



Historic England



War Memorials Trust

# Conserving War Memorials

## Structural Problems and Repairs



# Summary

This technical note describes good practice for diagnosing and understanding the structural problems found in war memorials, with a focus on freestanding masonry and memorials built of concrete. It details what specialist advice may be required, and the steps that might follow diagnosis, including structural monitoring, emergency works and structural repair options. It also indicates where to get further help and advice.

This note is intended for architects, building surveyors, structural engineers, project managers, contractors, craftspeople, conservators, and anyone else interested in the designing, specifying, conserving, and repairing of freestanding war memorials. It will also be of interest to those responsible for making decisions, such as local authority conservation officers, custodians, or volunteer groups.

This technical advice note forms part of a series of resources produced by Historic England, to coincide with the centenary of the First World War, that cover the overall approach to caring for war memorials as well as some of the more poorly understood technical aspects. They include:

- guidance on how to record, repair, conserve, maintain, and protect these unique monuments for future generations: *The Conservation, Repair and Management of War Memorials* and *Conservation and Management of War Memorial Landscapes*
- short technical advice notes covering inscriptions, structural problems and repairs, and maintenance
- case studies on conservation options for specific war memorial issues
- films on technical aspects of war memorial conservation

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## Front cover

**Top left:** Runnymede Memorial © CTP Consulting Engineers

**Top right:** Cookham Dean.

**Bottom left:** Waterloo Memorial, Bilinge. © Blakett-Ord Conservation

**Bottom right:** Civilian War Memorial, Stoke Newington.  
© London Stone Conservation

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# Introduction

War memorials are built to provide a visible, long-lasting remembrance of people or events, and hold communal value as a focal point for commemoration. In addition, many war memorials are of significant architectural, historic or artistic merit, and are an established and valuable part of the local historic environment. Their condition and the legibility of inscriptions may be seen as a measure of respect shown to the commemorated.

Most free-standing masonry war memorials are constructed simply: a shallow foundation (of concrete, brick or stone), a core construction of brick or concrete that provides a solid support, and the finishes which are generally of stone and may comprise a cross or monolith. Many war memorials are listed, and generally, work can only be carried out after consent has been obtained.

Further information on the variety of war memorials can be found in the Historic England document, [Types of War Memorial](#), available on the Historic England website.

## Definition

War Memorials Trust defines a war memorial as ‘any physical object created, erected or installed to commemorate those involved in or affected by a conflict or war.’

Although a war memorial might usually be thought of as a plaque, a freestanding cross or perhaps a bronze statues of a soldier on a pedestal, this definition allows for a vast array of different types.

The full range of memorials in the United Kingdom can be seen at [War Memorials Online](#) as well as researched through the [Imperial War Museum’s War Memorials Register](#).

It is not possible within the scope of this guidance to cover all the different types of memorials, so the focus is on those that are the most commonly seen across the country. These include plaques, crosses, obelisks, cenotaphs, sculpture, arches and lych-gates. Complete buildings, such as chapels, hospitals and community halls, along with objects such as windows, organs, rolls of honour, flags and seats have been excluded. However, some of the approaches covered in this guidance are still relevant; advice on the care of individual artefacts or historic fabric can be found through the Conservation Register. see [Where to Get Advice](#).



**Figure 1**  
Access platform for inspection, Runnymede Memorial,  
which is in the care of the Commonwealth War  
Graves Commission.

## Getting consent

Many war memorials are included in the *National Heritage List for England*. Listing celebrates buildings and monuments of special architectural or historic interest and encourages sympathetic and sustainable management. If a war memorial is listed any proposed work, including investigations and monitoring may require listed building consent from the local authority. Permission to carry out demolition (which includes full or partial dismantling and rebuilding, and relocation) of a war memorial (whether it is listed or not) within a conservation area must be obtained from the local authority planning department.

If a war memorial is a Scheduled Monument or within a scheduled area, contact Historic England. Listed Building Consent helps ensure that any proposed changes maintain the monument's significance and that appropriate methods and materials are used in any repairs. Before carrying out work on a war memorial it is worth consulting with the conservation or planning department at your local planning authority to establish what permissions are needed.

# 1 Is There Really a Problem?

War memorials were usually built a short while after the end of a conflict. Since the period after the First World War was an austere one, construction was not always of high quality. Poor concretes and weakly cemented rubble or brick cores were common. Even war memorials that look well built and sound may suffer from hidden defects of their age: for example, the inclusion of ferrous metal cramps to tie stonework, which corrode over time.

Though serious structural problems are not usually found in war memorials, there are various ways in which they can be compromised. Inadequate foundations can cause settlement, and vulnerable stonework can work loose over time. The most common structural defects, though, are leaning and cracking.

An incorrect diagnosis can lead to unnecessary or ineffective interventions. For example, simple indent repairs of spalling stonework may be insufficient if the root cause of fractures is corroding ferrous metal cramps or steel reinforcement.

The cause of defects may include:

- inappropriate detailing for runoff, allowing water to collect and penetrate or freeze
- erosion of the joints between stones, allowing them to move
- the corrosion of embedded metalwork: such cramps and pins; causing cracking or loss of the facing

- ground subsidence, which can cause leaning
- settlement or differential settlement
- movement causing opening up of joints
- vandalism or theft of parts
- vehicle collision

The professional is normally called when one or more of these defects is suddenly noticed or gets significantly worse over successive seasons.

The leaning of a war memorial is not necessarily a structural concern. A structural engineer may inspect, monitor and conclude that a leaning memorial is not at risk, as the movement is historic and not ongoing. However, custodians may still wish to rectify the lean because they feel it is disrespectful to those remembered. As stated in *Principles of practical conservation*, it is the value we associate with the war memorial that affects the appropriate degree of intervention.

## Principles of practical conservation

Conservation of a memorial should never be thought of solely in terms of practical treatment. It is intrinsically linked with the values that we associate with it; establishing these values will affect the degree of intervention that is considered appropriate. Since the mid-19th century a number of manifestos and charters have sought to set down the underlying principles that should govern the work to historic buildings and monuments. These are described in detail in *Practical Building Conservation: Conservation Basics* (Historic England, 2012).

A number of phrases such as 'reversibility' and 'minimum intervention' are often used to summarise these principles. However, these do not do justice to the complex series of questions that need to be asked when considering the need for intervention on war memorials.

When considering options for practical repair, there are a number of overriding criteria that should be taken into account:

- Only materials which have been demonstrated to be appropriate to the original fabric should be considered. These will normally be the same or similar to the host material. Where this is no longer possible (for example original stone is not available), the technical and aesthetic properties must be compatible with the original
- Any method should aim to be the least interventive to achieve the desired aims; this might mean using a gentle water-based cleaning system rather than an abrasive method
- Interventions should aim to maximise the life expectancy of the memorial while retaining as much of the original fabric as possible. For a memorial, this might mean deciding to retain features if they can be repaired or if they are still performing their function
- Interventions should aim for reversibility (that is they can be removed without having affected the original fabric) although in many cases this may be neither feasible nor practicable
- Interventions should not preclude repeated or other interventions in the future. This concept of 'retreatability' 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

# 2 Getting Specialist Advice

Most war memorials are relatively small, and the professional fees allocated to diagnose and solve problems may be modest. It may be difficult to engage a range of specialist professionals to advise, although sometimes funding may be available to facilitate this.

If the defects appear to be predominantly structural, the custodian should initially seek advice from a chartered engineer. Engineers engaged for such work should have conservation knowledge, skills and experience of the repair of similar historic structures. The Institutions of Civil Engineers (ICE) and Structural Engineers hold a register of chartered engineers and manage the [Conservation Accreditation Register for Engineering \(CARE\)](#) which lists accredited conservation engineers.

A structural engineer can:

- undertake an onsite inspection
- assess information on local ground conditions
- undertake or commission plumb surveys to measure a lean
- commission trial pits to understand the foundations
- undertake monitoring
- specify repairs
- commission and manage the works

A conservation engineering approach should be adopted by the engineer that:

- assesses the risks to historic fabric
- considers a range of options to solve a problem, which may include no action or just monitoring
- appraises the minimum intervention that can be safely adopted to repair defects
- maximises the retention of historic fabric
- makes repairs 'readable' so they can be understood by future inspectors

# 3 Understanding the Causes

## 3.1 Background research

A chartered structural engineer will first undertake a desktop study with the help of the custodian.

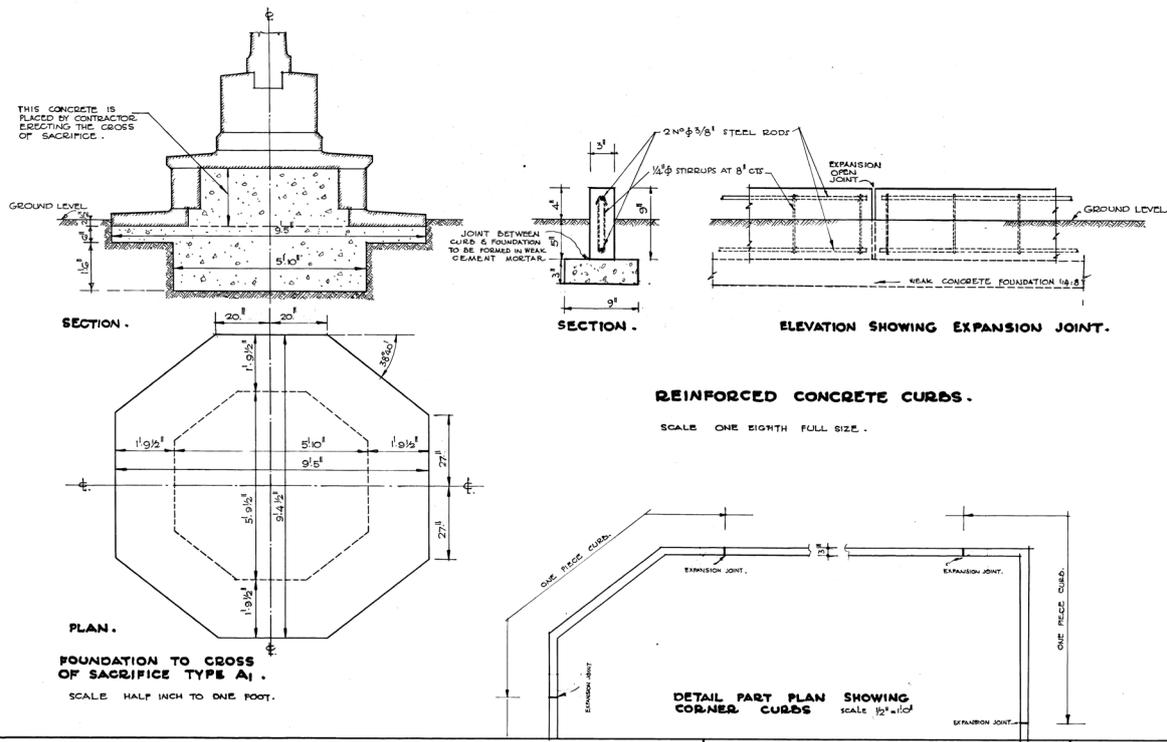
Useful information will include: the date of construction, archive photos, details of previous interventions, a statement of significance, a conservation maintenance plan, the likely subsoil conditions, and proximity of drains and trees, past and present.

Good archive photos can allow inspection of the past condition. In the case of many smaller war memorials, however, records may not have been kept or are difficult to track. Such searches may yield limited or no information.

There is a range of online resources for research listed at the end of this document.



Figure 2  
Record photograph of Arnos Vale war memorial.



**GWERU CEMETERY.**

DETAILS OF FOUNDATION TO CROSS - DETAILS OF R.C. CURBS.

IMPERIAL WAR GRAVES COMMISSION - E.D.

DRAWN BY:  
*[Signature]*  
 14.5.52

*[Signature]*  
 A.A.

*[Signature]*  
 D.D. OF W.

**DRAWING NO**  
**GW/E.D./4**

Figure 3  
 Foundations of Cross of Sacrifice, Gweru,  
 which is in the care of the Commonwealth War  
 Graves Commission.

## 3.2 Structural survey

This is an on-site inspection. Its purpose is to record the defects in the structure and the materials of construction, and draw conclusions from the facts to make further recommendations. These may include monitoring, testing or trial holes.

The survey will help identify issues such as:

### Defects

- Stone laid in incorrect bedding planes
- Detailing that prevents rainwater from running off
- Use of ferrous cramps
- Lean, loss of plumb
- Individual parts that are coming away from the main body
- Lack of cover to reinforcement embedded in concrete

### Lack of maintenance

- Water ingress and frost degradation
- Inappropriate use of mortars or renders
- Microbiological or vegetation growth
- Leaking, blocked or collapsed drainage
- Past, aggressive cleaning regimes

### The surrounding environment

- The proximity of trees, past or present, causing movement on clay soils, physical root damage or damp from the shadow of branches
- The orientation of the memorial and exposure to sun, wind, driving rain and sea salts, causing the erosion of bed joints, failure of masonry and accelerated corrosion in ferrous metals
- Exposure to high pollution levels, currently or historically: causing failure of masonry
- Burials or vaults beneath them, especially in churchyards, causing subsidence as the memorial keels into voids
- Vulnerability to vehicle impact or vibration, road de-icing salts or buffeting from lorries, causing a range of defects, including the failure of low-level masonry, the shaking loose of stones or complete demolition

The detail in the survey report may vary according to the size of the structure. For a simple small war memorial this may run to two or three pages (plus photographs), describing the observations, likely causes and conclusions. A survey report for a large war memorial may be significantly longer and be updated with the results of later investigations, tests or monitoring.

Work to a large monument may require a dimensional survey to be undertaken by a specialist and delivered as hard copy or electronic drawings. This allows a more accurate definition of the repairs and if necessary helps prepare an application for Listed Building Consent.

Laser scanning is an effective way of collecting data for both a dimensional survey and to establish lean. However, it may only be cost effective for larger war memorials.

The structural survey will assist in the preparation of schedules of work and consents. It will also be helpful in supporting grant applications.



**Figure 4**  
Corrosion of ironwork at the Nicholas War Memorial, Leek, Staffordshire.

**Figure 5**  
Settlement at the Abergavenny War Memorial, Monmouthshire, has resulted in the memorial leaning to one side.

**Figure 6**  
Curvature of the stone obelisk at the Waterloo Memorial, Billinge, Merseyside.

**Figure 7**  
Scaling of stonework, Alnwick Memorial, Northumberland.

### 3.3 Structural investigations and monitoring

#### The need for investigations

Before any work is done, a structural engineer should inspect the memorial and record any defects. Often this inspection is all that is needed to identify problems. However, in some cases, monitoring and further investigations may be required to improve understanding. This is especially the case with problems related to the core of a war memorial, which cannot be observed by surface inspection. If maintenance has not been kept up, cores can suffer from water ingress, softening of binders or washing out of the fine material. This may make them susceptible to frost heave, seasonal ranges in temperature or local internal collapse.

The structural engineer should explain why investigations are required and offer estimates of their likely cost.

It may sometimes be more cost effective to investigate the cause of a defect once other repairs are underway. If applying for a grant, this will need to be discussed with funders. Time frames for projects need to be realistic to enable appropriate consultation. For example, on a small war memorial, the excavation of trial pits may cost nearly as much as local shallow underpinning.



**Figure 8**  
Settlement at Titchfield war memorial, Hampshire, has resulted in the memorial leaning to one side.

**Figure 9**  
A well-constructed core at Cookham Dean, Berkshire. Here the brickwork has been rebuilt before the rebuilding of the Bath Stone stonework.

## Monitoring

In cases where there has been movement, a structural engineer can undertake monitoring to see whether the rate of movement has been significant. This may include the monitoring of individual cracks, lean or settlement.

Monitoring may be advisable if the diagnosis is likely to call for highly intrusive works, such as dismantling and rebuilding. Best conservation practice seeks to establish whether a threat or risk exists to the structure before particularly extensive or invasive works are undertaken. A set of results that shows trends in movement will help with understanding the problem and quantifying the risk.

It is important to set a time scale for monitoring. This would typically be a minimum of a year in order to understand whether there are seasonal variations in movement, but it should not be significantly longer to keep attention focused on diagnosis and solutions.

## Geotechnical Investigation

A simple geotechnical ground investigation can help diagnose the cause of settlement or lean.

This may involve arranging for simple shallow pits to be dug near the war memorial, and commissioning a geotechnical surveying company to record strength parameters for the subsoil by shallow probing. This will establish:

- the type of subsoil
- the bearing strata
- if clays are present, the depth of desiccation
- the depth of existing foundations and bearing strata
- the thickness of retaining walls and construction
- the existence of vaults below, construction and whether failed

## High level access

High-level access can permit a closer view of some defects if binoculars or telephoto lens photography provides insufficient detail. This may require the hire of a scaffolding tower or, more commonly, a mobile access platform. Platform hire charges may seem disproportionate for a small war memorial, but safe access is a priority. A platform will allow:

- fingertip inspections, e.g. extent of loss of mortar, cracking to masonry
- a cover survey of corroding embedded metal
- a plumb survey or use of spirit level

## Removal of finishes

Further opening up may be necessary if masonry or render is losing integrity. This allows inspection of concealed elements such as poor-quality brick of cores, or ferrous cramps.

## Removal and analysis of material samples

This assists with the specification of repair of elements such as pointing, render and replacement stone. Historic England's publication [\*Sourcing Stone for Historic Building Repair\*](#) provides further guidance about identifying and sampling stonework.

# 4 Repairs

Repairs need to be specified after investigation and diagnosis. The repairs outlined below are typical of the options available, but works to war memorials should be treated on a case-by-case basis.

Repairs should also adhere as closely as possible to the *Principles of practical conservation*.

## 4.1 Emergency works measures

Emergency works may occasionally be required. If a war memorial or any part of it has been identified as being unstable or unsafe, the first priority is to securely cordon it off and put up visible warning signs, in liaison with all relevant parties. However, barriers provide only a short-term solution, and require daily inspection to ensure that they have not been breached. It is unacceptable to use barriers around a historic monument for a prolonged period of time; they are not a substitute for considered conservation action.

A structural engineer will give guidance on the design of any temporary support that should be provided to any parts of the structure that appear unstable. This support will normally be in the form of structural timbers cut to wrap and prop the fabric. The metal ends of standard props should be timber-plated or cushioned so that masonry will not be damaged.

Dismantling should only be an option of last resort, since if it is not undertaken appropriately, it may cause even more damage. In addition, if a war memorial is dismantled or inaccessible, it is not able to perform its commemorative function. This might cause distress to some in the community.

For these reasons, the decision to dismantle a monument must be made by conservation professionals, who should supervise the work. It is important to allow for recording by photography and measurement before, during and after any emergency works.

## 4.2 Repairs to cracks

The underlying causes of cracking must be understood before repairs are carried out. Otherwise the work may simply re-open shortly after completion. However, it may not be possible, affordable or appropriate to correct the cause. In the case of slight foundation movements, for instance, re-cracking is likely to occur and mitigation measures will be needed.

In the case of stonework, the type of repair will depend on the severity of the cracking and the location and function of the stone. Options for repair to cracking of masonry joints and render include:

- localised raking-out and repointing with appropriate (usually lime-based) 'like for like' mortar
- stitching with bars or dowels
- stabilisation with synthetic resin injection, followed by raking and repointing



**Figure 10**  
Cracking beyond fingertip reach recorded by telephoto lens, Southborough War Memorial, Kent.



**Figure 11**

An old crack previously and successfully sealed with resin. Southborough War Memorial, Kent.

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If the cracking is restricted to the joints, then it may be simply a matter of grouting and repointing with appropriate mortar. If the stones are cracked, and the pieces on either side have moved, then some localised dismantling and rebuilding may be required, possibly incorporating new stones to replace the cracked ones to bridge the crack. Alternatively, additional support can be given by the introduction of a helical stainless steel bar, set perpendicular to the fracture.

A skilled contractor or conservator may sometimes specify that pinning with dowels can be used to give structural support and cohesion to individual stone elements. In the event of any subsequent movement, pinning may cause cracking elsewhere, either within the same stone or in adjacent stones. Surfaces to be bonded together should always be carefully cleaned and pieces fitted together dry to identify contact areas.

For larger pieces of stone, a thixotropic, moisture-insensitive epoxy resin may be applied, keeping the adhesive back from the edges. Most of these adhesives require a minimum temperature of 10°C to cure. Smaller sections of stone (typically less than 50mm in all three dimensions) can be joined more flexible compounds, such as finely ground lime mortar or lime and casein glue. Minor gaps can be filled with appropriate mortar.

In many cases, the repair of fractured stone will require the use of pins as reinforcement. The number, depth and type of pins will depend on the cross-section of stone, the nature and soundness of the material, and the location and shape of the fracture. Where pinning is required, holes should be drilled at slow speed, using a non-percussive variable-speed drill with tungsten carbide or diamond-tipped bits.

Threaded or deformed rods of austenitic stainless steel should be used for pinning, not smooth bars. Austenitic stainless steel is the standard choice because it does not corrode. Alternatives such as fibreglass and carbon fibre can be used because they are inert; however, the surface will need to be hatched or roughened to provide a rough key. If iron cramps have corroded and need to be replaced, they should first be carefully removed using a drill or chisel and then replaced by stainless steel.

### 4.3 Work to the core

Core work can suffer from retention of water, softening of binder or washing out of fine material.

Options for restoring integrity to an inadequate core include:

- **Do nothing.** This is acceptable if the core is substantially without voids and there has been no internal collapse.
- **Grouting.** This reduces water penetration through the walls and contributes to structural stability. Most grouts used for conservation purposes are based on low strength naturally hydraulic or non-hydraulic lime with pozzolanic additives. Grouting must be conducted in a controlled manner, and method statements must demonstrate how the flow will be controlled to avoid unwanted spillage and penetration is measured.
- **Localised rebuilding** of masonry, sufficient to re-bed the finishes and make them stable
- **Complete dismantling** and reconstruction of the core in cases of extensive internal collapse and loss of integrity



**Figure 12**  
Shuttering and reinforcement in preparation for laying of new foundations, Civilian War Memorial, Stoke Newington.



**Figure 13**  
Corroded cramps at Waterloo Memorial,  
Billinge, Merseyside.

#### 4.4 Cramps and pins

Metal cramps and pins are metalwork that hold masonry together. In the past, they were often made of ferrous metals, making them vulnerable to rusting once a path for water ingress has developed. This may cause expansion, which can then lead to cracks and spalling of the masonry face. The following options are available:

- **Do nothing.** This is only acceptable if the deterioration has been arrested by repair to prevent further water ingress.
- **Maintain.** In some cases, it is simply appropriate to repoint stonework that has been poorly maintained to prevent further water ingress.
- **Treat cramps.** Where stonework has spalled only lightly, it may be best to coat the cramp with a protective coating or rust inhibitor and install a stonework indent.
- **Remove cramps.** If they are consistently and heavily corroded it may be best to remove them, which will be a significant intervention. If structurally necessary, they should be substituted with an inert material such as austenitic stainless steel.

## 4.5 Foundations

Options for addressing adequate foundations include:

- **Do nothing.** If a significant amount of time has passed since the settlement occurred, the movement may be historic and complete.
- **Monitoring.** To find out whether movement is active.
- **Ground stabilisation by grouting.** This can be used where there is uneven movement. It involves grouting into the ground beneath and around the war memorial. An understanding of the soil types is essential, as it is not suitable for all soils. The war memorial does not need to be dismantled.
- **Local underpinning** or hybrid solutions that seek to address settlement without dismantling the war memorial. An innovative approach may be worthwhile to minimise intervention, but only if it can resolve the problem, or not cause more long-term damage from differential settlement. Underpinning requires access for excavating on one or more sides of the memorial, since it is often necessary to dig back a significant section to install a suitable underpin. This may not always be feasible where the war memorial is in close proximity to other structures.
- **New foundations.** This option requires the dismantling of the war memorial, the construction of a new foundation and the rebuilding of the memorial. Dismantling brings significant risk of damage to historic components, but may sometimes be unavoidable. New foundations are almost always constructed in concrete, and may include deeper mass bases, a reinforced raft slab, or piled beams or slabs.

It is important to assess archaeological risk when planning a project, as war memorials are often in graveyards and on other sites of cultural significance. Further information can be found at: [www.archaeologists.net/codes/cifa](http://www.archaeologists.net/codes/cifa).

## 4.6 Dismantling and rebuilding

Where stitching, pinning or grouting cannot provide required stability, the affected masonry may need to be at least partly dismantled and rebuilt. This is very invasive, and should not be performed as an improvement on the original construction or to correct what may be seen to be flaws. The aim should be to reinstate structural cohesion and unity.

Dismantling and rebuilding demands a careful and methodical approach as well as a thorough understanding of the way the structure was originally built. That information can then be used to replicate materials and methods as closely as possible.

Extensive rebuilding may mean adding some new stone. Replacement of stonework can range from minor indents to significant elements. Missing or badly damaged parts should generally not be replaced just because they are weathered, but rather for structural, safety or functional reasons. Indenting only the damaged sections of the stone is preferable, as this allows retention of as much original fabric as possible. However, if the damage is too great, complete replacement may be the only option.

If there is an obvious flaw in the original design, it may be necessary to modify it if this rectifies a defect.

## 4.7 Replacement materials

Replacement of stone or brickwork is usually specified by the lead professional on the project. Further information can be found in Historic England's guidance document, *The Conservation, Repair and Management of War Memorials*. Historic England's publication *Sourcing Stone for Historic Building Repair* provides further guidance about identifying and sourcing suitable replacement stone.

## 4.8 Documentation

The tender and contract documentation for works may vary in according to the size of the war memorial and extent of repairs. They may comprise, in combination:

- Neat hand sketches and/or annotated photographs and/or full computer-generated drawings
- A written schedule of works, part of a specification of works to allow clear pricing of the works
- Details of the contract, including programme dates, terms of payment, retention and the naming of parties

## Relocation of memorials

War memorials were usually located in places chosen by the community. They should therefore be preserved in their original position unless there is a very good reason not to do so. Some locations were chosen because they had particular importance, such as where soldiers signed up. Others commemorate connections other than to regiment or service, for example memorials in schools, clubs or workplaces.

Relocation should only be considered if the current position is putting the memorial at risk or it has become inaccessible to the public. War Memorials Trust has a helpsheet, *Relocation of War Memorials* that provides further guidance. In almost all cases, there are alternatives to relocation, such as altering access arrangements, managing traffic or reconsidering development proposals. In extreme cases in which movement is the only option, the new location should ideally have a geographical or social link with the original community. If a memorial, such as a plaque, is attached to a building that is to be redeveloped it should if possible be retained on site. Where the relocation is driven by development, the cost should normally be borne by the developer, whether private, commercial or a public authority.

If relocation is considered the only viable alternative then a new site should be established before the monument is dismantled. The existing structure should be carefully recorded and a detailed schedule for its movement, storage and re-erection should be drawn up. This should all be supervised and carried out by experienced professional contractors. Relocation can be a high-risk process as the true condition of the memorial and its internal fixings may remain unknown until the work begins.

## 4.9 Site works

The contractor must have proven skills in this type of repair, working sensitively and with respect on historic buildings and structures.

It is important to maintain adequate levels of supervision to ensure the required quality of work is obtained. The works will need to be inspected regularly while repairs are being carried out. The structural engineer should discuss methods of working with the contractor, focusing on key stages: dismantling, secure storage of components and the co-ordination of individual trades such as groundwork and stonework.

Virtually everyone involved in a construction project has legal duties under *The Construction (Design and Management) Regulations 2015*. The structural engineer will usually have the role of designer or principal designer. The Health and Safety Executive will not need to be notified about the majority of works on war memorials. However, the professionals and contractors involved should assist the custodian to ensure that the health, safety and welfare of the workers and the general public and the necessary protective measures are put in place.

# 5 References and Further Reading

## 5.1 Historic England

Historic England publications are available from:  
[www.HistoricEngland.org.uk/images-books/publications](http://www.HistoricEngland.org.uk/images-books/publications)

Caring for Historic Graveyard and Cemetery Monuments  
[www.HistoricEngland.org.uk/images-books/publications/caring-historic-graveyard-cemeterymonuments](http://www.HistoricEngland.org.uk/images-books/publications/caring-historic-graveyard-cemeterymonuments)

Conservation Area Designation, Appraisal and Management  
[www.HistoricEngland.org.uk/images-books/publications/understanding-placeconservation-area](http://www.HistoricEngland.org.uk/images-books/publications/understanding-placeconservation-area)

Conservation Principles, Policies and Guidance  
[www.HistoricEngland.org.uk/images-books/publications/conservation-principles-sustainablemanagement-historic-environment](http://www.HistoricEngland.org.uk/images-books/publications/conservation-principles-sustainablemanagement-historic-environment)

The Conservation and Management of War Memorial Landscapes  
[www.historicengland.org.uk/images-books/publications/conservation-management-war-memorial-landscapes/](http://www.historicengland.org.uk/images-books/publications/conservation-management-war-memorial-landscapes/)

Designation Listing Selection Guide: Commemorative Structures  
[www.HistoricEngland.org.uk/images-books/publications/dlsg-commemorative-structures](http://www.HistoricEngland.org.uk/images-books/publications/dlsg-commemorative-structures)

Graffiti on Historic Buildings and Monuments: Methods of Removal and Prevention  
[www.HistoricEngland.org.uk/images-books/publications/graffiti-on-historic-buildings-and-monuments](http://www.HistoricEngland.org.uk/images-books/publications/graffiti-on-historic-buildings-and-monuments)

Listing War Memorials in England: A Guide for Volunteers  
[www.historicengland.org.uk/images-books/publications/listing-war-memorials-in-england/](http://www.historicengland.org.uk/images-books/publications/listing-war-memorials-in-england/)

The Listing and Grading of War Memorials  
[www.historicengland.org.uk/images-books/publications/listing-and-grading-of-war-memorials/](http://www.historicengland.org.uk/images-books/publications/listing-and-grading-of-war-memorials/)

The Setting of Heritage Assets: Historic Environment Good Practice in Planning Note 3  
[www.historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/](http://www.historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/)

Sourcing Stone for Historic Building Repair  
[www.historicengland.org.uk/images-books/publications/sourcing-stone-for-historic-building-repair/](http://www.historicengland.org.uk/images-books/publications/sourcing-stone-for-historic-building-repair/)

Types of War Memorial  
[www.historicengland.org.uk/images-books/publications/types-of-war-memorial/](http://www.historicengland.org.uk/images-books/publications/types-of-war-memorial/)

War Memorials Parks and Gardens  
[www.historicengland.org.uk/images-books/publications/iha-war-memorial-parks-gardens/](http://www.historicengland.org.uk/images-books/publications/iha-war-memorial-parks-gardens/)

## 5.2 Practical Building Conservation

This series of fully illustrated books published by Ashgate provide detailed guidance on understanding, deterioration, assessment and care and repair.

*Practical Building Conservation: Basics* (2013)

*Practical Building Conservation: Building Environment* (2014)

*Practical Building Conservation: Concrete* (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* (2013)

*Practical Building Conservation: Stone* (2012)

*Practical Building Conservation: Timber* (2012)

## 5.3 War Memorials Trust

A complete A–Z of War Memorials Trust helpsheets can be found at: [www.warmemorials.org/helpsheets](http://www.warmemorials.org/helpsheets)

Condition Survey

[www.warmemorials.org/condition-survey-intro](http://www.warmemorials.org/condition-survey-intro)

Grants and funding

[www.warmemorials.org/grants](http://www.warmemorials.org/grants)

Ownership of war memorials

[www.warmemorials.org/uploads/publications/120.pdf](http://www.warmemorials.org/uploads/publications/120.pdf)

Preparing a method statement

[www.warmemorials.org/uploads/publications/48.pdf](http://www.warmemorials.org/uploads/publications/48.pdf)

Researching the history of a war memorial

[www.warmemorials.org/uploads/publications/122.pdf](http://www.warmemorials.org/uploads/publications/122.pdf)

Types of contractors and their roles

[www.warmemorials.org/uploads/publications/383.pdf](http://www.warmemorials.org/uploads/publications/383.pdf)

# 6 Where to Get Advice

## 6.1 General advice on war memorials

### War Memorials Trust

2nd Floor  
42a Buckingham Palace Road  
London SW1W 0RE

020 7233 7356 or 0300 123 0764  
[conservation@warmemorials.org](mailto:conservation@warmemorials.org)  
[www.warmemorials.org](http://www.warmemorials.org)

### Historic England

1 Waterhouse Square  
138-142 Holborn  
London EC1N 2ST

[HistoricEngland.org.uk](http://HistoricEngland.org.uk)

Details of all listed war memorials can be found at  
[HistoricEngland.org.uk/listing/the-list/](http://HistoricEngland.org.uk/listing/the-list/)

## 6.2 Historical research

### Commonwealth War Graves Commission

2 Marlow Road  
Maidenhead  
Berkshire SL6 7DX

01628 634221  
[www.cwgc.org](http://www.cwgc.org)

### Public Monuments and Sculpture Association

70 Cowcross Street  
London EC1M 6EJ

020 7490 5001  
[pmsa@btconnect.com](mailto:pmsa@btconnect.com)  
[www.pmsa.org.uk](http://www.pmsa.org.uk)

### War Memorials Online

War Memorials Trust  
42a Buckingham Palace Road  
London SW1W 0RE

020 7233 7356 or 0300 123 0764  
[www.warmemorialsonline.org.uk](http://www.warmemorialsonline.org.uk)

### War Memorials Register

c/o Imperial War Museum  
Lambeth Road  
London SE1 6HZ

020 7207 9851/9863  
[www.iwm.org.uk/warmemorials](http://www.iwm.org.uk/warmemorials)

## 6.3 Conservation Professionals, Specialist Contractors and Conservators

### Building Conservation Directory

c/o Cathedral Communications Ltd  
High Street  
Tisbury  
Wiltshire SP3 6HA

01747 871717

[info@buildingconservation.com](mailto:info@buildingconservation.com)

[www.buildingconservation.com](http://www.buildingconservation.com)

### Conservation Register (for Conservators of Materials)

c/o Institute of Conservation  
Unit 1.5 Lafone House  
The Leathermarket  
Weston Street  
London SE1 3ER

020 3142 6799

[conservationregister@icon.org.uk](mailto:conservationregister@icon.org.uk)

[www.conservationregister.com](http://www.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](mailto:conservation.register@riba.org)

[www.architecture.com/knowledge-and-resources/resources-landing-page/find-a-conservation-architect](http://www.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](mailto:info@ciat.org.uk)

[ciat.org.uk/resources/find-an-accredited-conservationist.html](http://ciat.org.uk/resources/find-an-accredited-conservationist.html)

### Institute of Civil Engineers

One Great George Street  
Westminster London SW1P 3AA

020 7222 7722

[www.ice.org.uk](http://www.ice.org.uk)

### The Institution of Structural Engineers

International HQ  
47-58 Bastwick Street  
London EC1V 3PS

020 7235 4535

[www.istructe.org](http://www.istructe.org)

### National Association Of Memorial Masons

1 Castle Mews  
Rugby  
Warwickshire CV21 2XL

01788 542264

[www.namm.org.uk](http://www.namm.org.uk)

### Register of Accredited

#### Building Conservation Surveyors

c/o Royal Institution of Chartered Surveyors  
Parliament Square  
London SW1P 3AD

0870 333 1600

[contactrics@rics.org](mailto:contactrics@rics.org)

[www.rics.org/uk/join/member-accreditations/building-conservation-accreditation/](http://www.rics.org/uk/join/member-accreditations/building-conservation-accreditation/)

### Register of Architects Accredited in Building Conservation

AABC Register  
No. 5 The Parsonage  
Manchester M3 2HS

0161 832 0666

[info@abc-register.co.uk](mailto:info@abc-register.co.uk)

[www.abc-register.co.uk](http://www.abc-register.co.uk)

## 6.4 Contact Historic England

East Midlands  
2nd Floor, Windsor House  
Cliftonville  
Northampton NN1 5BE  
Tel: 01604 735460  
Email: [eastmidlands@HistoricEngland.org.uk](mailto:eastmidlands@HistoricEngland.org.uk)

East of England  
Brooklands  
24 Brooklands Avenue  
Cambridge CB2 8BU  
Tel: 01223 582749  
Email: [eastofengland@HistoricEngland.org.uk](mailto:eastofengland@HistoricEngland.org.uk)

Fort Cumberland  
Fort Cumberland Road  
Eastney  
Portsmouth PO4 9LD  
Tel: 023 9285 6704  
Email: [fort.cumberland@HistoricEngland.org.uk](mailto:fort.cumberland@HistoricEngland.org.uk)

London  
1 Waterhouse Square  
138-142 Holborn  
London EC1N 2ST  
Tel: 020 7973 3700  
Email: [london@HistoricEngland.org.uk](mailto:london@HistoricEngland.org.uk)

North East  
Bessie Surtees House  
41-44 Sandhill  
Newcastle Upon Tyne NE1 3JF  
Tel: 0191 269 1255  
Email: [northeast@HistoricEngland.org.uk](mailto:northeast@HistoricEngland.org.uk)

North West  
3rd Floor, Canada House  
3 Chepstow Street  
Manchester M1 5FW  
Tel: 0161 242 1416  
Email: [northwest@HistoricEngland.org.uk](mailto:northwest@HistoricEngland.org.uk)

South East  
Eastgate Court  
195-205 High Street  
Guildford GU1 3EH  
Tel: 01483 252020  
Email: [southeast@HistoricEngland.org.uk](mailto:southeast@HistoricEngland.org.uk)

South West  
29 Queen Square  
Bristol BS1 4ND  
Tel: 0117 975 1308  
Email: [southwest@HistoricEngland.org.uk](mailto:southwest@HistoricEngland.org.uk)

Swindon  
The Engine House  
Fire Fly Avenue  
Swindon SN2 2EH  
Tel: 01793 445050  
Email: [swindon@HistoricEngland.org.uk](mailto:swindon@HistoricEngland.org.uk)

West Midlands  
The Axis  
10 Holliday Street  
Birmingham B1 1TG  
Tel: 0121 625 6870  
Email: [westmidlands@HistoricEngland.org.uk](mailto:westmidlands@HistoricEngland.org.uk)

Yorkshire  
37 Tanner Row  
York YO1 6WP  
Tel: 01904 601948  
Email: [yorkshire@HistoricEngland.org.uk](mailto:yorkshire@HistoricEngland.org.uk)

# 7 Acknowledgements

## Contributors

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