Historic England

Conserving War Memorials

Timber Lych Gates, Shelters and Calvary Crosses

Summary

Outdoor timber war memorials, such as lychgates, shelters and Calvary crosses, have particular conservation needs. This Technical Advice Note is for anyone concerned with their care, including parish, local and district councils, conservation professionals, contractors, statutory bodies, volunteer groups and private owners. It gives practical advice on conserving and maintaining outdoor timber war memorials, and describes current best practice in assessing, planning and carrying out conservation works. It also suggests sources for further help and advice.

This is one of a series of practical guides to caring for war memorials, produced by Historic England. Further guidance and information about the conservation, repair and maintenance of war memorials is available on Historic England's website.

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All references to individual war memorials link to War Memorials Online using WMO/ war memorial reference number. This gives information about the war memorial, as well as any grant-funded works carried out.

This edition published by Historic England November 2024.

Please refer to this document as: Historic England 2024 *Conserving War Memorials: Timber Lych Gates, Shelters and Calvary Crosses*. Swindon. Historic England.

HEAG324
Publication date: v1.0 November 2024 © Historic England
Design: Historic England

Front cover: Overbury and Conderton lychgate, Church of St Faith lychgate, Overbury, Worcestershire. Designed by Sir Herbert Baker, the war memorial encloses a sandstone chest tomb which commemorates Geoffrey Holland-Martin, the 19 year old son of the Holland-Martins of Overbury Court. The memorial, however, commemorates all 27 local servicemen who died in the First World War. It is Grade II*.

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1. Introduction

Outdoor timber war memorials are especially liable to deterioration and damage. The physical and chemical composition of wood makes them particularly susceptible to the effects of weathering and excessive moisture. Changes in humidity cause timber to swell and shrink, leading to splits, open joints and the failure of coatings, such as paint or varnish. Furthermore, timber that remains persistently damp is vulnerable to attack by destructive organisms such as fungi and insects. For these reasons, outdoor timber memorials are often designed with features intended to protect them from moisture ingress. But when these features are ineffective or fall into disrepair, water inevitably finds a way in, resulting in deterioration and damage. This not only harms the heritage significance of the memorial but may also render it unstable or even unsafe. Appropriate and timely treatment, repair and maintenance are, therefore, essential to sustain the war memorial's significance and ensure its survival.

This guidance focuses on the care and conservation of lychgates, shelters and Calvary crosses. Most outdoor timber war memorials are one of these three types and share similar conservation challenges. Other kinds of timber war memorials, such as plaques, crosses, grave markers, benches and tables, are not dealt with in this guidance. However, many of the approaches described here will be relevant to their care, maintenance and repair.

2. Types, construction and materials

Lychgates and shelters usually take the form of a small, roofed, timber-framed structure. They were traditionally built on the edges of churchyards. It was here that pall-bearers would rest with the coffin before being met by the priest and led to the grave. They sometimes but not always include a gate.

Shelters feature a roof and walls that enclose a commemorative plaque, and often include seating within for visitors.

Calvary crosses consist of a sculpture of the corpus (figure of Christ), crucified on a large Latin-style cross set on a raised base. They often incorporate a small roof or canopy. They are usually sited in churchyards, but may also be found away from church premises.

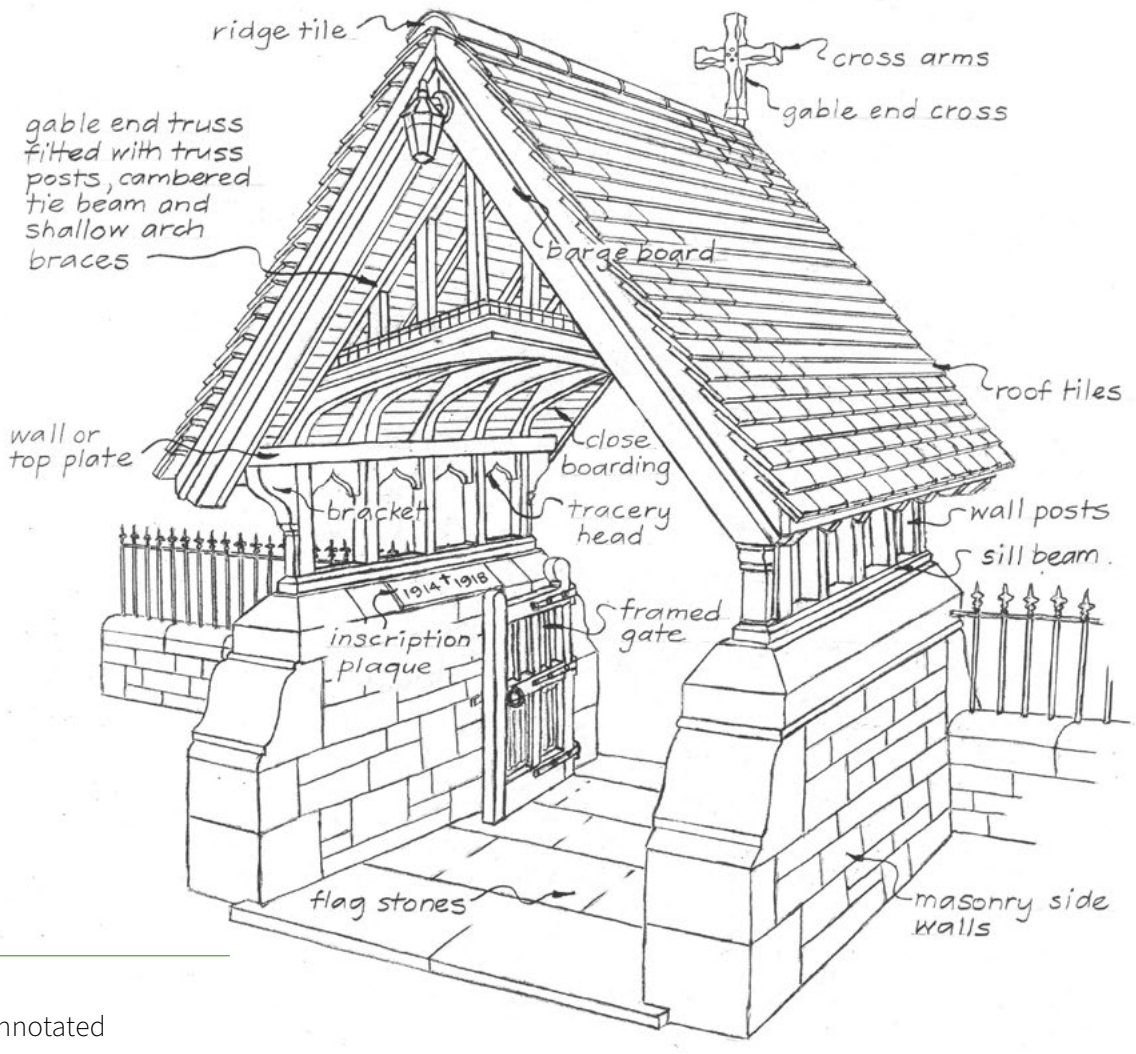


Figure 2.1a: Annotated illustration of a lychgate exterior

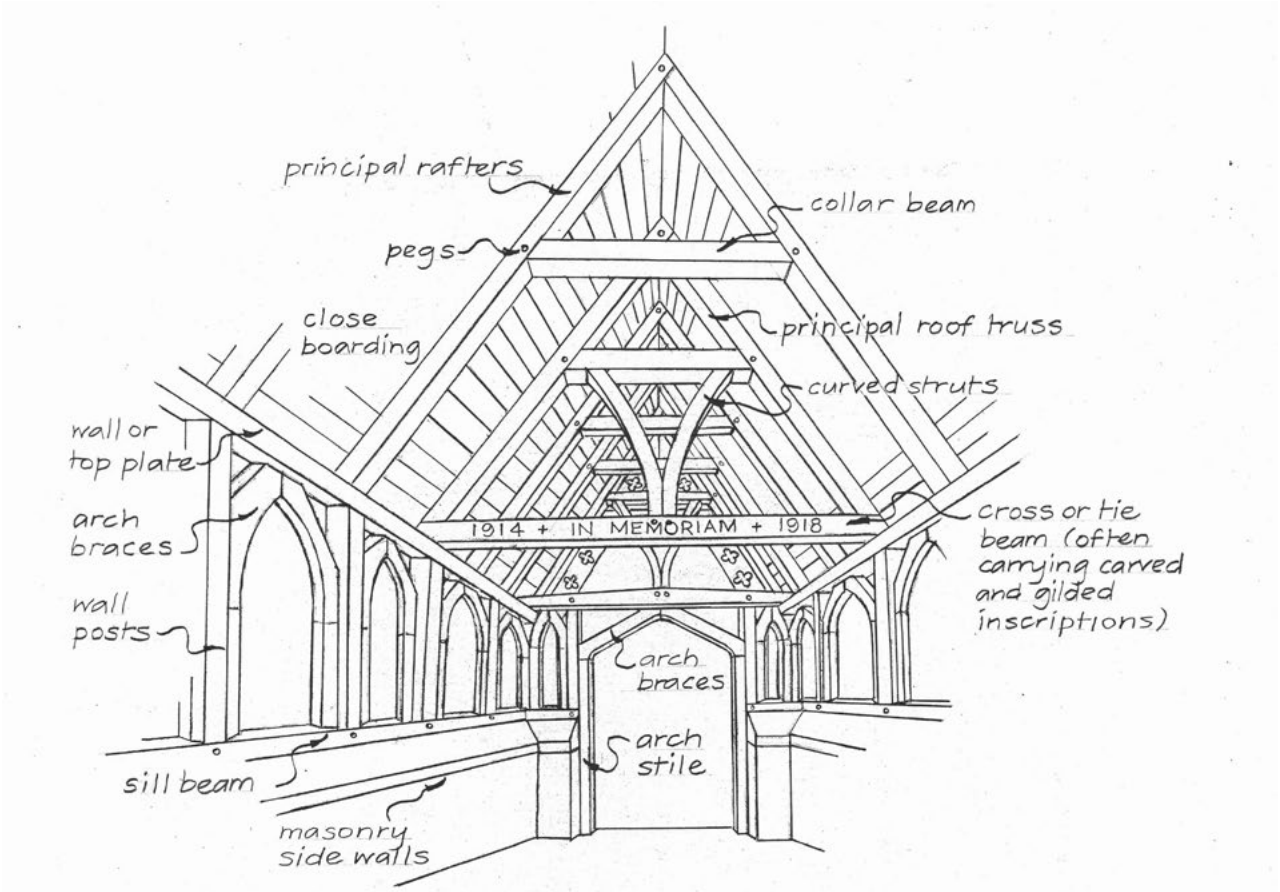


Figure 2.1b: Annotated illustration of a lychgate interior

Figure 2.2: This Grade II World War memorial oak lychgate at Chipstable, Somerset (WMO/99221) exemplifies the decorative qualities of work of this period. Note, in particular, the contribution made by the gates themselves. An iron inscription plate above the gates commemorates the fallen of 1914–18.

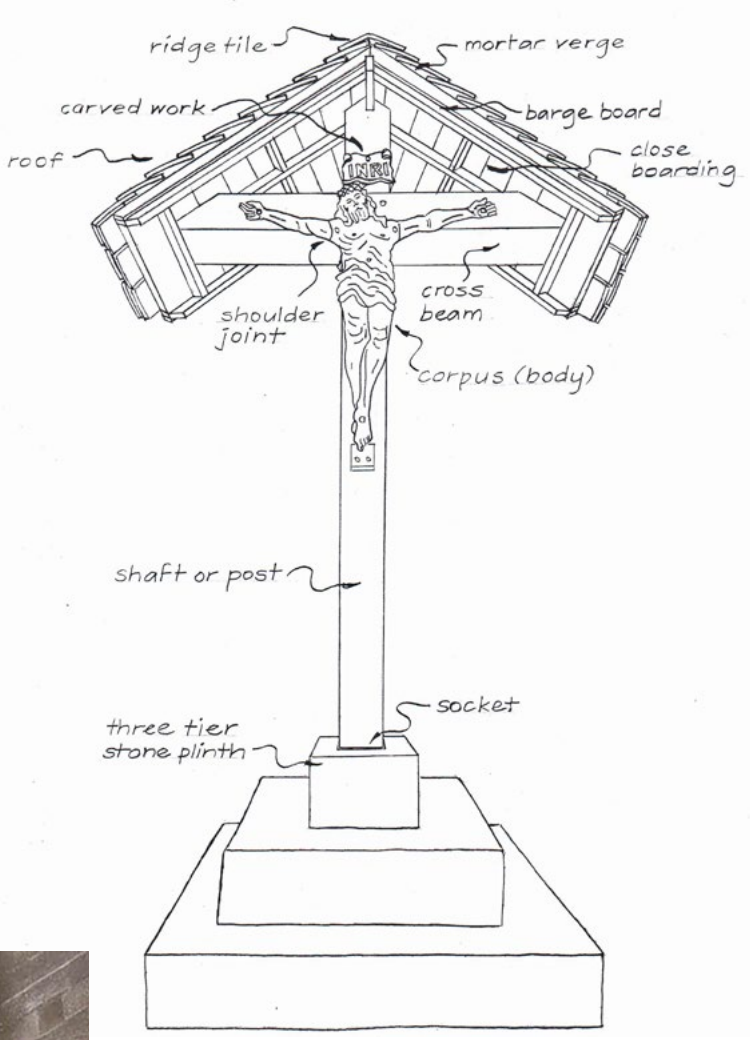


Figure 2.3: Annotated illustration of a Calvary cross

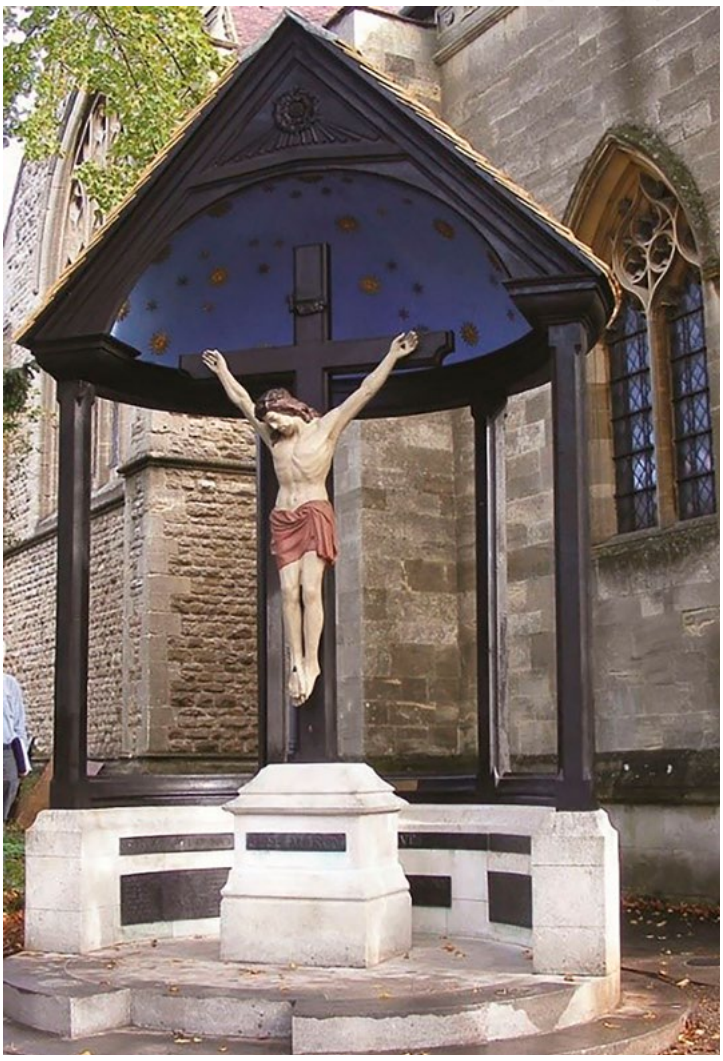


Figure 2.4: This elaborate oak Calvary cross at St Margaret's Church, Oxford, Oxfordshire (WMO/92236) is set on a limestone plinth, with the corpus in painted cast iron. It is partially enclosed by a low semi-circular limestone wall, featuring several commemorative bronze plaques with raised inscriptions and names. The wall is surmounted by four oak pillars that support an ornate plaster semi-dome with a blue interior. The corpus was cast by Lucy's Engineering Works in nearby Jericho. It is one of 200 such castings, all presumably intended for similar memorials..

Many First World War memorials were designed in the then-popular Arts and Crafts style, sometimes by nationally recognised architects. This style is characterised by its use of vernacular forms, materials and details that evoke the Middle Ages, such as hand-forged nails and ironmongery and projecting timber pegs to secure mortise and tenon joints. To many, this approach, with its stress on the handmade, was the perfect response to the first ‘mechanised war’.

Timber lychgates and shelters were usually built from oak (sometimes teak) set on a plinth of stone or brick. Roofs were often covered in timber shingles, but slates and clay or stone tiles (with associated sheet metal flashings) were also used.

Timber Calvary crosses were typically made of oak or other durable hardwood species. The corpus was usually carved from timber, but occasionally it was cast in bronze. Calvary crosses were generally set in a socket in a base or pedestal made of stone. The cross was often protected by a small peaked roof, which might have been covered with shingles, slate, tiles, lead or other sheet metal, such as copper or zinc.

Commemorative names and inscriptions were an integral part of a war memorial. They might have been included as separate stone, brass or bronze plaques, but were also often incorporated as carved (incised or raised) details within the timber structure itself.

Paint and gold leaf were sometimes applied to outdoor timber war memorials, particularly for inpainting inscriptions. The corpus in a Calvary cross may also have been painted and gilded. Occasionally, oils or decorative stains were applied to timber elements, either originally or at a later date.

Figure 2.5: St John the Baptist Church, Spalding, Lincolnshire (WMO/189589). A timber inscription panel with raised and incised lettering.

Figure 2.6: St Mary's Church, Knaresborough, North Yorkshire (WMO/301432). The painted cast iron corpus has some corrosion in localised areas. The inscription to the canopy bargeboard is clear and has likely been repainted in the recent past.

3. Planning for conservation

Understanding and assessing a memorial and its heritage significance is the basis of good conservation practice. The process consists of evaluating heritage significance and identifying how this may be threatened, assessing the memorial's condition and devising strategies to safeguard it.

Professional advice

Many aspects of the maintenance and repair of war memorials require professional involvement. It is recommended that all professionals should be conservation accredited. This may be a requirement from potential funders. An architect or surveyor should be appointed to inspect larger, more complex war memorials and to advise on what action may be appropriate. Specialist conservators may be required to evaluate the condition of materials and to supervise and execute complex treatments. Excellent practical skills and a thorough knowledge of the materials are essential to carry out any repairs to the required standard. It is, therefore, important to employ craftspeople with suitable experience. Information on selecting suitably accredited professionals can be found in Section 7 – Where to get advice.

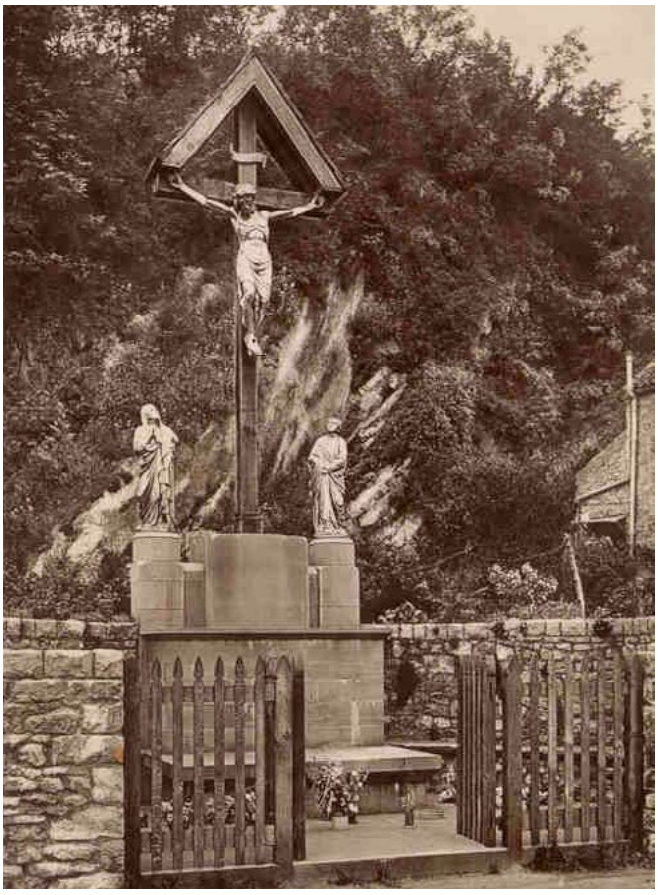
3.1 Understanding history and significance

Before any work is done on a war memorial, it is essential to understand its history and significance:

- Who designed it?
- What was the concept of the original design?
- How important are its setting and surroundings?
- How have the memorial and its environment changed through the years?
- What was the relationship of the community to the memorial in the past, and what is it now?

Answering questions such as these will provide important information about the memorial's construction, appearance and significance, both to the local community and the nation as a whole. Only then can informed decisions be made about treatment and repair.

Background and documentary research should always be the first stage of any conservation project. This can assist planning, listed building consent and faculty or grant applications if they are required. Thorough research will enable understanding of the structure and its surroundings as well as any past alterations, possible relocation and repairs. It will also reveal ownership, listing or other heritage designations and possible restrictions. Parish records, local libraries, record offices and county and local societies are all good sources of information, as are members of the community who possess letters, photographs, drawings, diaries and other material about the memorial, both current and historic. War Memorials Trust has **helpsheets** on researching the history of war memorials and their ownership.



Figures 3.1a and 3.1b: Calvary and war shrine, East Clevedon, Somerset (WMO/158421), designed by John Ninian Comper and dedicated in August 1918. Commemoration of a casualty of the Second World War was added to the memorial in 1948. These photographs, taken in June 1930 and November 2018, show several significant changes to this memorial. All three figures have been replaced with different materials, and the side figures of Mary and John no longer look up at the crucified Christ, obscuring the message conveyed by the original assembly of the group. The detail at the base of the cross shaft has been lost, and the design and spacing of the palings at the front of the enclosure have been altered. An extension to the house behind impacts the setting of the memorial. Note that the lead cap to the central plinth stone is concentrating the staining below.

Records should be kept of all information obtained in background research and all decisions informed and justified by it. These will be valuable to those responsible for caring for the memorial in the future. It may be useful to prepare a Statement of Heritage Significance, which can help with decisions about the impact of changes and with obtaining heritage consents (listed building consent from the local authority or a faculty from the Church of England) if needed. Further information about these can be found in the Historic England publication Statements of Heritage Significance: Analysing Significance in Heritage Assets.

3.2 Assessing condition and causes of decay

A thorough survey is the next stage. This should be performed by an accredited conservation professional who understands timber and the ancillary materials. A good survey should not only focus on areas of obvious decay, but also systematically study the entire memorial and its environment to identify the nature and causes of deterioration and determine appropriate conservation strategies. All conservation options should be considered and evaluated so the most appropriate can be identified and justified. This approach is particularly helpful if seeking funding: ensuring this information is covered by an initial survey report avoids additional questions, which may delay the project.

The survey should:

- consider the original design and appearance of the memorial and how they may have changed through the years
- consider the materials and elements of the structure and how they correlate
- study not only the structure, but also its features, such as original surface finishes (including staining) and inscriptions
- assess the surroundings and environment and consider how these may affect the condition of the memorial
- identify defects and determine their causes; comment on the integrity and stability of the structure
- indicate what remedial works are required and assess their priority; highlight any urgent ‘first aid’ measures that may be needed
- assess other threats and suggest measures to mitigate them
- record observations, using both photographs and written accounts
- reveal areas where more specialist advice may be needed

Condition surveys can be uploaded to War Memorials Online and the War Memorial Register, which are freely accessible repositories.

Further information on condition surveys can be found in the Historic England publication The Conservation, Repair and Management of War Memorials.

3.2.1 Environment

The condition of a monument should be assessed in the context of its local environment and its exposure to sun, wind, rain and other potential threats. Trees and hedges that have been allowed to grow over memorials (sometimes for decorative reasons) can increase moisture levels, and leaf litter may block rainwater goods and drains. While removing overgrown foliage may seem the natural solution in these situations, the trees, hedges and plants may form part of the original setting design for the memorial. They may also be of ecological value and provide important habitats for wildlife. Consequently, the aesthetic and ecological impact should always be considered. This may have a bearing on the extent and timing of works, for example, during bird nesting season.

The vulnerability of a memorial to other threats should also be assessed. These may include damage caused by branches falling from overhanging trees, mature tree roots, traffic (such as vibrations from the road or impact damage from a vehicle collision), wear and tear, and vandalism.

Figure 3.2: Norton Juxta Kempsey war memorial, Norton, Worcestershire (WM/233441). Over time, the weather has eroded the surface finish to the more exposed elements of the memorial.

3.2.2 Structural stability and integrity

When assessing the condition of a memorial, it is essential to establish that it is structurally stable and not a potential hazard to passers-by. Surveyors should examine a lychgate in the same way they would a small timber-framed building (which is basically what it is). This means considering how loads are transferred from the roof down through the structure to the plinth wall and the foundations. Evidence of movement, distortion failure, dislocation of joints and settlement should be noted. The survey could form part of the quinquennial inspection within a church setting. It is important to keep in mind that the structure of a Calvary cross makes it inherently unstable, because it takes the form of a tall post often set in a relatively small stone plinth, with the weight of the cross, sculpture and roof concentrated at the top. Over time, timber contraction and wind-caused movement may loosen the shaft in its socket and provide a trap for moisture.

Figure 3.3: Here, the timber base of the cross has rotted within the masonry socket and strong winds have pushed the Calvary cross over.

3.2.3 Moisture-related problems

Water is a major cause of deterioration in many materials used in the construction of memorials, including timber, masonry and metalwork. Timber that is persistently wet is prone to attack from a range of organisms, including fungi and insects, which selectively destroy substances that make up wood. This will cause the timber to lose strength and change shape. Exposed timber frames are particularly vulnerable if water can penetrate joints and junctions where timbers meet.

Surveyors should look systematically for evidence of moisture ingress, starting at the roof and working down. They should check to see if the roof leaks or if any weathering details are defective, and also keep an eye out for evidence of rainwater paths and potential water traps. The presence of mosses, lichens and algae is an indication of persistent dampness. Probing joints and other vulnerable areas, such as upward-facing mortises or between sill beams and plinths, can reveal areas of concealed decay. Other vulnerable places include roof coverings, gutters, rainwater pipes and gullies, weathering details and flashings, as well as timbers set into, or resting on, masonry plinths where water can penetrate junctions. All these areas should be closely inspected because they may be prone to decay. In addition, the adequacy of surface water drainage should be assessed. Do ground levels and gradients allow water to flow quickly away from the base of the structure, or is there evidence of ponding? If rainwater pipes discharge into drains or soakaways below ground, are these free from blockages? Particular attention should be paid to carved work, as it can create a trap for moisture. There may be areas of exposed end grain that allow water to penetrate, such as the head of Christ on a Calvary cross. In addition, high-level carved work, such as crosses, finials and decorative bargeboards, may have been poorly maintained due to access difficulties. It may be necessary to erect scaffolding to enable inspection and for works to be carried out.

Figure 3.4: Decay of the timber post is visible where it enters the socket in the stone base. The shrinkage of the timber has created a substantial gap between the post and the stone on one side. This will allow water in, thereby causing further timber decay.

Figure 3.5: This cross is situated at high level at the apex of the lychgate roof. Decay is evident in the cross where the end grain is exposed to moisture at the junctions between the cross bar and the shaft.

Figure 3.6: Algal growth on lychgate timbers indicates persistent dampness, the cause of which needs to be investigated.

Figure 3.7: The shingles on this lychgate have deteriorated over time to the extent that they need to be replaced.

Figure 3.8: Decay in the bottom rail of this gate is the result of its exposure to the elements, as it is farthest away from the protection of the lychgate roof and within the 'splashback zone' from groundwater.

Although inspection may reveal damage caused by wood-boring beetles, it is important to establish whether this is evidence of an active or historic infestation. While the sapwood edges of timbers in a historic building often show signs of beetle damage, in most cases the infestation will have occurred quite early in the life of the building when the timbers were still comparatively damp. It should be noted that beetle larvae will only attack sapwood (the outer part of a tree's woody stem that contained living cells before the tree was felled) in timber and not heartwood (the inner part of the woody stem made up of dead cells). Heartwood is protected by chemical 'extractives' – natural preservatives that are part of a living tree's defences – and it would be attacked only if it had first been chemically modified by a fungus.

Figure 3.9: A common furniture beetle infestation can be seen in the cover boards on the underside of this lychgate roof. Damage is generally restricted to sapwood. Active beetle infestations usually only occur where the timber is damp.

Figure 3.10: The underside of this Calvary roof shows staining and decay from water ingress caused by pointing failure below the edges of the tiles.

Figure 3.11: The junction of this cross shaft and stone base is supported by carved brackets. They have now decayed as a result of absorbing water from the masonry plinth below, and because of weathering damage to the exposed end grain on the top surface. General exposure to moisture has destroyed the fixings of the brackets, which are now loose.

Figure 3.12: Disfiguring staining from steel nails. These should be painted with anti-corrosive paint and the gaps filled to prevent moisture coming into contact with the shaft of the nail.

For more information on timber decay and infestation, see Historic England's *Practical Building Conservation: Timber* (2012) and *Timber Decay in Buildings and its Treatment* (2019).

Moisture is also a major factor in the deterioration of the non-timber components of lychgates and Calvary crosses. For information about the treatment and repair of these components, see the Historic England publication The Conservation, Repair and Management of War Memorials.

3.2.4 Past repairs

The performance and appearance of past repairs should be evaluated. Although well-intentioned, past repairs sometimes turn out to have been ill-informed, ineffective or even harmful. 'Cosmetic' repairs that did not deal with the cause of a problem may conceal and even accelerate deterioration. It is important to try to understand the intention of past repairs and find out if underlying problems were eliminated. On occasions, some past repairs may themselves be assigned heritage value and contribute to the structure's character.

3.2.5 Further investigations

The survey should identify any areas that were not accessible for close inspection. In some cases, it may be necessary to arrange for scaffolding or other access to be provided to aid inspection. The survey should also highlight areas where further advice from a conservator or other specialist may be needed. A structural engineer's assessment may be necessary, for example, if a lychgate or shelter is affected by settlement, subsidence or extensive deflection of the timber frame.

Lychgates and shelters - things to look out for:

Environment	■ Exposure to sun, wind and rain ■ Overhanging trees, tree roots and surrounding vegetation ■ Ground levels and adequacy of surface water disposal arrangements ■ Vulnerability to flooding ■ Vulnerability to traffic impact ■ Vulnerability to vandalism ■ Ecological considerations
Roof	■ Coverings materials (timber shingles, clay or stone tiles, slates, sheet metal). Note special or unusual details ■ Condition of coverings (cracked, displaced or missing units; corroded or split sheet metal) and fastenings (corroded nails; decayed or missing pegs) ■ Colonisation by algae, mosses and lichens ■ Defective, displaced or missing flashings and weatherings ■ Decayed sarking boards, battens/laths; corroded nails ■ Blocked, damaged or missing rainwater goods
Structure (timber frame)	■ Framing system and timber species ■ Presence of water-trapping features and defects ■ Structural defects and deflection; dislocated joints; missing or fractured pegs ■ Evidence of active decay and insect attack ■ Colonisation by algae, mosses and lichens
Gates	■ Construction and materials (including ironmongery) ■ Dropping due to loose or defective joints; binding due to structural movement of timber frame ■ Defective ironmongery; corrosion; mechanical wear and tear

Plinth walls	■ Method of construction and materials ■ Superficial decay of masonry units and mortars ■ Structural settlement; displacement ■ Colonisation by algae, mosses and lichens
Flooring	■ Materials and details ■ Superficial decay of flooring materials and mortars ■ Settlement; subsidence; evidence of ponding ■ Colonisation by algae, mosses and lichens
Inscription	■ Materials and details ■ Superficial deterioration; legibility of inscriptions ■ Colonisation by algae, mosses and lichens
Surface finishes: painting, staining and gilding	■ Materials and extent of application; evidence of decorative stains ■ Deterioration and damage; cracking; blistering; flaking; legibility of inscriptions

Calvary crosses – things to look out for

Environment	■ Overhanging trees, tree roots and surrounding vegetation ■ Ground levels and adequacy of surface water disposal arrangements ■ Vulnerability to flooding ■ Vulnerability to traffic impact ■ Vulnerability to vandalism ■ Ecological considerations
Roof/canopy	■ Coverings materials (timber shingles, clay or stone tiles, slates, sheet metal). Note special or unusual details ■ Condition of coverings (cracked, displaced or missing units; corroded or split sheet metal) and fastenings (corroded nails; decayed or missing pegs) ■ Colonisation by algae, mosses and lichens ■ Condition of flashings and weatherings ■ Condition of sarking boards, battens/laths and fixings
Cross	■ Materials ■ Stability of joints and fixings ■ Presence of vulnerable water-trapping features and defects ■ Condition (decay and pest infestation) ■ Colonisation by algae, mosses and lichens
Corpus	■ Materials and details ■ Condition of carved timber (moisture-trapping features; exposed end grain) ■ Stability of joints and fixings ■ Condition of metalwork (patination; corrosion)
Plinth/pedestal	■ Materials and details ■ Condition (superficial decay of masonry units and mortars) ■ Condition (structural settlement/displacement) ■ Colonisation by algae, mosses and lichens
Inscription	■ Materials and details ■ Superficial deterioration; legibility of inscriptions ■ Colonisation by algae, mosses and lichens
Surface finishes: Painting, staining and gilding	■ Materials and extent of application; evidence of decorative stains ■ Condition (nature and extent of deterioration; legibility of inscriptions)

Analysis of paint finishes

The importance of architectural paint (also known as polychromy) has only really been recognised in the past 30 years. It received little attention before that, and much painted decoration was lost. Now, however, the painted decoration is sometimes seen to be more historically significant than the timber structure. It is particularly important, therefore, that all painted surfaces are carefully conserved. A painted surface can be of great help in revealing an object's history.

One of the first tasks in any timber conservation project is to search for signs of old paint layers. In many cases, these are microscopic or hidden in grooves. For objects that have been previously restored, it is important to look out for and record any microscopic remains of earlier polychromatic schemes that may have been cleaned off. It is quite normal for the polychrome conservator to take very small samples of paint to carry out historic paint analysis to help determine earlier colour schemes. When stratigraphies from different elements are compared, any earlier paint layers that are missing will be evident. This immediately suggests that the element with fewer paint layers is of a later date and therefore represents a later intervention.

4. Repair and maintenance

4.1 How much work is needed?

To be effective, repairs should not treat symptoms only. Instead, they should lessen or even eliminate the underlying causes of deterioration. In accordance with conservation principles, the aim should be to do as much as is necessary but as little as possible. Sometimes, simple procedures, such as cutting back trees and vegetation or removing moisture-retaining mosses, may be all that is needed to curtail deterioration. When repairs are required to protect heritage significance, correct damage or prevent deterioration, it is important to note that these may be expensive. With limited resources, it may not be possible to solve all the problems at once. If resources are seriously constrained, it may be necessary to consider temporary measures to prevent further deterioration. Temporary measures should be designed to be as unobtrusive as possible, although this may be difficult to achieve. Most importantly, they should not cause permanent damage to the memorial or impede future repairs.

Figure 4.1: Calvary cross, St Michael and All Angels' Church, Pirbright, Surrey (WMO/100753). Although the supports holding the corpus to the cross are temporary, they are barely noticeable.

Once heritage significance and condition have been assessed, the basic steps to devising a repair programme are as follows:

- Arrive at a comprehensive, soundly based diagnosis of deterioration and its causes.
- Define clear repair objectives.
- Determine the urgency of the work; assess the likely consequences if defects and damage remain untreated.
- Assess the available resources (knowledge, skills, materials, finance).
- Identify repair options; assess their practicability and cost.
- Assess the impact of repair options on heritage significance (both positive and negative).
- Select the options that best meet the repair objectives and are practicable and affordable; prepare a written schedule of work.
- Determine a programme and timescale for the work.

If you intend to approach others for funding or support, it is particularly important that your documentation explains what you are proposing and why. It should also clarify why other options have been discounted. Funders are likely to ask questions to ensure any project has been fully considered, so having that information in your plan will help prevent a delay.

4.2 What are the priorities?

Repairs should always be prioritised, and can be ranked as ‘immediate’, ‘necessary’ or ‘desirable’. There is also sometimes a case for ‘doing nothing’.

- Immediate: Priority should be given to immediate issues such as stabilising the memorial and repairing any unsound parts that are in danger of structural failure.
- Necessary: These are repairs that will protect the memorial from excess moisture. They include repairs to the roof or canopy.
- Desirable: These repairs are not strictly needed to preserve the memorial. They may be repairs that improve the appearance, such as re-gilding decorative elements. Although inscriptions are not critical to the longevity of a war memorial, they are integral to its significance and purpose.

- Do nothing: If deterioration does not present an immediate threat, it may be preferable to monitor the condition. This may also be the case where damage appears to have occurred in the past caused by agents of deterioration that are no longer active. Assessors should consider doing nothing if they discover one or more of the following:

    - Splits running the length of a timber that is otherwise sound. While it might seem logical to insert new timber into splits to repair them, this may make things worse, as the new timber will expand in damp weather

    - Decay at the bottom of a post if a good proportion of the timber is sound

    - Decay and infestation on sapwood edges if they do not allow moisture to penetrate and the timber can still fulfil its function

    - Joints that are pulling apart. They need not be tightened, although this may be desirable for aesthetic reasons

    - Signs of past infestation, since it is unlikely to be active

Where an expensive access arrangement, such as scaffolding, has been installed to enable urgent repairs, it may be cost-effective to carry out additional less urgent ones at the same time.

Figure 4.2: Emergency intervention is sometimes needed to prevent further deterioration until more permanent repairs can be carried out. Here, two raking shores have been installed to stabilise the structure.

Principles of practical conservation

Conservation of a memorial should always be linked to the communal, historic and aesthetic values that are associated with it. Understanding these values is essential when deciding how much and what kind of intervention is appropriate. Since the mid-19th century, a number of manifestos and charters have sought to identify the underlying principles that should govern the conservation of historic buildings and monuments. They are described in detail in *Practical Building Conservation: Conservation Basics* (2013).

Phrases such as 'reversibility' and 'minimum intervention' are often used to summarise conservation principles. However, they do not fully answer the complex questions that must be asked when considering treatment and repair of a war memorial. There are a number of overriding criteria that should be considered:

- The best materials for repair are those that are the same or similar to the original fabric. If this is no longer possible, the technical and aesthetic properties of any replacement must be compatible with the original.

- Interventions should be as gentle and minimal as possible. For example, it is desirable to splice in timber repairs rather than replace a whole element.

- Interventions should aim for reversibility (that is, they can be removed without affecting the original fabric) where possible.

- Interventions should not preclude repeated or other interventions in the future. This concept of 're-treatability' encourages the use of like-for-like repairs, sacrificial repairs and coatings.

- All works should be adequately recorded, and the records made available to others. They should be stored where they can be referenced in the future. War Memorials Online and the War Memorial Register are freely accessible repositories.

4.3 What are the options for repair?

This section summarises typical repair options for the component parts of lychgates, shelters and Calvary crosses.

4.3.1 Lychgates

Roof

Simple maintenance treatments, such as removing heavy accumulations of moss and cutting back overhanging foliage, can help prolong the life of roof coverings (particularly shingles). In many cases, simply refixing slipped shingles, tiles or slates or replacing what is broken or missing will be all that is necessary. In other cases, complete reroofing may be required, which is a far bigger and more expensive job. The scope of works will often be influenced by the cost of providing access. Where scaffolding is needed, it is likely to be more cost-effective in the long term to reroof than to carry out patch repairs, but this has to be balanced against the heritage significance of the existing roofing material.

Replacement materials should match existing ones as closely as possible. Existing roofing details should also be reinstated, unless there is evidence that they have contributed to premature failure. For example, it may be desirable to increase the air circulation behind shingles to aid drying and help reduce the risk of decay. Metal flashings and weatherings should also be replaced if they are missing or in poor condition. Metal flashings on oak shingle roofs should be protected with bituminous paint to prevent corrosion caused by acidic run-off. Although few lychgates had gutters and rainwater goods originally, it may be beneficial to install them if prevailing winds are causing run-off to be blown back onto the timber elements.

For detailed advice on the repair of traditional roofing, see Historic England's *Practical Building Conservation: Roofing* (2013).

Structural timber

Repairs are usually needed where timber components have been weakened by decay, insect infestation or well-intentioned but inappropriate historic interventions that threaten the integrity and stability of the structure. Repairs may also be required to remedy defects that allow water to penetrate and become trapped in joints or other vulnerable places. However, superficial defects such as splits and shakes should not be filled or otherwise repaired if they are freely draining. In simple terms, structural repairs fall into three main categories:

- Timber-to-timber repairs: cutting out defective timber and replacing it with new timber using traditional carpentry techniques
- Support and stabilisation with metal brackets and straps
- Consolidation and reinforcement using epoxy resins

There are two main types of timber-to-timber repairs: face or patch repairs and whole section repairs. Patch repairs involve cutting out areas of decay from the existing timber and piecing in new inserts. In whole section repairs, the complete cross section of decayed timber is replaced. Factors influencing the design of timber-to-timber repairs include functional requirements (for example, strength), location, buildability and whether or not mechanical fastenings and/or adhesives are to be used. Repair joints should always be designed to avoid rain penetration and water trapping. Inserted timber should match the species, grain direction and moisture content of the existing component. Where possible, the density and orientation of the annual growth rings should also be matched. This will allow the new and host timbers to expand and contract in unison. Unseasoned timber will shrink as it dries, which may cause splitting and open joints. In general, therefore, seasoned timber should be used for small-scale repairs and inserts. However, partially seasoned or green timber may be used for large-scale repairs or replacements where shrinkage is less of an issue.

Where mechanical fastenings, such as bolts, coach screws and screws, are used in structural repair, these should be of austenitic (300 series) stainless steel to avoid corrosion and staining of timber.

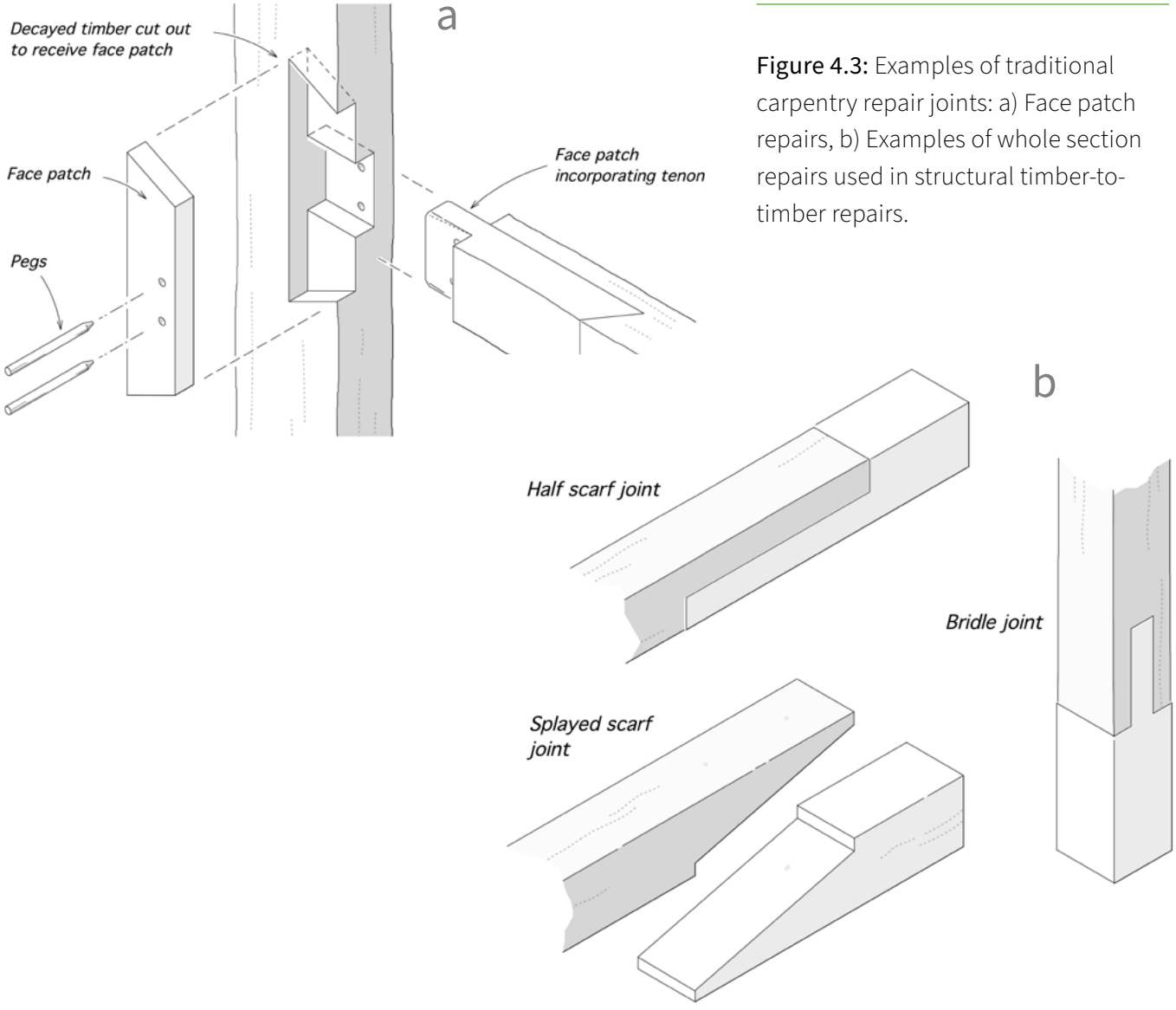
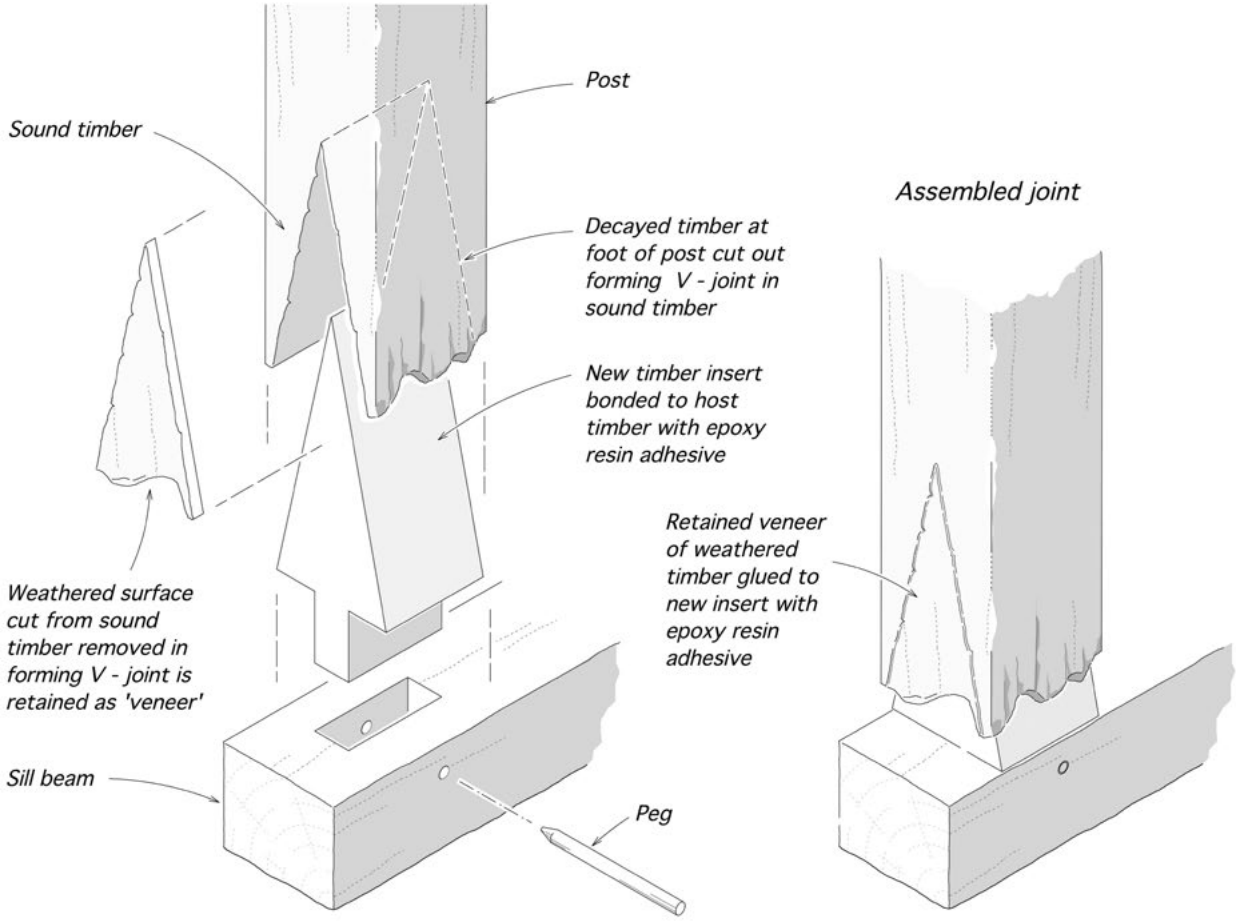


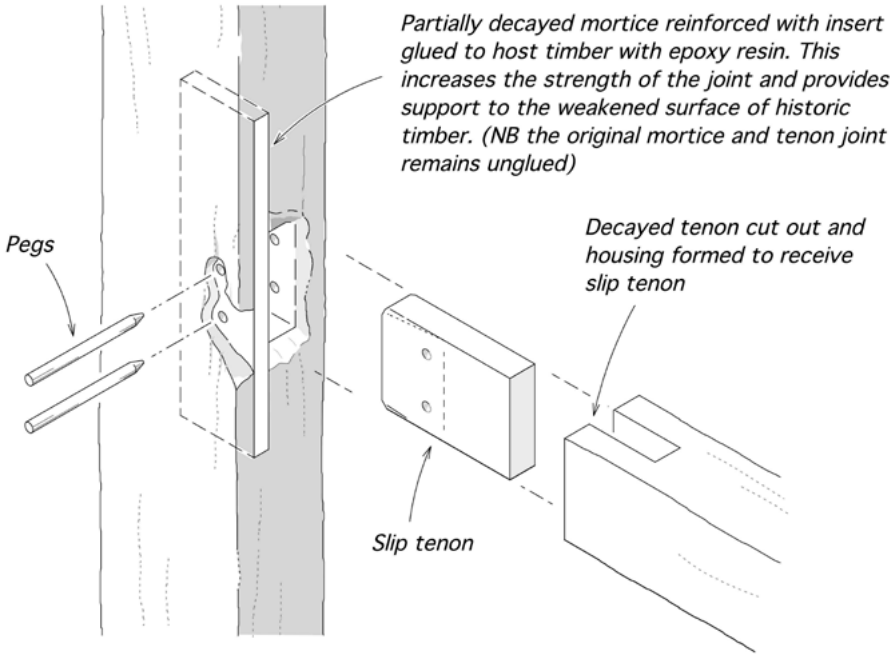
Figure 4.3: Examples of traditional carpentry repair joints: a) Face patch repairs, b) Examples of whole section repairs used in structural timber-to-timber repairs.



a) Scarf repair to the foot of a post.

b) Completed repair.

Figures 4.4a ,4.4b, 4.4c and 4.4d: Timber-to-timber repairs can be designed to be less conspicuous and preserve more original material than traditional repair joints. Examples of repair methods developed by the Weald and Downland Open Air Museum, Singleton, Sussex are shown here:



c) Repair of a decayed mortice and tenon joint.

d) Completed repair.

Timber-to-timber repairs are comparatively invasive, as historic fabric has to be cut away to receive new inserted timber. Also, some dismantling of the structure may be required where whole section repairs are needed. As an alternative, adding metal straps or brackets to strengthen and stabilise the structure could be considered in some cases. This method has been employed for centuries, and could, therefore, be said to be more 'traditional' than timber-to-timber repairs. It eliminates the need for dismantling the structure and minimises the loss of historic fabric. Furthermore, such repairs are reversible. This method can, therefore, be an efficient cost-effective treatment. The suitability of this type of repair will depend on its location, visibility and vulnerability to rain penetration and water trapping. Consideration should also be given to whether stainless steel or painted galvanised mild steel could be used. Careful design and good workmanship are required. In some instances, specially crafted metalwork may be used to enhance the visual quality of the repair.

Figure 4.5: Steel angle cleats take the place of decayed tenons to fix studs to a newly inserted rail.

Consolidating and reinforcing fragile timber components with suitable two-part epoxy resins may be a useful approach. The formulation of epoxy resin allows for considerable control over its viscosity, mechanical properties (for example, flexibility) and rates of hardening, depending on the intended use. Low-viscosity epoxy resins can be used to impregnate and consolidate decayed and fragile timber. For example, after consolidation, carvings on a decayed timber can be preserved by laminating them onto a new timber backing. Two-part epoxy resins in gel or paste form are most useful as adhesives in timber-to-timber repairs

because they do not shrink on curing, they have good gap-filling capabilities and they only require contact pressure for the bond. Epoxy resins should not be thought of as a cheap alternative to timber-to-timber repairs. Instead, they should be used in an informed way by craftspeople skilled in both traditional and new techniques.

Although timber-to-timber repairs are usually favoured, sometimes they have to be balanced against the importance of preserving any significant features on the surface of a decayed timber element. In practice, the different approaches to repair outlined above are often used in conjunction with one another. Whatever methods are employed, repairs should always be carefully designed to meet the required objectives, minimise harm to heritage significance and avoid the creation of water traps or other elements that may lead to future deterioration.

For detailed advice on the repair of timber-framed structures, see *Historic England's Practical Building Conservation: Timber* (2012).

Gates

Gates will often need adjustment or repair. It is important to ensure bolts and latches operate and engage properly, as binding gates are easily damaged when users try to force them. Where a gate has dropped, this can usually be remedied by lifting hinges on the pintles or inserting shims inside strap hinge loops where they are badly worn. This is preferable to planing the leading edges of the gate. Gates are also susceptible to decay in joints where moisture has been trapped. It is often necessary to dismantle a gate to enable decayed timber to be cut out and pieced in or replaced. Modifying the profile of horizontal components to encourage water run-off may also be considered. If a gate's condition is so poor that it needs to be replaced, it is important that the reproduction matches the original closely in both material and design. Corroded ironmongery and hardware should be removed, rubbed down and treated with a suitable corrosion-inhibiting coating or paint system.

Inscriptions and carvings

Carved features such as inscriptions, decorative bargeboards and roof apex carvings should be preserved where practicable. Consolidation using synthetic epoxy resin is normally preferable to replacement and should always be carried out by an appropriately skilled and experienced conservator. Epoxy resins can also be used for infill repairs to decayed timber. This minimises the amount of repair and eliminates the need to dismantle the affected components. Polyester resins are prone to shrinking and cracking and are not likely to offer the longer term durability needed in an external environment. Carvings on a decayed timber can be preserved in some situations by laminating them onto new structural timber.

Advice on the conservation of inscriptions on stone memorials is available at historicengland.org.uk/advice/technical-advice/war-memorials/. In principle, this guidance is equally applicable to inscriptions on timber memorials.

Figures 4.6a and 4.6b: An oak inscription panel before and after consolidation with an epoxy resin. There is some darkening in appearance, but the consolidation will increase the lifespan of the carved element.

Where carved timber must be replaced, the work should be carried out to the highest standard, as inferior copies will be detrimental to the memorial's aesthetic value.

For detailed advice on the repair of non-structural timber, see Historic England's *Practical Building Conservation: Timber* (2012).

Masonry plinth walls

For advice on the conservation and repair of masonry, see the Historic England publication The Conservation, Repair and Management of War Memorials and Historic England's *Practical Building Conservation: Stone* (2012).

Floors

Lychgate floors may be paved in a variety of materials, including stone slabs, cobbles, setts, brick paviours and clay tiles. Repairs may be required where a floor has deteriorated to the extent it is a potential hazard to pedestrians, or where it no longer allows surface water to drain freely. In general, patch repairs are preferable to wholesale lifting and re-laying. However, sometimes the floor is so badly deteriorated there is no other option. In such cases, the floor should be recorded in detail before lifting. The paving units may need to be numbered and labelled to aid accurate reinstatement. Replacement materials should match the original as closely as possible.

Further advice on the conservation and repair of historic ground surfaces is available as pdf publication at The Buildings of Ireland website.

4.3.2 Calvary crosses

Roof/canopy

Repair options for the roof or canopy that shelters a Calvary cross are similar to those already described for a lychgate. Although the roofs are usually small in scale, their height may require scaffolding to allow works to be carried out safely.

Cross

In principle, repair options for the cross are similar to those described for the structural timbers in a lychgate: timber-to-timber, support and stabilisation, or consolidation and reinforcement. For example, if the base of the cross shaft is decaying, it can be renewed in timber, with a glued structural scarf joint made between the replacement and host timbers. An alternative approach is to cut off the defective timber and insert substantial stainless-steel dowels set in epoxy resin adhesive into the base of the shaft. The socket in the masonry plinth is then infilled with a stone insert or suitable mortar into which the dowels are embedded. Another solution may be to consolidate decayed timber at the base of the shaft with an epoxy resin repair system. Whatever repair option is chosen, it should be designed to avoid creating moisture traps. Consideration should be given to inserting metal flashings to protect vulnerable areas.

For detailed advice on all these repair options, see Historic England's *Practical Building Conservation: Timber* (2012).

Corpus

The sculptural detail of a corpus contributes greatly to the heritage significance of a Calvary cross. Therefore, expert advice from a suitably accredited and experienced conservator should always be obtained to assess if treatment or repair may be needed. The overriding objectives are to sustain the heritage significance of the sculpture, including its visual character, and to mitigate ongoing deterioration and damage. Defects such as cracks, shakes and open joints, which disfigure the corpus, allow rain penetration and trap moisture, should be remedied. Repairs and treatments to sculptural timber should always be carried out by an appropriately accredited conservator.

A corpus is normally made up of several elements. The arms are usually carved from separate pieces of timber, joined to the torso. Defective joints at the shoulders should be repaired in a way that matches the original construction, ensuring that the joints are as tight as possible and glued with a waterproof adhesive. Epoxy resin adhesives can be useful because they have good gap-filling properties and do not require clamping. In some situations, such as where there is decayed end-grain timber at the crown of the head, consolidation with a low-viscosity epoxy resin may be appropriate. Localised consolidation may also be useful to strengthen decayed wood onto which new timbers are to be jointed. Impregnation with epoxy resin is an irreversible treatment, but it can extend the life of timber surfaces of high significance where heritage values would be diminished by replacing them.

Where decayed timber is cut out to receive a new timber insert, the aim should be to remove as little original material as possible. The shape of the cavity should, therefore, follow the profile of the sound timber, rather than being 'squared up'. The insert is then shaped to fit the cavity.

A wide range of proprietary wood fillers is available for making-good superficial defects in timber. However, fillers differ widely in appearance, properties (including flexibility and moisture permeability) and performance (including durability). Some are intended for preparing timber surfaces before painting. Others may be used on unpainted timber. Therefore, wood fillers should be selected carefully, depending on the proposed end use and the advice of the conservator. They should never be used to conceal large-scale defects as a cheap alternative to proper repair.

Where a corpus is badly decayed and its carving is no longer legible, a decision may have to be made about replacement, either partial or complete. If new carved elements are needed, they should be carefully researched to ensure they can be reproduced in the original design and style. New carved work should be carried out to the highest standard, as inferior copies will be detrimental to the memorial's aesthetic value.

Figure 4.7 a, b and c Head of Christ before, during and after conservation:

a) The cracks in the head are wide enough to receive seasoned timber slips which are fixed with epoxy resin.

b) They are then trimmed and carved.

c) The surface of the completed piece finished with tung oil.

In some cases, the corpus may be cast in bronze or iron. Repair or re-fixing of a metal corpus is very likely to require the expertise of a metal conservator. For advice on the conservation and surface treatment of bronze and cast iron statuary, see Historic England's Looking after metal statuary and Looking after war memorials webpages, as well as *Practical Building Conservation: Metals* (2012).

Pedestal or base

Repairs may be needed if wind-induced movement has disturbed or cracked the masonry that holds the shaft, or where structural movement or settlement has occurred. For advice on masonry repairs, see Historic England's *Practical Building Conservation: Stone* (2012) and The Conservation, Repair and Management of War Memorials.

4.4 Other conservation treatments

This section considers other treatments for lychgates, shelters and Calvary crosses.

4.4.1 Cleaning

Biological growths, such as algae, mosses and lichens, and dirt deposits can obscure carvings and inscriptions. Removing them will make the carvings and inscriptions more visible, and will protect timber surfaces, too. Some lichens are protected (under Schedule 8 of the Wildlife and Countryside Act 1981), so you should always check before removing them. Be aware that inappropriate cleaning methods can damage both painted and unpainted timber surfaces. Site trials in small inconspicuous areas will enable conservators to identify the most effective and least harmful cleaning method. Often, all that is needed is a careful cleaning with water, non-ionic soap, and soft bristle brushes and sponges.

Historic England's advice on cleaning masonry surfaces is available at historicengland.org.uk/advice/technical-advice/war-memorials/.

Timber structures are prone to graffiti attacks. Painted graffiti can be removed, but great care is needed to make sure that any solvents or cleaning agents used do not leach into the timber and stain it. Incised graffiti can be concealed with coloured waxes. Advice on removing graffiti can be found at historicengland.org.uk/advice/technical-advice/buildings/maintenance-and-repair-of-older-buildings/removing-and-preventing-graffiti/.

Figure 4.8: Calvary cross at St Giles' Church, Reading, Berkshire (WMO/253679). Commemorative names and text are integral to the significance of a war memorial and should, therefore, be legible. Here, the incised inscription could be made more legible if it was gently cleaned by hand.

4.4.2 Retouching incised inscriptions

When incised inscriptions on a war memorial lose some or all of their original paint or gilding, they may become illegible. Since the incised names play a fundamental role in the memorial's purpose and significance, there is a strong case for retouching them. However, it is essential to correctly match original finishes. Oil-based paints are most suitable and durable for external timber. If gold leaf is used, it should be no less than 23 carat. 'Gold' paint would not normally be acceptable because it is made from bronze powders and is likely to oxidise and turn green within a few years.

Figure 4.9: The incised names are legible even though the gilt has weathered away. Some maintenance of the surface would help preserve the timber and improve legibility. Re-gilding the letters may be an option.

4.4.4 Surface finishes

For the most part, timber lychgates, shelters and Calvary crosses are left untreated. Exposed to sunlight, wind and water, the surface of oak and other durable hardwoods gradually weathers, taking on an attractive silvery-grey appearance. Wood stains, oils or other coatings should not generally be applied to timbers that have not previously been coated. However, if there is evidence that coatings have been applied, either originally or in subsequent maintenance, a decision on whether or not to reapply will have to be made. This should be based on an assessment of the appearance and performance of the coatings. Have they been beneficial or harmful? Where reapplication is proposed, it is important to match the character and properties of the original finishes as closely as possible.

Figures 4.10a and 4.10b: Roll of honour and shrine, Burton Salmon, North Yorkshire (WMO/231096). Here, the sill beam and rails have been replaced with oak (a). Over a few years, these have weathered to closely match the originals (b).

Although modern paints and coatings, including stains, varnishes and lacquers, can provide durable protection against the elements, many form an impermeable film that can trap moisture, exacerbating deterioration of the timber beneath. They can also alter the colour or sheen of timber surfaces.

Figure 4.11: An impermeable paint has trapped moisture beneath it, causing the paint to peel and the wood to decay.

Unpainted carvings and inscriptions can be protected using wax or oil. Microcrystalline wax is harder and lasts longer than beeswax. Even so, a five-yearly maintenance cycle of cleaning and re-waxing should be anticipated. It is important that wax is buffed well because the timber surface will attract dirt if the wax is left tacky. Tung oil and linseed oil are both traditional plant-based surface treatments for timber. Tung oil is preferable because it is less susceptible to mould and mildew than linseed oil.

Covering inscription panels with acrylic sheet (such as Perspex) is not advised. The glare makes the text beneath difficult to read and the acrylic sheet can trap moisture and cause deterioration.

4.4.4 Pest management

If there is evidence of active insect infestation, such as the presence of fresh, sharp-edged emergence holes and powdery ‘frass’, an integrated pest management approach to treatment should be followed. This consists of controlling organisms by eliminating the source of water and thus reducing the moisture content of timber.

Biocides should only be used where there is a specific requirement – and in minimum quantities. Growing concern for the environment has made the automatic use of biocides obsolete and untenable. The Health and Safety Executive runs two regulatory schemes

that assess the safety of biocides and the active substances within them and impose conditions on the use of biocides. Further information can be found at hse.gov.uk/biocides/introduction.htm.

For detailed advice on dealing with timber decay and infestation, see Historic England's *Practical Building Conservation: Timber* (2012) and *Timber Decay in Buildings and its Treatment* (2019).

4.4.5 Maintenance

Although often neglected, routine management and maintenance are fundamental to the care and conservation of timber war memorials. Regular and timely maintenance can often reduce the need for more expensive and intrusive treatments in the future. For example, clearing away leaf litter and making sure rainwater is draining away safely will help prevent moisture-related defects from developing. Cutting back overhanging trees and foliage will reduce moisture run-off and make it less likely that the structure will be damaged by a falling branch during a storm.

Re-waxing or re-oiling will normally need to be carried out on a three- to five-year maintenance cycle.

Figure 4.12: The branches of nearby trees have been allowed to encroach on the roof of this lychgate. They will increase moisture run-off and could cause structural damage if any of them were to break and fall.

5. Getting the work done

Planning for maintenance and repair ensures that actions are taken in an appropriate and timely way, and that the necessary resources are available when required. War memorials should ideally be surveyed and assessed in detail at five-yearly intervals; memorials within the curtilage of a church should be included in the quinquennial inspection. More frequent inspections can be made by custodians to keep an eye on general conditions and to look out for problems as they occur. Additional inspections should be made after stormy weather.

An inspection checklist will help to ensure nothing is missed. There is a war memorial condition survey template in the Historic England publication The Conservation, Repair and Management of War Memorials that can be used to record any findings. You can upload photographs and condition information to document your regular maintenance checks.

Ideally, larger repair projects should be led by a conservation-accredited architect or surveyor and carried out by suitably skilled and experienced craftspeople. Smaller projects that involve specialised areas of work might instead be led by a specialist contractor, such as an accredited conservator. Tasks such as periodic re-waxing or re-oiling could be carried out by non-professionals following instructions prepared by a timber conservator. Many essential day-to-day maintenance tasks, such as keeping gutters and rainwater drainage free from obstructions and in good working order, can be carried out by volunteers. They may also be available and willing to raise funds for appropriate works.

The success of a repair project depends on:

- Availability of sufficient funding
- Well-defined objectives and a robust conservation options appraisal
- Clear and unambiguous schedules and specifications or method statements for the works required
- Realistic timescales for the work
- Availability of people with necessary knowledge, skills and experience to carry out and supervise the works

Successful projects depend on a collaborative approach and good communication between professionals, craftspeople and custodians. Contact details for appropriate professionals can be found in Section 7 – Where to get advice. War Memorials Trust offers a range of helpsheets and details on grants. Further information is also available in Historic England's The Conservation, Repair and Management of War Memorials. For detailed advice on planning and managing repair projects and maintenance programmes, see Historic England's *Practical Building Conservation: Conservation Basics* (2013).

Getting consent for repairs

Many war memorials are included in the National Heritage List for England. The listing celebrates buildings and monuments of special architectural or historic interest and encourages sympathetic and sustainable management. All listed buildings of any grade are legally protected, and any proposed work may require Listed Building Consent or Scheduled Monument Consent or Faculty Consent from the Church of England. These consents help ensure that proposed changes maintain the monument's significance and that appropriate methods and materials are used in any repairs. Advice should be sought from Historic England before any work is undertaken to a memorial that is a scheduled monument or within a scheduled area. Regardless of whether a war memorial is legally protected, it is essential to consult with the custodian and community before doing any works.

6. References and further reading

All of Historic England's technical advice on caring for war memorials can be found at historicengland.org.uk/advice/technical-advice/war-memorials/.

Historic England publications

These are available online and from retail.historicenglandservices.org.uk/.

Caring for Historic Cemetery and Graveyard Monuments (webpage)

Conservation Principles, Policies and Guidance (2008)

Conservation and Management of War Memorial Landscapes (2016)

Statements of Heritage Significance: Analysing Significance in Heritage Assets (2019)

The Conservation, Repair and Management of War Memorials (2015)

Historic Environment Good Practice in Planning Note 3: The Setting of Heritage Assets(2nd edition) (2017)

The War Memorials Listing Project (webpage)

Timber Decay in Buildings and its Treatment (2019)

Practical Building Conservation

This series of fully illustrated books published by Routledge provides detailed guidance on understanding, deterioration, assessment, and care and repair. The books are available to purchase online at routledge.com/Practical-Building-Conservation/book-series/PBC.

Practical Building Conservation: Building Environment (2014)

Practical Building Conservation: Concrete (2013)

Practical Building Conservation: Conservation Basics (2013)

Practical Building Conservation: Earth, Brick and Terracotta (2015)

Practical Building Conservation: Glass and Glazing (2012)

Practical Building Conservation: Metals (2012)

Practical Building Conservation: Mortars, Renders and Plasters (2012)

Practical Building Conservation: Roofing (2014)

Practical Building Conservation: Stone (2012)

Practical Building Conservation: Timber (2012)

War Memorials Trust

War Memorials Trust aims to help all war memorial custodians, whatever the nature and size of their war memorial, by facilitating repair and conservation projects through grant funding and/or best conservation practice advice. Grants are available to support the repair and conservation of war memorials in the UK, Channel Islands and Isle of Man.

War Memorials Trust have a series of helpsheets on a range of topics relating to caring for war memorials. **Titles include:**

'Conservation contractors and professional advisors'

'Fundraising for war memorial projects'

'Looking after your war memorial'

'Ownership of war memorials'

'Preparing a method statement'

'Researching the history of a war memorial'

'Starting a war memorial restoration project'

'Types of contractors and their roles'

7. Where to get advice

General advice

War Memorials Trust and War Memorials Online
14 Buckingham Palace Road
London SW1W 0QP
020 7233 7356 or 0300 123 0764
conservation@warmemorials.org
www.warmemorials.org

Historic England
4th Floor Cannon Bridge House
25 Dowgate Hill
London EC4R 2YA
020 7973 3700
customers@HistoricEngland.org.uk
historicengland.org.uk

Details of all listed war memorials can be found at historicengland.org.uk/listing/the-list

Historical research

Commonwealth War Graves Commission
2 Marlow Road
Maidenhead
Berkshire SL6 7DX
01628 634221
enquiries@cwgc.org
www.cwgc.org

Public Statues and Sculpture Association
pssauk.org

War Memorials Register: Imperial War Museums
memorials@iwm.org.uk
www.iwm.org.uk/memorials/search

Conservation professionals, specialist contractors and conservators

c/o Building Conservation Directory
Cathedral Communications Ltd
High Street
Tisbury
Wiltshire SP3 6HA
01747 871717
info@buildingconservation.com
buildingconservation.com

Conservation Register (for conservators of materials)
c/o Institute of Conservation
106–109 Saffron Hill
London EC1N 8QS
020 3142 6799
admin@icon.org.uk
conservationregister.com

Conservation Register (for conservation architects)
c/o Royal Institute of British Architects
66 Portland Place
London W1B 1AD
020 7580 5533
conservation.register@riba.org
architecture.com/knowledge-and-resources/resources-landing-page/find-a-conservation-architect

Directory of Accredited Conservationists
c/o Chartered Institute of Architectural Technologists
397 City Road
London EC1V 1NH
020 7278 2206
info@ciat.org.uk
ciat.org.uk/find-a-practice/find-an-accredited-conservationist.html

Register of Accredited Building Conservation Surveyors
c/o Royal Institution of Chartered Surveyors
12 Great George Street
London SW1P 3AD
024 7686 8555
contactrics@rics.org
ricsfirms.com/accreditations/building-conservation-accreditation-scheme/

Register of Architects Accredited in Building Conservation
41 Bengal Street
Manchester M4 6AF
0161 832 0666
administrator@aabc-register.co.uk
www.aabc-register.co.uk/

8. Acknowledgements

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Contact Historic England

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Brooklands
24 Brooklands Avenue
Cambridge CB2 8BU
Tel: 01223 582749
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HistoricEngland.org.uk

Fort Cumberland
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Eastney
Portsmouth PO4 9LD
Tel: 023 9285 6704
Email: fort.cumberland@
HistoricEngland.org.uk

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25 Dowgate Hill
London EC4R 2YA
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Bristol BS1 6JQ
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HEAG324
Publication date: v1.0 November 2024 © Historic England
Design: Historic England