

1 Understanding War Memorials

War Memorials in NSW

There are more than 3000 war memorials in NSW. The centenary of the First World War provides an opportunity to focus on the condition and maintenance of these memorials for future generations to honour.

The artists and craftsmen are in many cases unknown. Many memorials are the work of local masons and artisans; others are by recognised Australian sculptors such as Gilbert Doble and Rayner Hoff. The diversity and individuality of these objects make them an important resource for future students of Australian art. Their inscriptions and insignia are a source of information for historians. Their beauty and symbolism make our war memorials an essential part of the Australian landscape. Many of our public parks and squares display war memorials in groups, often with First World War and Second World War and later memorials or plaques and commemorative features clustered together as focal points of collective memory and expression, particularly on ANZAC Day. The quality of their materials and craftsmanship illustrates the special reverence felt by our communities towards those who served in wars and conflicts. These are some of the values we want to uphold when managing war memorials and commemorative spaces or objects in our towns and cities.

Significance

No two war memorials in NSW are alike. Every one is a unique response to the need to commemorate those in our community who have served. War memorials possess their own, unique values both collectively and individually.

"Cultural significance means aesthetic historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects"
(Burra Charter)

Additional Information

Register of War Memorials in NSW is an initiative of the Trustees of the ANZAC Memorial (including the RSL), State Library of NSW and NSW Government. To learn more about war memorials in your area, or to upload details to the register, visit www.warmemorialsregister.nsw.gov.au

The NSW Government has established the Community War Memorials Fund to help protect and restore war memorials across NSW. Visit <http://www.veterans.nsw.gov.au>

References

K. Inglis, *Sacred Places: War memorials in the Australian landscape*, Third Edition, Melbourne University Publishing, 2008

Materials and styles

War memorials are made of a variety of materials such as sandstone, trachyte, marble, granite, brick, terracotta, concrete, bronze, copper, timber and cast iron, either separately or in combination.

The common types include the First World War "statue" (typically a Digger on a plinth, and more rarely other types of figurative sculpture, in stone or bronze), the "obelisk", the "cenotaph" and the column. We find memorial arches, gateways, fountains, halls and other utilitarian structures.

Post 1945 memorials come in an unlimited variety of designs and materials, from simple walls of remembrance to complex sculptural compositions. Many towns have both war memorials and an honour roll listing the names of those who served. Together they constitute a material record specific to our individual towns and localities.

The diversity of types, materials and settings makes it difficult to issue specific advice on suitable treatments and approaches. Every object calls for its own individual strategy.



Waverley Soldiers Memorial, Bondi.



Bowral War Memorial



Bega Boer War Memorial



Exeter War Memorial

Responsible care

It is vital to understand the physical properties of the different materials when planning maintenance work, repairs and when preparing memorials for commemorative events. For example masonry cleaning methods differ greatly between sandstone, marble and brickwork. Approaches to maintenance and repair and the types of skills required will vary from one memorial to another, depending on memorial type, complexity, condition and location. Any one memorial may require input from a number of different professionals and tradespersons depending on the construction method and materials.

A cautious approach

The essence of good care in managing cultural heritage places is to adopt a 'cautious' approach. Sprucing up or adding new commemorative elements to a war memorial, or altering setting, access or security, may involve risks. Decisions should balance the community significance and use of a war memorial with its physical condition and vulnerability. The aim of responsible care is to slow down the rate of decay and address causes of deterioration - not to 'restore' for appearance's sake. The challenge (in the words of the Australia ICOMOS Charter for Places of Cultural Significance, or "Burra Charter") is to do "as much as necessary but as little as possible", and to consider carefully what the long-term impact of our actions might be.

Conservation

Conservation is the best way to protect and safeguard war memorials. Before considering any work of repair, maintenance, renovation, alteration or enhancement affecting war memorials we should consider what strategies are appropriate to ensure long-term conservation.

"Conservation is an integral part of good management of places of cultural significance" (Burra Charter)

The memorial and its surroundings

Looking after the immediate surroundings of war memorials (paths, steps, gates, railings, trees, plantings, associated commemorative objects, flagstaffs, lighting, etc.) is part of the process of conserving war memorials. But we should consider what the impact will be of any changes we make to the site and setting. New works such as disabled ramps, paths and plantings should be sympathetic and compatible in design, materials and scale. They should not detract from the values of the memorial itself or involve unnecessary physical damage to stonework and sculpture.

For further enquiries msp@services.nsw.gov.au

2 Assessing the Condition of War Memorials

- Many of our older (Boer War, First World War) memorials are a century old. Though built from durable materials like stone and metal, they are a fragile resource especially when located in urban and coastal environments
- Before embarking on any works of repair, renovation, maintenance, alteration or enhancement affecting war memorials we need to understand the structure, materials and overall condition of our memorial
- A simple condition assessment, made for example every 3 to 5 years, can help quantify any damage or decay and judge what kind of skills or services, if any, you may need to call upon and how soon you may need them
- See other Information Sheets in this series to help you understand common defects and materials issues affecting war memorials
- Funding for condition assessments to establish priorities and scopes of work for war memorials at risk may be available through the Community War Memorials Fund and other sources (<http://www.veterans.nsw.gov.au/heritage/memorialsfund.html>).

Conservation

Providing information about the condition of the memorial, vulnerability to damage and any works undertaken is an important conservation process. Recording the monument before, during and after repairs with annotated drawings and photographs provides valuable information for future generations. Copies of the documents should be lodged in a public archive (such as a local/regional library or museum).

Most war memorials will not require repair or restoration. Some may require minor works of ongoing maintenance. A few may justify major works on the basis of sound evaluation of risks. Responsible management means knowing what action is required, if any, and when. It also means understanding the risks of ill-advised treatment or unsuitable repairs.

For sources of help and advice see **Information Sheet 3 'Finding Appropriate Skills and Expertise'**

Use other sheets in this series to explore specific materials and maintenance issues



Glossary

Algae

A group of organisms found in moist environments, usually bright green and slimy in texture

Alkali

The salt of an alkali metal element. Common alkali salts used in cleaning products are sodium hydroxide and potassium hydroxide

Brass

An alloy of copper and zinc, harder than copper but softer than bronze and less corrosion resistant

Bronze

An alloy of mainly copper (typically around 85%), tin and lead

Cairn

A pile of stones. Used literally or symbolically to mark graves

Cenotaph

A symbolic monument marking the grave of someone who is buried elsewhere. The basic form is a tomb chest on a plinth but many WWI memorials are modelled on the "stepped pylon" shape of the Cenotaph in Whitehall, London.

Consolidation

Stabilisation or strengthening using techniques that preserve as much historic material as possible.

Distilled water

Water with its impurities removed by boiling and condensation. De-ionised (or demineralised) water has also been purified using a chemical process to remove metal elements like calcium, sodium and iron.

Erosion

Process of breakdown of stone materials due to wind and weather

Gilding

Decorative application of gold leaf onto stone, wood and metal

Lichen

An organism consisting of a fungus living in symbiosis with an alga. Lichens come in many colors, and have a leafy or crusty appearance.

Limewash

A traditional surface finish consisting of lime mixed with water, sometimes modified with fats or oils for extra durability

Microclimate

Atmospheric and environmental conditions in the immediate vicinity of an object

Micro-crystalline wax

Synthetic wax used in conservation in place of traditional beeswax as a more stable, flexible protective coating for bronze, brass and other materials

Obelisk

Tapered, four-sided pillar terminating in a pyramid at the top

Orb

Ornament, symbolic of the Empire, often found at the top of a monumental column

Patina

A layer of relatively stable corrosion products in metals (or weathering effects in stone) that causes pleasing alterations in colour, tone and lustre. Also an artificial chemical treatment for cast metals that induces a thin, often colored, "passive" layer.

Pedestal

The cylindrical or cubic structure supporting a column or statue, usually displaying inscriptions

Plinth

The lowest part of a pedestal, usually a projecting moulding

Poultice

A treatment to remove paint, stains or salts from masonry, which involves active chemical reagents combined in a gel or paste with inert materials (such as natural clays, latex or cellulose) to allow controlled, localised chemical cleaning

Raking out

Removing loose or decayed mortar from joints with hand tools

Reagent

A substance or chemical ingredient that brings about a chemical reaction

Repointing

Maintenance of masonry by re-filling decayed joints between bricks and stones with suitable mortar to keep out the weather

Risk

The probability of something causing injury or harm

Soluble salts

Crystalline, inorganic mineral compounds found in, or introduced into, building materials in dissolved form as a result of water movement. They cause physical damage to brick, mortar, stone and coatings.

Spalling

Detaching flakes or fragments of stone or concrete, often caused by expansion pressure (e.g. due to rusting ironwork or soluble salt attack)

Tarnish

A thin layer of corrosion formed on copper, brass and aluminium caused by reaction with oxygen or other gases

Trachyte

Dark greenish-grey igneous rock, often polished

Weathering

Physical disintegration and chemical decomposition of materials in an outdoor environment

For further enquiries msp@services.nsw.gov.au

Condition Assessment

Assessor's name & organisation Assessment date

Contact phone E-mail

War memorial name and location

Custodian Maker's name if known

General Type

Statue Obelisk Cenotaph Sarcophagus

Cross Column Cairn Other

Main Materials (plinth, pedestal, steps, superstructure)

Granite - Marble -

Other Stone - Brick -

Ceramic Tile - Concrete -

Trachyte - Other -

Other Materials (sculpture, insignia, plaques, gates, ornaments)

Granite - Marble -

Other Stone - Brass -

Ceramic - Bronze -

Trachyte - Other -

General Condition (plinth, steps, pedestal, walls)

Missing Parts - Loose mortar / open joints -

Erosion of stone - Cracks / ground movement -

Graffiti - Bird droppings

Moss / algae / lichen - Staining -

- Red (rust)
- Green (copper)
- Black (biological/dirt)
- White (salts)

Sculpture Condition

Missing Parts - Crumbling / flaking stone -

Scratched / chipped - Cracks / split -

Graffiti - Bird droppings -

Moss / algae / lichen - Staining (of stone/concrete) -

- Red (rust)
- Green (copper)
- Black (biological/dirt)
- White (salts)

Painted -

Blue/green patina (metals) -

Further Notes

Number of attached photographs

Sources of old photographs (include copies if possible)

Inscriptions Type

Incised	Incised/painted	Raised	Leaded
Applied	Metal tablet / plaque	Stone tablet	Other

Inscriptions Condition

Missing Parts -	Lost paint / gilding -
Loss of legibility (erosion) -	Graffiti -
Bird droppings -	Corrosion spots (metals) -
Moss / algae / lichen -	Discolorations/Stains -
Tarnish -	Red (rust)
Flaking lacquer / paint -	Green (copper)
	Black (biological/dirt)
	White (salts)

Other Condition e.g railings, gates, walls, woodwork (describe)

Setting

Public Garden	Private Land	Urban street/square	Coastal Area
Close to buildings	Indoors	Close to shrubs/trees	Other

Notes e.g. part of a group, in busy road,

Summary

Overall condition of structure	Good,	Fair	Poor
Overall condition of sculpture	Good	Fair	Poor
Overall condition of Inscriptions	Good	Fair	Poor

Possible future risks

Maintenance notes

Memorial details entered on NSW Register of War Memorials? Y / N

For further enquiries msp@services.nsw.gov.au

3 Finding Appropriate Skills and Expertise

- Builders and local craftsmen or monumental masons may be able to assist with some works of repair and maintenance but they are unlikely to have the skills, experience and training needed to carry out more complex interventions
- Inscriptions and sculpture are especially delicate. Specialist heritage conservation input will be needed for any works affecting them
- Consider the options carefully when looking for specialist advice. What is the nature of the work? Who is best qualified to carry it out? Where will I find useful information on the different specialists, their roles and their qualifications?
- It is often better to do nothing than to make hasty decisions based on unreliable advice. Inform yourself fully of the options and get help from your local council heritage officer/ adviser
- For works to war memorials Local Councils can also directly engage NSW Public Works under Section 55(3) of the Local Government Act without calling tenders.

Conservation

When conceiving, planning or carrying out works, the involvement of professional specialists such as heritage architects, stonemasons and conservators may be necessary. To alter, remove or replace old material such as mortar, paving or metalwork without first understanding the causes of decay may lead to problems in the future. Well developed practical skills are essential to assess the need for action and to carry out any necessary work to the required standard.

As a custodian, this information sheet can inform you of the various risks and pitfalls, guide decision making and help in the allocation of resources. As a contractor or specialist adviser, you can use this information to ensure you have covered all the right issues and to guide you in seeking further specialist input where necessary.

Additional Information

As well as the information in this pack, sound basic advice for all contractors working on heritage sites can be found in the list of links provided on the inside cover of the information folder.

Advisers And Contractors

Local Government Heritage Officer/Adviser

Your local council is your first source of information on heritage in the local area. Approximately 120 councils have heritage officers or advisers to assist local councils and communities with professional advice for the management and conservation of heritage in the local government area. They may be employed full-time as a member of staff or alternately engaged on a part-time consultancy basis. Heritage specialists employed by councils have specialised training and experience in heritage management, particularly relevant to a council's role and functions. Individually or through local heritage committees they may be able to support you and direct you to other sources of funding or assistance, or suggest suitably trained private contractors or professional advisers. To find out more you can ring the council concerned and ask for the officer who normally deals with heritage matters.

Professional Adviser

Heritage architects and heritage consultants may provide condition assessment, design and project services for larger projects or heritage listed places, charging a fee for their services. They can deal with statutory planning requirements and may handle the procedures for hiring contractors.

They can also deal with documentation and recording of heritage places and formulate conservation management plans for local councils and community organisations. If there are issues of structural stability or safety, a structural engineer with experience in heritage conservation may need to make a structural appraisal.

Historians may also help you prepare heritage management plans as well as carry out historical research or prepare exhibitions or publications. The Professional Historians Association of NSW can put you in contact with freelance historians. <http://www.phansw.org.au>

Conservator

A conservator specialises in the preservation and care of historic objects. He/she normally specialises in one or more areas. For war memorials you will generally require a specialist in stone or metals conservation or a conservator with demonstrated expertise in conserving outdoor monuments. Your local council may be able to suggest suitably qualified conservators. The Australian Institute for the Conservation of Cultural Material (AICCM) has a code of ethics to ensure conservators work in line with internationally accepted standards. It has useful information in its website on the role of a conservator and a database of members. <http://www.aiccm.org.au>

Monumental Mason

The manufacture and installation of cemetery memorials is undertaken by monumental masons. Masonry today is a technologically sophisticated industry. Mechanisation of stone cutting and polishing and the use of stencilling and sandblasted lettering have transformed the business of memorial sculpture. The skills required for repair and maintenance of historic memorials of all kinds go beyond the minimum requirements for industry training. Masons should be not only competent in appropriate methods of renovation and restoration but should have a good grasp of conservation principles and the Burra Charter, and be skilled in conservation-based approaches to cleaning and stone repair. You may need to ask for proven competency in traditional techniques such as hand-cut or leaded lettering. The Monumental Masons' Association of New South Wales may be able to assist you in sourcing suitably competent craftsmen. <http://www.nswmma.com.au>



Sach Killam, monumental mason, cutting leaded letters.

General Builder

Where mortar has been lost from masonry joints, a general builder may be able to carry out repointing work (notably to plinths and steps). Information sheet 5 provides essential information on the correct approach and techniques. Cleaning and conservation of sculpture, carved or cast ornaments, statuary, lettering and painted surfaces are well beyond the scope of general building work. Inappropriate work by persons unskilled in the treatment of historic sculpture and inscriptions, however well-intentioned, may cause permanent disfigurement. Builders may, however, be able to carry out repairs to damaged steps and paving, kerbstones, railings and gates, flagpoles and paths as well as memorial walls in brick or concrete. With heritage guidance and suitable precautions for sculpture and inscriptions, they may be equipped to undertake maintenance cleaning to polished granite, trachyte, concrete or glazed tiles.

What to look for in an adviser or contractor

When choosing any professional conservation adviser or contractor on the open market be sure to check their heritage credentials. It is not sufficient to be a Registered Architect, a Chartered Engineer or to be listed on the NSW Government Department of Environment & Heritage online Directory of Heritage Consultants or Register of Products and Services. Does he/she have a post-graduate qualification in heritage conservation? Has he/she attended professional development programs in Australia on heritage themes? Is he/she member of a recognised heritage body such as Australia ICOMOS, Engineering Heritage Australia or the Australian Institute for the Conservation of Cultural Material ?

For further enquiries msp@services.nsw.gov.au

4 Cleaning War Memorials

- Cleaning may seem a harmless way of improving appearance. In fact it is fraught with dangers. Cleaning for aesthetic reasons alone is not good conservation practice
- Chemicals, abrasion and high pressure water cleaning techniques are commonly responsible for causing irreparable damage to historic building materials
- Consider whether cleaning is necessary and why. Is it to remove paint, staining, biological growth, tarnishing, bird droppings or dirt build-up? Is it primarily for aesthetic reasons (such as making inscriptions legible) or are you concerned about long-term decay? Who will do the work? What are the risks? Are the relevant skills available?

Conservation

Using The Gentlest Methods

Gentle brushing or washing with controlled amounts of water and a soft-bristle brush (with a pH neutral detergent if necessary) are the safest and cheapest methods, but even these are not risk-free. Water may enter masonry joints and cause interior damage; it may mobilise soluble mineral salts in stone and lead to new blotching, staining or tide-marks; it can promote corrosion in embedded copper, iron and steel fixings and cause staining and cracking of masonry. Even gentle washing may rub away friable marble or sandstone, and remove loose paint from incised lettering.

Marble may accumulate black and grey deposits from atmospheric dirt. Often this is part of a chemically altered surface layer that will not respond to water cleaning. Furthermore, the stone may be weakened by the formation of soluble compounds such as gypsum (calcium sulfate) caused by reaction with dissolved acids in the atmosphere. Sandstones vary in softness and durability. All tend to be porous, drawing water into the body of the stone in ways that can have unpredictable consequences on drying.

As a rule it is always preferable to "underclean" rather than "overclean", even on polished finishes.

For more on sandstone, marble and granite, see **Information Sheet 5 'Masonry'**

Water Cleaning

- Do a trial clean on a small, unobtrusive area before going ahead
- Work in a controlled way. Avoid water spillage or runoff causing streaking/staining.
- Use a gentle rotating action and a soft cloth or nylon bristle brush
- Mop up excess water as you go
- Change the water regularly (use one bucket for rinsing the dirty brush and a separate bucket of clean water for washing)
- Protect brass, bronze, timber, iron and painted surfaces by taping firmly with plastic sheeting
- Avoid getting water into joints and fixing sockets
- Avoid tipping water onto steps and plinths
- Protect vulnerable areas from ladders and scaffolding
- Work from the top downwards, to avoid dirty water running down over areas already cleaned.

Specialist techniques

Specialist masonry cleaning sometimes involves using weak acids, chemical solutions and poultices, water/steam, abrasive methods, or even lasers. These are not suitable for general use. Bleaches, strong alkaline cleaners, solvents and strippers may leave damaging residues behind which can be unsightly and are difficult to remove afterwards. Wire brushes, sandpaper and scourers are not suitable for cleaning as they leave permanent scratches on metals and stone, abrade finishes and carved details and damage original surface coatings (such as protective varnishes and waxes) on bronze. Steel wire leaves minute steel particles behind which can cause rust-spots in stone or concrete.

High-pressure water cleaning is not appropriate for an historic memorial with its combination of embedded

NB. All cleaning should be preceded by a range of tests to determine the least aggressive method

Material	Condition	Dirt	Method
Sandstone	Sound, no loose or powdering stone, no loose painted lettering	General soiling	Gentle water washing; for more advanced methods consult a conservator
		Lichens	Pre-soak with water and scrub (nylon bristle brush – not wire); plastic or wooden spatulas
		Heavy soiling, paint, particular stains, etc	Poultice or gel (consult a conservator)
	Poor condition, powdering, spalling; cracked or stained; vulnerable inscriptions	Consult a stone conservator	
Marble	Unpolished, unpainted, sound, no cracks, no "sugaring"	Loose dirt	Gentle washing with distilled water; dry clean with specialist rubber sponges
		Greasy/sooty stains	Controlled water washing with distilled water; 50/50 mixture water/acetone or 2% pH neutral soap in white spirit may be tried for stubborn stains (rinse with water)
		Iron/copper staining	Consult a conservator
	Biological growth	See 'sandstone'	
Poor, sugaring, heavily soiled, brittle or yellowed, cracked or previously repaired	Consult a stone conservator		
Granite/trachyte	Polished, sound and well-preserved; mortar joints in good condition	General soiling, grease/grime	Warm water and pH neutral soap; steam
		More resistant soiling	Controlled moderate-pressure water cleaning (NB not suitable for painted or leaded inscriptions)
Concrete	Sound, no corrosion staining or spalling	General soiling, pollution	Water washing; steam; low/medium pressure washing on non-sensitive areas
Terracotta	Sound	General soiling	Warm water and pH neutral soap; steam
		Heavy soiling	Specialist chemical cleaning (consult a conservator)
Brick	Sound	General soiling	Warm water and neutral soap
Bronze	Good – moderate corrosion, no historic paint, gilding or enamel	Loose dirt/dust	Soft long-haired dusting brush; wipe with distilled water and pH neutral soap, soft nylon brush (e.g. toothbrush) in crevices, rinse and dry with clean cloth immediately
		Greasy deposits	White spirit, soft cloth, rinse with distilled water, dry immediately
		Bird droppings	Wooden spatulas and gentle washing as above
	Extensive or severe corrosion, fragile historic paint/enamel, gilding, decayed lacquers/waxes & patination treatments	Seek specialist advice	
Brass	Good – moderate or no corrosion, no historic paint or enamel	Loose dirt/dust	Distilled water, pH neutral soap, soft nylon brush
		Tarnish/finger marks	White spirit diluted in distilled water, soft cotton rag, rinse with distilled water
		To restore lustre	A non-abrasive conservation metal cleaner - keep buffing to a minimum

ironwork, old mortar joints, carvings, historic inscriptions, bronze or brass plaques and ornaments and paintwork. Low pressure washing (up to 2700kPa) of larger, newer or less vulnerable surfaces may be possible but be mindful of the risks of saturation or damage to mortar joints or arrises. Wherever possible, seek expert advice.

Biocides

Use of biocides to remove algae and lichen is best avoided. Most lichens are not harmful except when very heavily encrusted or disfiguring. Algae indicates a humid "microclimate". Consider whether overhanging trees or surrounding vegetation might be promoting dampness around the object, or whether accumulated leaves or animal and bird life are detrimental to preservation.

Graffiti

Arrange to remove graffiti as soon as possible as it is more difficult to remove the longer it is there. Poultices and gels are preferable to liquid chemicals. graffiti removal specialists consider the type of paint (e.g. spray paint, felt pen, enamel paint), the type of material defaced and the texture and condition of affected areas. Special solvents may be recommended to remove paint from historic surfaces. Graffiti removal is a highly specialised area.

Additional Information

Distilled water is available in supermarkets. pH neutral soap or non-ionic detergent and conservation-grade non-abrasive metal cleaning pastes can be bought from conservation suppliers. http://www.powerhousemuseum.com/pdf/preservation/products_and_supplies.pdf

For further enquiries msp@services.nsw.gov.au

5 Masonry

War memorials in NSW were built using local materials such as sandstone, trachyte and grey granite or imported materials including pink or black granite and Carrara marble. Some incorporate brick or concrete structures and facing. Glazed tiles or brick and terracotta are sometimes used, and memorials may be rendered in cement or painted (usually as part of a restoration effort). Softer masonry materials such as sandstone, brick and concrete are more susceptible to decay caused by water and weathering than harder materials like granite, trachyte, and terracotta.

Sculpture and carvings are especially sensitive areas for any historic artefact. See Information Sheets 6 and 7 for tips on war memorial sculpture and inscriptions. Cleaning poses many problems for small-scale composite structures - metal fixtures, insignia, inscriptions and sculpture, combinations of different stone types, weathered mortar joints and painted or carved detail are all at risk of damage or accelerated decay. See Information Sheet 4 Cleaning War Memorials.

Identifying Stone

Stone	Color/texture	Uses	Stone sources
Marble	White, often with grey, pink or blue veining	Facing units for plinths and pedestals, inscription panels, statuary and relief carving	Ulam (Qld); Carrara (Italy), NSW, SA
Sandstone	Grey-brown/brown or buff, fine textured	Plinths and pedestals, inscription panels, ornament and relief carving, steps, walls, seats, kerbs; bush-rocks, boulders and cairns; occasionally sculpture. Sometimes painted to resemble marble	Sydney, Hawkesbury Basin, Southern Tablelands, Hunter
Trachyte	Dark greenish grey; polished	Facing units for obelisks, plinths and pedestals, inscription panels, paving	Bowral
Granite	Pink, grey, black; polished	Obelisks, inscriptions, columns, facing panels, steps	Uralla, Moruya, Tarana, Gunning etc.; Harcourt (Vic); Europe
Terracotta	Buff, cream, red, smooth textured but unglazed	Cladding and facing, inscription panels	

Sandstone

Sandstone decay and damage are influenced by the local environment as well as the method of construction. Blackening of sandstone in urban environments is often seen in Sydney along with white staining and "tide-marks" produced by re-crystallisation of soluble sulfates and chloride salts which break down the stone causing crumbling and flaking or erosion in the form of deep hollows and cavities. Cleaning and repair of historic sandstone memorials in a decayed condition should be undertaken by an experienced stone conservator or conservation stonemason. Repair can be done by mortar patching or pinning cracks, aiming to retain as much of the original material as possible. The historic significance of the objects or areas being treated, and the impact of any intervention on the stonework and adjacent materials, must be thoroughly assessed by a conservation professional. Cleaning of sandstone building facades using fine, low pressure air abrasives, either in wet or dry mixtures, is a specialist field.

Marble

Marble is a crystalline metamorphic rock favoured for ornamental stone and sculpture. White marble often veined with grey or blue was preferred for memorials. Marble may accumulate black and grey deposits from atmospheric dirt. Often this is part of a chemically altered surface layer that will not respond to water cleaning. The stone may be weakened by the formation of soluble compounds such as gypsum (calcium sulfate) caused by reaction with dissolved acids in the atmosphere (producing a friable, "sugary" texture). Marble can be severely affected by iron staining from metal cramps or pins used in construction. Thin marble slabs can bend or distort due to constraint caused by fixings, ultimately causing cracking. Repairs can be undertaken by a stone conservator or suitably experienced monumental mason with heritage guidance. The historic and artistic significance of the areas being treated, the impact of any intervention on the stonework and adjacent materials,

and long term risks for the memorial must be thoroughly assessed.

Marble is a calcitic rock and as such is prone to damage from acids. Even "traditional" reagents like vinegar and lemon juice are acidic and will etch the surface of marble. Alkalis such as bleach will deposit harmful salts and are highly damaging to painted details and polished faces. General grime and grease can sometimes be removed with distilled water with non-ionic detergent but the marble's surface condition and vulnerability and risks to painted inscriptions or gilding must be taken into account.

Conservation

Blue-green staining is caused by corrosion products in copper alloys (like bronze) being washed into porous stonework. Discoloration can be reduced using special poultices of ammonium chloride, but the staining is almost impossible to remove completely.

Trachyte and Granite

Granite is a hard, igneous rock distinguished by the presence of black mica flakes and glittery pale feldspar crystals. It is commonly pink/red, grey or black in colour. Trachyte is a hard, greenish-grey, fine-textured igneous rock that may be studded with larger crystals. Both were favoured for their ability to take a high polish. Abrasive treatment such as sandblasting or grinding will permanently damage polished granite or trachyte. Low-pressure "wet abrasive" methods and high-pressure washing used today for facade cleaning are also potentially damaging to fine details, joints, inscriptions and buried metalwork. Chemical cleaning will deposit damaging salts that can promote decay even of dense, durable stones like granite. Where dirt is loosely adhered, both stones may respond to water or steam cleaning, or use of water and pH neutral soap.

Conservation

Never apply sealants, paint or other chemical treatments to masonry. Preventing the surface from breathing traps moisture and causes further damage.



Repointing

Masonry joints need periodic repointing to protect the structure. If mortar in the joints is loose or missing, action may be needed. Hard cement mortar or mastics can cause damage by trapping moisture in the stone. But sound, well-adhered mortar is best left alone, especially in the finely worked joints often found in memorials – cutting out strong cement mortar can damage the edges of stone units.

When repointing, contractors should aim to replicate original mortar composition, colour, texture, and finish. The finished appearance should blend into the original pointing. Mortar mixes should always be softer than the masonry to allow moisture to evaporate through the joint rather than through stone or bricks where it might promote decay. A test panel or specimen joint is often required in heritage work so the mix composition and joint finish can be agreed. Always carefully remove mortar by hand, never with power tools. Raked-out joints are prepared for repointing by cleaning with low pressure water spray and pre-wetting of the joint to reduce water suction and prevent too-rapid drying out of mortar.

Conservation

- Rake out loose mortar to a depth of at least twice the width of the joint
- Use jointing tools that fit within the joints for better joint filling and compaction
- Protect masonry by taping joints where possible.
- Dampen lime mortar after repointing using a hand held bottle sprayer to control curing, and shield from sun and rain
- Do not over-work the mortar while pointing
- Take care with final clean-up - poor cleaning off will lead to staining and ghosting
- Advice on pointing is available at <http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/tagrepointjointsupdate.pdf>

Concrete

Steel reinforcement encased in concrete will cause considerable damage if corroded. Repairs should only begin after the rectification of the cause of the damage. Extensive repair works may be necessary by cutting back the concrete, treating or replacing the steel and patching the concrete. A heritage structural engineer should specify the work.

For further enquiries msp@services.nsw.gov.au

6 Inscriptions

'Lest we forget'

The inscriptions on war memorials – names of those who served or died, epitaphs, dedications and descriptions – possess social, genealogical and historical significance for local communities. They may also have artistic significance in the technique, quality and style of lettering and the treatment of painting or gilding, or in the method of casting and finishing of plaques and tablets.

Recording

Recording inscriptions – especially if weathered or damaged – is an important conservation process and can be undertaken easily and cheaply at local level. Photographing the inscription in raking light produces the best result. If the war memorial has multiple plaques or sides, photographs should be taken of each plaque, showing as much close-up detail as possible. If there are soldiers' names listed, a photo of each name plaque is desirable.

Conservation

The War Memorials Register website gives guidance on photographing memorials. [http://www.warmemorialsregister.nsw.gov.au/tips for photographing memorials](http://www.warmemorialsregister.nsw.gov.au/tips-for-photographing-memorials)

Make sure to record the condition of inscriptions on your memorials assessment sheet so that rates of decay or fretting can be monitored over time. Is there lost paintwork or missing leaded letters? Are inscriptions becoming fainter? Is there spalling or chipped lettering, or lichens over the surface?

Methods/materials

Incised lettering is hand carved by a letter cutter and was common for marble and sandstone. Granite and hard stones may have incised lettering, often gilded, or raised lettering carved in relief.

Lead lettering is a laborious technique in which lead is hammered into small holes drilled into the stone as a key, then the letter forms are scored and cut with fine tools. Letters may have become loose or fallen out. Some monumental masons can repair missing or loose leaded letters.

Gilding involves painting on a special adhesive then applying gold leaf with a brush. Gilding has an even, bright surface and does not tarnish. Paint will appear granular, streaky and dull by comparison, and may darken or discolour on ageing. Cleaning of gilded lettering should be undertaken with professional advice.

Both water washing and solvent cleaning can be damaging to gilding. Don't attempt to retouch gilded lettering with gold paint.

Sandstones were sometimes painted or limewashed white, or to imitate marble, with lettering picked out in black. Old photographs may provide evidence of such finishes. Consider carefully how much, if any, restoration is appropriate. Removal or overpainting means loss of important material evidence and may be out of keeping with the aesthetic and historical values of the object.

Retouching

Many attempts to retouch inscriptions with paint – to fill in lost paint or to make letters stand out more clearly – are poorly executed. The definition of the letters is lost by clumsy brushwork which is detrimental to the artistic quality of the original. Oil-based paints seep into porous stone and are hard to remove later. Unless there is clear evidence of historic paint, retouching should not be considered without specialist heritage advice (regardless of whether the memorial is locally listed or not). If retouching can be done, it must be done using materials that are reversible and by skilled craftspersons.

Paint products are available to 're-black' painted letters, but care must be taken. Use acrylic or other "reversible" paint types. Use specialist expertise so the result does not detract from the original workmanship.

Conservation

Reversibility

Reversibility means using material for restoration that can be removed later with minimal damage to original fabric – for example if new evidence comes to light about methods or materials, or if there are detrimental physical effects on the object.

The National Trust of Australia (NSW) document 'Guidelines for Cemetery Conservation' gives guidelines on how to deal sensitively with carved inscriptions. http://www.nationaltrust.com.au/conservation/cemeteries/assets/cemetery_conservation_guide.pdf



Cleaning

Even the gentlest methods of cleaning may remove fine particles of stone or protective finishes on metals. The fine edges of inscribed or raised lettering on weathered stone or corroding brass/bronze are especially vulnerable to wear during washing/scrubbing or scraping to clean off dirt or lichen. Chemical residues may cause etching and pitting over the longer term. Washing may cause blotches or stains to appear from within the stone. Cleaning may loosen historic paint or enamelling. This could make inscriptions less legible and remove historically and artistically important remains. Painted lettering on sandstone and timber are especially fragile. Leaded lettering may be susceptible to falling out.

Corrosion, cracking or splitting may indicate underlying problems needing specialist attention. Are there records of earlier treatment by others? It is helpful to find out if metals have been cleaned, oiled or patinated before.

For general cleaning issues, see **Information Sheet 4 'Cleaning War Memorials'**

Recarving

Re-cutting stone inscriptions destroys the original engraver's work and is out of keeping with the historic and aged character of the memorial. A more conservation-based approach for extremely weathered inscriptions is to leave the original untouched and introduce a metal plaque nearby – on a kerb or purpose-made tablet set apart from the original structure. In this way lost or vanishing inscriptions can be preserved in a way that maintains the memorial and associational values of the structure in situ without affecting its material integrity or damaging its worn and weathered beauty.

Consolidation

Effective chemical consolidation of stone objects using resins (including epoxies, acrylics and ethyl silicates) is very difficult to achieve outside the laboratory. Benefits are far outweighed by the risks of permanent long term damage. Stone conservators experienced in dealing with the stone type can advise further. "Water repellent" products (silicones, siloxanes, fluoropolymers, etc) - despite manufacturers' claims - are unsuitable for historic masonry as they inhibit moisture evaporation, trap soluble mineral salts and speed up decay behind a superficial film or skin, leading to catastrophic failure in a few years' time.

Bronze/brass plaques

Bronze and brass are copper alloys. They can dull or tarnish with age, or may be disfigured by oil from touching or cleaning. Over time, corrosion may become apparent: look for localised white, blue or green specks in crevices, incised lettering, or sheltered areas. There may be "pitting" where corroded metal has been lost. The process is slow, but the effects can be worse in coastal environments where the air contains more chloride salts. Bird droppings release organic acids that can accelerate corrosion.

Lacquered brass

Lacquered brass has a bright reflective shine. Lacquer protects against tarnish and corrosion. Cleaning with abrasives, household or ammonia-based cleaners or excessive polishing can dissolve the coating and expose metal to deterioration. Information Sheet 4 gives advice on maintenance cleaning. Degraded lacquer, if unsightly or detrimental to preservation, can be removed and the object re-lacquered by a plaque specialist.

For further enquiries msp@services.nsw.gov.au

7 War Memorial Sculpture

There is a great variety of war memorial sculpture in NSW. Some of it is the work of important figures in 20th-century Australian art. Much is by lesser known artisans employed by memorial masonry firms across the state. In many cases little is known or registered about the designers and craftsmen – even of heritage listed memorials.

The most common materials for figurative sculpture (of servicemen and women, allegorical figures or other human representations) are marble and bronze. One of the most characteristic sculptures found on WWI memorials is the Digger mounted on a pedestal. These figures were often favoured in white marble by local councils and committees. The Digger remains an icon of Australian remembrance.



Significance

Around 120 NSW war memorials or memorials parks are listed by local councils and shires on account of their social and historical significance. Many incorporate fine sculpture by Australian artists and artisans. Works may require a heritage impact statement.

For complex memorials and sculpture see **Information Sheet 3 'Finding appropriate skills and expertise'**

Local communities can do much to raise awareness about the history, significance, care and maintenance of public memorials.

- Explore the history of your memorials and their designers and makers; share information using the NSW War Memorials Register. See the Community contribution section of the Register website.
- Consider a regular maintenance program for your war memorials and other outdoor public sculpture and monuments. Go to the local heritage adviser in your Regional Council for help.
- Explore how to work with local council heritage services on community-based heritage studies for historical research, management and enjoyment of memorials in your area.
- Explore what the options are to fund urgent repairs through Local Heritage Assistance and other mechanisms.

Marble

Some marble statuary for First World War memorials was made to order overseas. Sculpture was carved in one piece where possible but sometimes in several pieces dowed together with iron rods. Marble's brittleness makes it extremely delicate. Marble sculpture even in relatively clean environments can acquire dark streaks and stains caused by bacteria or chemical reactions with atmospheric sulfur, especially in sheltered areas of a sculpture.

The fragility of marble statuary - especially after years of exposure under the Australian sky - means that remedial works to marble sculpture (such as removal of iron stains, black deposits and algae, or repairs to broken features) should only be attempted by a conservator (or, depending on the condition, complexity, and heritage significance of the object, under heritage guidance by a suitably trained and experienced monumental mason).

Bronze

Bronze is copper alloyed with tin, lead, zinc and other metals. It is an orange-russet metal when freshly cast but darkens on exposure to the atmosphere, turning a warm brown due to the reaction of copper with oxygen and other elements in the atmosphere.

Many bronzes are artificially "patinated" in the foundry using sulfide or nitrate compounds to produce colours such as blue-green, brown or black.

Natural ageing of copper alloys forms a "passive" layer composed of relatively stable corrosion products that can suppress or significantly reduce corrosion, and is known as a natural or "noble" patina. In aggressive urban or coastal climates, the brown turns to blue-green and black as further reactions with chemical compounds in the atmosphere occur. These discolorations indicate the presence of unstable chlorides and sulfates (there may also be blue staining of stone plinths below). Eventually this causes "corrosion". However, the corrosion process is slow. There is rarely a good reason for removal of natural patinas except when corrosion is well advanced (often indicated by bright green spots or streaks). Cleaning bronze sculpture risks damaging patinas that may be both protective and artistically significant to the original work. It is often possible to remove loose dirt with warm water and a soft-bristle brush, and wooden scrapers and modelling tools on corrosive bird droppings. But major cleaning, corrosion

removal and re-patination must be undertaken by a specialist sculpture conservator. Painting of bronzes is not recommended, and traditional coatings such as beeswax (which discolour and attract dirt) are no longer advised (instead special micro-crystalline waxes are used).

Conservation

Specialist treatment for bronze sculpture involves coating removal, application of corrosion inhibitor and re-coating with protective wax. Such coatings generally last up to 4 years depending on specification and exposure. Use our links and references to find out more.

Maintenance plan for sculpture?

A good approach to managing outdoor sculpture is to set up a preventive maintenance plan. But sculptures are complex objects, rich in cultural connotation and artistic expression: sometimes the smallest decisions on cleaning and repairs have major aesthetic impacts. It may be tempting to spruce up a marble statue or polish up a bronze casting as a way of honoring the servicemen and women of NSW. This is a risky business. Talk to your local council heritage adviser about how to engage suitable specialist expertise to help you understand the history of the object, original materials and finishes, acceptable strategies for repairs, public expectations and values and possible new approaches to how the objects are presented and perceived.

Using the Condition Assessment Sheet we have provided in this pack, make periodic inspections (for example every 3 to 5 years) to monitor any defects or problems. Photograph the objects and relevant details and file these in a public archive for the next inspection to make comparative assessments of condition. See your local heritage adviser for help getting started.

Significance

Noted War Memorial Artists in NSW

Paul Montford, George Rayner Hoff, Gilbert Doble, William Macintosh, Alessandro Casagrande, Francis Rusconi, James White, William Dobell, Ross & Bowman, Cleveland & Son, Anselm Odling Ltd.

8 Managing the Site and Setting of War Memorials

The site and setting of war memorials are an intrinsic part of their significance. Memorials are typically located in public parks, outside public buildings or at road intersections. A paved area and walkway, sometimes with seating, gates, kerbs, walls and enclosures may be part of the composition. Plantings and herbaceous borders may help to enclose the space. Memorial structures may share the site with flagpoles, lighting and perhaps other commemorative objects or features.

Whether grand and monumental or smaller and more intimate these spaces have a function as sites for gathering, contemplation and ceremony and their values should be safeguarded. Some memorials have been enveloped by traffic and development. Others have been subject to ad-hoc addition and "densification" within the immediate setting, for example with new plaques or street furniture. Provision has to be made for public veneration, but clutter can detract from monumentality. Access and use can be encouraged but design values should be preserved.

Relocation

Relocating war memorials and honour rolls is contentious. Where possible a war memorial should be preserved in its original location. Relocation is a strategy of last resort when there are imminent threats to the structure that cannot otherwise be controlled. Services of a specialist conservator will be needed. Such projects may qualify for state funding if a convincing case can be made. Seek advice from your local council heritage adviser and NSW Office of Environment and Heritage.

Trees and plantings

Ensure important views or vistas to memorials have not become obscured by growth of plantings. Where plantings are out of control, there may be dampness which could pose risks to the structure. Mould or algae could produce discoloration and an appearance of neglect. Lichens are not generally harmful unless very heavily encrusted, but they may obscure inscriptions. Overhanging branches may fall and cause physical damage; security, access and bird or animal activity may become a maintenance issue. If modifications are required, seek advice from a heritage horticultural specialist.

Conservation

Maintenance Tips

- Do not use mechanical mowers or trimmers near memorials. Trim plantings around memorials by hand
- Low ground cover around memorials may remove the need for maintaining grass
- Modifications may be necessary for safety, such as paving repairs or new paving around the structure. Provide good site drainage so that water falls away from the memorial
- Prevent algae, moss and staining from overhanging trees by cutting back where possible and removing leaf litter collected on the memorial
- Keep climbers, creepers and invasive species away from memorials
- Avoid spraying water on memorials and keep potted plants away from plinths and steps
- Devise a maintenance plan that provides for annual checks and minor works to surrounding plantings, pathways and enclosures
- Check masonry joints for mosses and weeds and remove regularly
- Keep gates, fences and walls in good repair.



War Memorial setting: Rose Bay, Sydney

Alterations

Proposals to change the setting of war memorials may involve new lighting, paving, security, new plaques, wreath-holders or commemorative objects, ramps or handrails, and alterations to plantings. These proposals and their effect on the significance of the site as a whole need to be carefully considered in terms of materials, design and maintenance implications. Discuss with a local heritage officer or adviser.

Additional Information

The English Heritage/War Memorials Trust publication "Conservation and Management of War Memorial Landscapes" contains useful advice applicable to larger war memorial spaces, including methods for assessing the significance of the wider setting and environment.
<http://www.warmemorials.org/uploads/publications/359.pdf>

Security an Issue?

- Establish good photographic records of a memorial and its various features and inscriptions
- Upload the information to the NSW War Memorials Register
- Consider deterrents such as lighting, railings and bushes
- Keep memorials and their settings well maintained and encourage watchful communities
- See the English Heritage/War Memorials Trust publication "War Memorial Theft Prevention and solutions" <http://www.warmemorials.org/uploads/publications/189.pdf>

For further enquiries msp@services.nsw.gov.au