutralised immediately after use.

3.8.3 Removal of paint and other coatings and facings from masonry

1. Removal of coatings and later applied finishes (e.g., tiles, brick slips) may be necessary and grant-eligible where there is evidence of distress

to the underlying masonry, or where the finish may be considered incongruous and detrimental to the building significance.

2. Analyse the paint, coating, or other finish to establish the least damaging removal method.

3. Removal should be tested and agreed for use on the particular masonry type before approval to proceed is given. Gels, chemical poultice systems or air/water abrasion may be appropriate. Test the proposed system as a control sample for approval to proceed, particularly where chemical poultice or low-level air/water abrasion is proposed.

4. Chemicals used on stone are to be neutralised immediately after use.

3.9 External carpentry and joinery

3.9.1 Repairs to Timber Cladding and External Finishing and Architectural Joinery

1. Retain as much original material as possible.

2. Replace rotted sections, with timber to match species, visible grain characteristics, quality and colour, suitably treated for the location.

3. New sections are to match the profile of the original with fixings to match existing.

4. Reinstatement of missing sections and elements may be necessary and grant-eligible where supporting historical documentary evidence is available.

3.9.2 Treatment and finish

1. Timber cladding and weatherboarding may be left to weather where this is the original finish.

2. Treatment and finish to external carpentry and joinery such as cupolas, fleches, balustrades, louvres, porches, barge, and eaves boards, should match that evident on the original fabric or, if not feasible, should be based on research and historical documentary evidence if available.

3. Products and systems selected for treatment and finish should be appropriate for the location. At exposed and inaccessible areas, high performance oil treatment and non-traditional paint systems may be applicable.

4. Modern protective wood stains are not recommended or grant-eligible.

3.10 Window and door joinery

3.10.1 General repairs

1. Carry out repairs to windows and doors sensitively retaining the original fabric in preference to replacement where possible.

2. Repair wherever possible should be by splicing in matching timber (new or salvaged), to follow accurately the original profile using traditional techniques and suitable proprietary wood glues.

3. Windows and doors should be overhauled to ensure that they are operable as per their original design. Windows should be openable for ventilation, cleaning, and maintenance on completion. They should not be sealed shut useless this was the original design intent.

4. Where trickle ventilation is found to be required to aid room ventilation this must be discrete and designed appropriately for agreement.

5. Refer to HES Short Guide: Sash and Case Windows for further information.

3.10.2 Replacement and reinstatement of windows and doors

1. Replacement window sashes, full windows, and doors may be considered grant-eligible where windows can be evidenced to be beyond repair.

2. Reinstatement of traditional windows and doors may be considered grant-eligible where later unsympathetic and inappropriate alterations exist, and / or where windows or doors have been lost.

3. Where replacements are required they should be manufactured from timber sections which accurately match the original, or an earlier, design and its profiles.

4. Where replacement windows or doors are required, careful consideration should be given to whether any glazing should be single or double-glazed. Considerations may include: the number of replacements; the impact of double-glazing on the appearance of the building or area; its impact on original design and detailing, e.g., timber window profiles; and the longevity of products.

5. Where appropriate, new glazing may be double-glazed units, in which case the specification of the glazing units must be carefully considered to suit the design and dimensions of the original joinery (frame, astragals etc.). It will be most likely to be vacuum or narrow profile glazing and may incorporate gas fill units and/or low emissivity glass to increase the energy efficiency performance, retain interior heat and reflect solar heat gain. Modern putty glazing compound may need to substitute traditional putty.

6. Refer to HES Managing Change in the Historic Environment: Windows for further information.

3.10.3 Ironmongery

1. Retain and reuse original ironmongery wherever possible. Where necessary select historically appropriate new ironmongery that meets the modern requirements of security, exit, and cleaning, yet is of an appropriate style and quality.

2. Use only slot headed screws of the correct type to match original installation.

3.10.4 Recessed draught-proofing

1. Existing windows and doors may be thermally improved by inserting recessed draught-proofing. Consideration should be given to the significant of the original joinery and any associated ironmongery.

3.10.5 Metal windows and doors

1. Retain and repair as much original frame, operating gear, and ironmongery for re-use as possible.

2. Replace damaged sections, to match section and profile.

3. Where repair is not possible, replace to replicate size, profile, and finish.

3.10.6 Abutment pointing

1. The joint between joinery and masonry is to be pointed with either of the following: a traditional site mixed mastic comprising burnt mastic sand and boiled linseed oil placed against a suitable backing stop; or lime mortar pointing placed against a suitable backing stop.

2. Where a building is harled/rendered the use of lime mortar to fill this joint will allow the harl/render to be brought up to the joinery. This should be placed after joinery fascias have been decorated to ensure good protection of the fascia.

3. For metal windows that are a feature of the original design, alternative mastics may be agreed.

3.10.7 External painting of window and door joinery

1. Paint using traditional methods prior to assembly of sections where possible. Use good quality oil-based paint preparation including knotting preparation treatment. Particular attention should be given to rounding sharp arisses to avoid thinning of paint.

2. Ensure paint is not spread onto adjacent masonry.

3. Appropriate window colour is to be agreed; choice can be informed by paint analysis. Off white (avoid brilliant white on pre 1920s buildings)

or other colours such as black or green, following historic local practice may be appropriate.

3.10.8 External painting of metal windows and doors

1. Generally as for section 3.10.7 with specialist preparation, and coatings as required.

3.11 Glazing

3.11.1 Existing glazing frames

1. Where the existing window or glazing frames are considered appropriate to the building these should be retained.

3.11.2 Original glass

1. Original and historic glass (crown, cylinder, plate, drawn, patterned or coloured glass or glass with seeds, reams or other notable impurities) should be retained in-situ, and where this is not possible should be put aside for later reinstatement.

2. The use of a proprietary putty lamp can be valuable in removing old putty without damaging the glass.

3.11.3 Repair of single glazing

1. Where it is necessary to replace existing glass panes in an original window or door, consider the best match to original glass examples on site or to the date of the building's construction. These may vary on a single building or elevation. Any patterns established as a result of evolution of the building should be respected.

2. Glass options should be appropriate to the building's appearance considering colour, tone, and light reflectance.

3. Modern cylinder, Vauxhall, crown, float glass or horticultural glass may be used for replacements depending on the original glass type.

4. Repair of glass in-situ should be considered for small cracks; modern techniques may be considered.

3.11.4 Historic secondary glazing

1. Historic secondary glazing should be repaired as per window joinery. Refer **Window and Door Joinery**.

2. Refer to **Ancillary Works** for new secondary glazing.

3.11.5 Historic shutters and blinds

1. Repair of existing timber shutters and blinds can contribute significantly to a reduction in energy loss from interior spaces.

2. Ventilation requirements and control of light levels need to be considered.

3. Refer to **Ancillary Works** section for new shutters and blinds, and insulation of historic shutters.

4. Where interiors are of recognised historic significance and historic roller blind fittings remain, repair of the blind mechanisms and fitting of new UV fabric may be grant-eligible.

3.11.6 Leaded glazing and zinc came glazing

1. Before beginning a repair to lead or zinc came windows, a report should be commissioned from a glass conservation specialist to schedule the works required to bring the window construction into a good state of repair.

2. This report should be sufficiently detailed to give an outline of the proposed works, including to the surrounding opening such as saddle bars and drainage, along with the associated costs. Include a brief outline of the importance of the glazing and identify any unique attributes that may require more in-depth investigation.

3.11.7 Leaded glass protection

1. Remove any inappropriate window protection and make new window protection in woven or welded non-ferrous or stainless-steel wire mesh with a pitch and strength designed to meet the risk. Meshes should be made by a skilled wireworker to accurate templates.

2. Protection should follow the glass line and not cover stone tracery.

3. Protection should be fixed using non-ferrous fixings into joints in the masonry ingoes, back from the outside stone face but suitably spaced away from the glass to give maximum protection.

4. To increase protection in highly vulnerable areas, consider safety glass, or where weight is an issue, clear polycarbonate. Clear sheet material should be fitted behind mesh but not against the leaded glass and be installed with adequate ventilation at top and bottom. Clear sheet used without mesh gives unsightly reflections.

3.12 Metalwork

1. Identify the form of metalwork to be repaired at an early stage to guide subsequent works e.g., cast or wrought iron, mild steel.

2. Retain as much historic metalwork as possible.

3. Weathervanes, roof ventilation louvres, solum ventilators, railings, gates or other historic architectural ferramenta should be repaired with matching materials using traditional methods.

4. Where replacement or reinstatement of missing metalwork is required this should be carried out using materials to match existing and designs/profiles taken from surviving objects.

5. Use appropriate cleaning methods of the metal and object for example: flame cleaning, needle gunning, blast cleaning and chemical cleaning. Particular care is required for cast iron due to the porosity of the material.

3.12.1 Cast Iron

1. Each project should be assessed, and the most appropriate repair technique(s) employed given the application, materials, and historic importance.

2. In certain circumstances cast iron may be welded by specialists using high nickel electrodes or brazed using aluminum bronze. Plate repairs or pinning by drilling and tapping adjoining components may also be appropriate. Cold metal stitching may also be feasible.

3. Re-casting missing components using traditional techniques might be considered. Design and quality should match existing.

3.12.2 Wrought Iron

1. Wrought iron should be removed for repair by proven experts in this field.

2. To correctly repair wrought iron, use only suitable quality recycled wrought iron or pure iron if this is unavailable.

3.12.3 Steel

1. Where repairs are necessary use an appropriate grade of steel, matching sections, and original fixing details.

3.12.4 Metalwork protection

1. Generally new steel (not cast or wrought iron) should be galvanised following manufacture.

2. Suitable long life paint treatments for ironwork, such as zinc rich primers and micaceous iron oxide build coats, should be considered for use.

3. Hard shell epoxy paints should not be used on cast iron.

4. Dry film thicknesses should strike a balance between protection and loss of detail.

5. Protection with rust inhibiting greases and waxes treatments may be appropriate treatment.

3.12.5 Metalwork decoration

1. Where significant decorative paint schemes are evident, repair should be based on paint analysis and research to establish historic paint schemes and their significance. A specialist report will be required

including recommendations and specification for new paints to be used in the scheme.

2. Where there is evidence of historic gilding, re-gilding may take place.

3.13 Lightning conductors

1. Where a lightning conductor system is existing, its functionality to provide suitable protection should be assessed. Any repairs should be considered following the points below.

2. Lightning conductor systems can result in a considerable visual intrusion on historic structure. Historic England's publication Lightning Protection Design and Installation for Historic Buildings contains useful information for guidance on design.

3. Fixings should be secured in joints rather than stones and conductor lines are to be discreetly located behind or beside other building elements such as downpipes or buttresses.

4. Early lightning conductors may be retained and integrated into the new system.

5. Any proposed groundworks relating to earthing the conductor(s) within sensitive areas may require an archaeologist. Refer **Project Development** for further information.

3.14 Internal works

1. Where an interior is of particular historic significance, internal repairs may be grant- eligible as part of a wider external fabric repair project.

2. In exceptional cases, historically significant internal fixtures and fittings may be grant- eligible.

3. The making good of internal finishes to match the original where these have been damaged to allow for the opening up for structural repairs will be grant-eligible, including secondary rooms. Any general repair/redecoration of historic linings to secondary rooms would not be grant-eligible.

3.14.1 Plaster repairs

1. Plaster repairs should be in lime plaster to match the original as determined by analysis of the existing.

2. In rooms where lath and plaster exists, repairs should be carried out in matching materials.

3. New lath sections should be hand split or sawn to match existing.

4. Repairs to rooms or buildings where the existing lath is lost entirely, may be undertaken in modern materials to match original appearance but this is not grant-eligible.

5. Refer to HES Technical Advice Note 02: Conservation of Plasterwork for further information.

3.14.2 Joinery work repairs

1. Carefully record, using profile gauges, the original size and form of original internal joinery.

2. Reuse any original joinery items which result from downtakings or alterations wherever possible in repair and new work.

3. Where it is necessary to repair or replace in new internal joinery sections, profile new timber of suitable species and quality to match the original design and cut and fix in accordance with best practice.

3.14.3 Decoration

1. Grant for decoration is eligible where redecoration or conservation of historically significant decorative schemes is required as part of making good interior finishes as part of other grant-aided external fabric repair work.

2. General redecoration is not eligible for grant.

3. Where application for grant is made, the internal decoration should be based on paint analysis and research to establish historic paint schemes and their significance over the course of the building's life. Proposals may require establishing a cohesive approach to return the interior scheme to one specific period. A specialist report will be required including recommendations and specification for new paints that match the identified historic colours and finish to be used in the scheme.

4. Where new schemes are required, the use of lining paper with reversable fixative is recommended but would not be eligible for grant.

5. Ensure all proposed paints are technically compatible with the substrate to be painted.

3.15 Shopfronts

1. This category may include a range of activities from repair of historic shopfronts to reinstatement of traditional shopfronts.

2. Repair work should follow relevant advisory standards for the material involved e.g., timber, masonry, and glazing. Work should consider support for specialist traditional skills such as sign writing and traditional awnings.

3. Reinstatement cannot be based solely on aesthetic reasons. We would expect any reinstatement to be based on sound physical and/or

photographic evidence and to retain any remaining significant historic fabric, for example historic elements of an existing shopfront.

4. An assessment should be made of the significance of each existing shopfront, which may include hidden elements below subsequent renewals of the shopfront.

5. Careful consideration should be given to cases which require reinstatement of the shopfront height and associated internal impacts.

6. Where a highly significant shopfront interior remains, in exceptional cases, repair of interior features may be grant-eligible e.g., significant decorative tile schemes, highly decorative plasterwork.

7. Where historic evidence is not available, in exceptional cases, new works designed by the Professional Adviser, may be considered for grant assistance. New designs should be based on local precedent, using suitable traditional materials, and of a design appropriate to the character, appearance, and period of the partner building. This may for example revert back to an earlier shopfront form but should not be a pastiche of traditional styles. We will ask you to explain the case and provide justification for the work, and the proposed design.

SECTION 4: ANCILLARY WORK TO BUILDINGS

The following items relate to possible ancillary works to buildings generally (not ancient monuments) and which **may** be grant-eligible at a lower intervention rate than repair works. Our decisions on eligibility for each project will be assessed and set out in principle in our TAR1 report where you have applied and been successful to our Historic Environment Grant (HEG) Programme.

4.1 Ancillary works to roofs

1. Trace heating to rainwater goods can be considered beneficial where there is a risk of damage to the exterior building face or to significant historic interiors from snow or ice build-up during low temperatures and where access is difficult. A monitoring system is required for regular checks of the continuity of function.

4.2 Introduction of new safe access

1. A strategy for maintenance beyond the completion of the works should be considered, and most projects in receipt of £25,000 or more of grant-aid will be required to produce a maintenance plan.

2. The opportunity should be taken to consider if there is adequate safe access for future repair and maintenance, and if not, can appropriately designed access be introduced.

3. Introduction of new measures to assist safe access may be grant-eligible when sensitively designed and positioned on the building. This may include for example access ladders, roof hatches, internal crawl-boards, external duck boards, and latch way systems for lead flat roofs etc. as applicable to the individual building.

4.3 Installation of new lightning conductors

1. Installation of new lightning conductors can be considered where a risk assessment has been carried out which identifies potential lightning damage and resultant fire risk to the building.

2. Lightning conductor systems can result in a considerable visual intrusion on historic structure. Historic England's publication Lightning Protection Design and Installation for Historic Buildings contains useful information for guidance on design.

3. Lightning equipotential bonding should be considered if extensive electrical fit out is to take place during the project.

4. Fixings should be secured in joints rather than stones and conductor lines are to be discreetly located behind or beside other building elements such as downpipes or buttresses.

5. Early lightning conductors may be retained and integrated into the new system.

6. Any proposed groundworks relating to earthing the conductor(s) within sensitive areas may require an archaeologist. Refer **Project Development** for further information.

4.4 New work to windows and doors

4.4.1 New secondary glazing

1. New secondary glazing installations can be considered when retaining original windows to improve energy efficiency.

2. Purpose made systems should provide a discreet installation for example bespoke aluminum secondary glazing and polycarbonate systems.

3. The design should suit the existing opening reveals and not impede existing shutters or opening operations for general cleaning.

4. New secondary glazing should not create an unventilated void. Ventilation to suit the room requirements has to be maintained and it may be necessary to incorporate openable units to suit the occupants' use of the room.

4.4.2 Retrofit of double-glazed units

1. Where no historic glass survives in an existing window (or door), it may be possible to fit double-glazed units in the existing frames, if the existing timber sections can accommodate the wider double-glazed units.

2. Due to the design and construction of historic windows, it is normally only vacuum or narrow profile double-glazed units that may be able to be used. Vacuum glazing is thin enough to directly replace single glazing, but if narrow-profile glazing is used, the windows concerned will have to be robust enough to withstand any adaption or routing required to accommodate the thicker panes. Any works that either weaken the window or may lead to exacerbated decay should be avoided.

3. Incorporating gas fill units and/or low emissivity glass can increase the energy efficiency performance, retain interior heat, and reflect solar heat gain.

4. Modern putty glazing compound may need to substitute traditional putty, and the weighting of sash and case windows may need adjustment.

5. Refer to HES Managing Change in the Historic Environment: Windows for further information.

4.4.3 New shutters and insulation

1. Introduction or reinstatement of traditional timber shutters can contribute significantly to a reduction in energy loss from interior spaces. Designs should be based on existing shutters in the building, photographic evidence and/or the historic joinery detailing of the window / building.

2. Existing abutting joinery details should be respected when incorporating new shutters and fittings.

3. Some traditional shutter designs can be suitable for thin panel or sheet insulating products fitted within the existing shutter panels and/or window reveals / shutter pockets. Large scale details and specification will be required for consideration.

4. Where interiors are of recognised historic significance and are sensitive to UV light, installation of suitably designed new UV blinds may be considered; avoid using UV film on historic window glass as this cannot be removed easily without risk of damage to the glass.

4.4.4 External door insulation

1. Some traditional external door designs can be suitable for thin panel or sheet insulating products fitted within the existing recessed door panels. Large scale details and specification will be required for consideration.

4.5 Insulation

1. Options for insulation measures are described in the HES Guide to Energy Retrofit of Traditional Buildings, to note that not all measures may be grant-eligible.

2. The Professional Adviser should provide HES with construction details and technical calculations for any proposed insulation measures.

4.5.1 Roof insulation

1. Natural and breathable roof insulation products may be grant-eligible in some cases where its introduction will not impact on the significance of the roof / roof space.
2. In designing any retrofit of insulation, consider the risks of condensation, damp, rot and the effect on water pipes and storage tanks isolated from previous heat sources in both warm and cold roof constructions. The full isolation and draining down of water pipes and storage tanks is advised but would not be grant-eligible.
3. Avoid loss of natural ventilation and maintain traditional details.
4. Different measures may be necessary for roof features such as coombs and dormers.

4.5.2 Solid wall insulation

1. Natural and breathable wall insulation materials may be grant-eligible in some cases where their introduction will not impact on the significance of the building, its appearance, or require the loss of historic fabric or unnecessary waste of sound fabric (i.e., significant removal of existing linings and fabric such as lath and plaster).

2. General considerations should include an assessment of the impact of insulation on the existing wall fabric and the building's ventilation. Avoid dependence on membranes based on modern construction practice and consequent risk of damage from interstitial condensation. Be aware of the implications of creating cold spots and thermal bridges and the related condensation risk.

3. If proposing external wall insulation, retain significant external features and prevent damage to the underlying masonry. Insulated external renders may be appropriate if a lost covering is being reinstated, or a cement-based covering has been removed. Consider the implications for external details at wall fixtures and openings to avoid consequent thermal bridging and condensation. Consider the impact of any applied render on existing external detailing at junctions and the functioning of copes, rainwater goods, other weatherings and drips.

4. If proposing internal wall insulation, retain significant interior details and seek to supplement existing plaster or other finishes. Avoid non-breathable materials. Consider the implications for internal wall construction and detailing at junctions such as doors, windows, and other original joinery.

4.5.3 Floor insulation

1. Natural and breathable floor insulation materials may be grant-eligible in some cases where their introduction will not impact on the significance of the floor or require the loss of historic fabric or unnecessary waste of sound fabric.

2. The type of floor insulation material and method will depend on the floor construction i.e., a suspended timber joist floor or a solid floor. In either case the management of moisture and ventilation (under suspended floors), should be detailed.

3. Ensure air movement around timber joist ends and sole plates is maintained when adding insulation below floorboards.

4. Where later concrete floors have been introduced and damp conditions are present, alternative solutions such as a new insulated limecrete floor may be grant-eligible as part of a larger project.

5. Consider the detailing of the floor to wall junction and be aware of the implications of creating cold spots and thermal bridges and the related condensation risk.

6. Consider the implications for internal detailing at junctions such as doors, skirtings, and other original joinery if the floor level is to be altered.

4.6 Heating and building services

4.6.1 Heating

1. Low and zero emissions heating systems may be appropriate for historic buildings when considered sensitively and assessment has been made of the appropriateness of the heating technology for the building type and fabric in question.

2. Review current energy sources and their use in the protection of the building fabric.

3. Where a case can be made that new heating is required for protection of the building fabric, new low and zero emissions heating systems can be grant-eligible. This may include Ground Source and Air Source Heat Pumps (GSHP, ASHP), efficient electrical systems and bioenergy from sustainable sources.

4. Care is required when designing and installing new heating energy sources and systems. Carefully consider the siting of any heating installations within the curtilage of the building, including any necessary infrastructure such as substations or large plant/equipment to avoid inappropriate loss of the building's setting.

5. Heating equipment placed on or near the building, should be discretely located and sympathetic to the historic fabric. For example, the siting and shielding of ASHPs or solar panels so that they are not visually intrusive to the building. Solar panel design also requires considering reflectivity, roof loads (both weight and lift), and roof penetrations associated with their fixings.

6. Consider installation requirements internally including plant/equipment locations and routing of pipework and/or electrical cabling to controls and heaters as applicable to the project.

7. Any proposed groundworks relating to utilities within sensitive areas may require an archaeologist. Refer to **Section 1: Project Development** for further information.

4.6.2 Building services

1. If applicable, for example when undertaking a large-scale repair project, or reuse of a building, a review of existing building services is advisable, and possibly a statutory requirement. This should include testing of the electrical installation and completing any upgrading found to be necessary.

2. Electrical re-wiring may be required for safety reasons; however, this is not grant-eligible unless work to original /historic fittings.

3. In all cases where electrical work has been required, the Electrical Inspection Condition Report (EICR) will be provided on completion.

4. Similarly, renewal of other building services may be required. This should be approached sympathetically to minimise any impact on historic fabric. Where historic heating or ventilation systems remain, consideration of their design and reuse should be made as appropriate.

5. Refurbishment of significant historic electrical and mechanical fittings may be considered grant-eligible.

6. Thermostatic and humidistat controls should be fitted where applicable, set to appropriate level for historic fabric and/or room contents in the case of significant interiors/collections. When controls are required for the maintenance of the historic fabric, this is grant-eligible.

4.7 Fire safety

4.7.1 Fire risk assessment and management

1. We may ask to see your fire risk assessment or equivalent fire safety management plans. This would include identification of the fire hazards, assessment of the associated risks and any necessary measures required to mitigate risks to the historic fabric. Note this would be in additional to any statutory obligations under fire legislation and Building Standards on protection of human life from fire.

2. Refer to HES Managing Change in the Historic Environment: Fire Safety Management and Guide for Practitioners 7: Fire Safety Management in Traditional Buildings and Guide for Practitioners 6: Conversion of Traditional Buildings: Application of the Scottish Building Standards.

4.7.2 Fire safety adaptations or interventions

1. Where adaptations or interventions to the historic fabric are required to mitigate against the risk of fire and/or minimise its impact in the event of a fire, then appropriate prevention and protection measures may be grant-eligible in exceptional cases, for example highly significant historic buildings and/or highly significant interiors. Such measures should aim to protect the historic fabric and retain its

cultural significance with minimal visual and physical impact on the building.

2. Measures may include for example: installing appropriate sensitively designed fire detection systems; discrete passive measures such as the compartmentalisation of roof spaces; fabric interventions to enhance fire resistance (intumescent linings, fillers, and seals); unobtrusive signage and lighting of escape routes.

3. Appropriate fire suppression systems such as sprinklers may be considered grant-eligible in some cases where the reduction in the risk of fire damage to the fabric or contents outweighs the harm of the installation and the potential harm from 'false' activation or from leaks. In the design of these systems, consideration should be given to discrete but effective maintenance access and the ability to test the system without damaging the historic fabric or building contents.