Historic England

Conserving War Memorials

Case Study: Surface Treatment of Bronze Statuary

First and Second World Wars Memorial, Tottenham, Haringey, London

Summary

This case study describes the conservation work carried out to the bronze elements of the First and Second World Wars Memorial in Tottenham which had previously been treated and painted. The paint was flaking and the surfaces looked matt and lifeless. Following investigations to assess the underlying condition, the bronzes were cleaned and repatinated with coloured waxes.

This guidance is intended for those designing, specifying and undertaking conservation and repair work to free standing war memorials, such as architects, building surveyors, structural engineers, project managers, contractors, craftspeople, and conservators. It will also be of interest to those responsible for making decisions, such as local authority conservation officers, custodians or volunteer groups. It also indicates where to get further help and advice.

This guidance forms part of a series of resources produced by Historic England, to coincide with the centenary of the First World War. This series covers the overall approach to caring for these memorials, as well as some of the more poorly understood technical aspects. It includes:

- 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

This guidance has been written by Brian Hall and edited by Clara Willett (Historic England).
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Front cover:
General view of Tottenham First and Second World Wars Memorial. © Paul Latham

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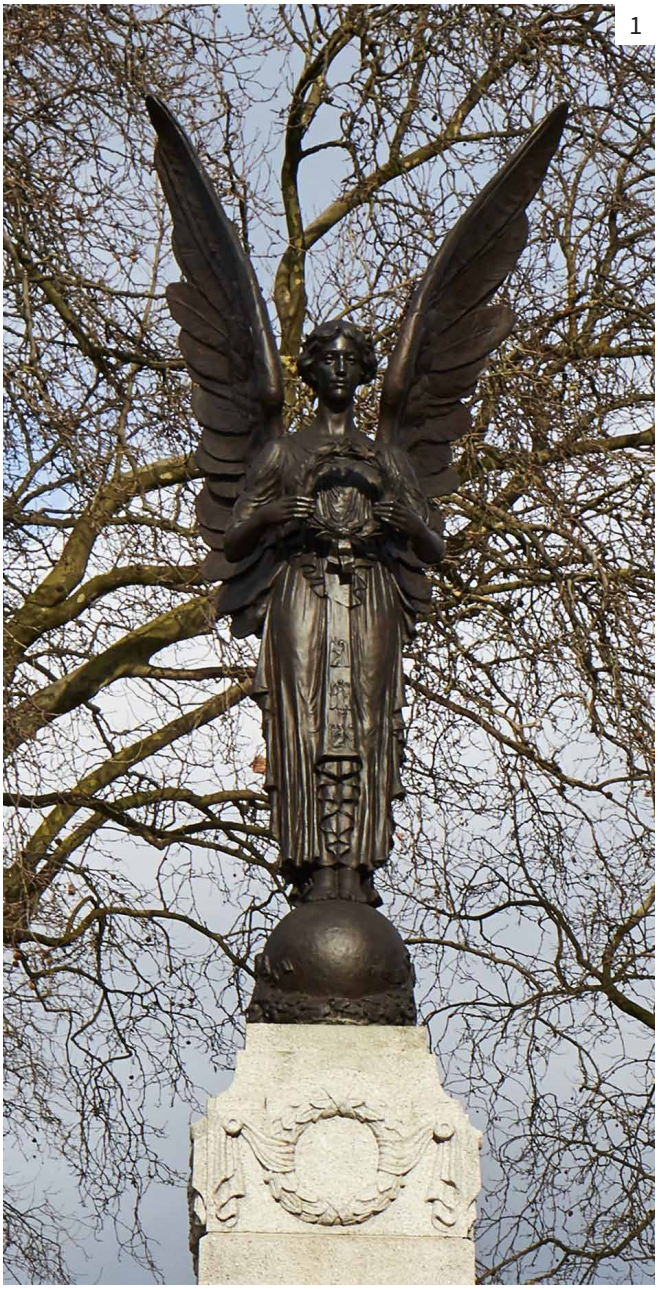
1 Description and Condition

The First and Second World Wars Memorial is located on Tottenham High Road, Tottenham, London. It was unveiled in 1923 to commemorate those who lost their lives in the First World War and received a Grade II listed status in 2002.

Description

The war memorial comprises a bronze statue of Peace: a laurel-crowned angel with outstretched wings holding a wreath, standing on a half-globe. The statue is the work of Louis Frederick Roslyn (born Louis Frederick Roselieb 1878–1934). Other works attributed to Roslyn include the Greengate War Memorial in West Yorkshire, which has a similar statue.

The statue is mounted on a tapered, square Cornish granite shaft (from Kit Hill Quarry, Callington, by W. Griffiths and Sons, Masons), above a stepped plinth. The plinth is carved on the top stage with garlands and fillets on each face. A bronze, downward-pointing sword is attached to the front (south) face of the shaft. Below this is a commemorative inscription in lead letters set into the stone including the dates of the First and Second World Wars. Further inscriptions in lead lettering are found on the north, west and east faces.



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1 The statue of Peace wears a laurel crown and holds a wreath. She stands with outstretched wings on a half-globe. The pleated front of her gown is decorated with angels in relief.

Unless analysis is carried out, it is very difficult to correctly identify the precise material used for the statue and for the purposes of conservation work, it is sufficient to use the term ‘bronze’ to describe the copper alloy.

Condition

Bronze elements were treated as part of a project to conserve the whole memorial in the 1980’s. Although the techniques used were thought to be appropriate at the time, some have proved not to be in the material’s long term interest such as the application of a layer of metallic paint which camouflaged any potential deterioration to the original surface. As a result, these elements required substantial conservation work.

During initial assessment it was identified that the bronze statue appeared to be structurally sound. No corrosion jacking from the internal ferrous armature was observed.

Dirt, areas of paint failure and surface corrosion had given the statue an uneven and disrupted appearance. Some corrosion was observd, but this was deemed stable (non-active).


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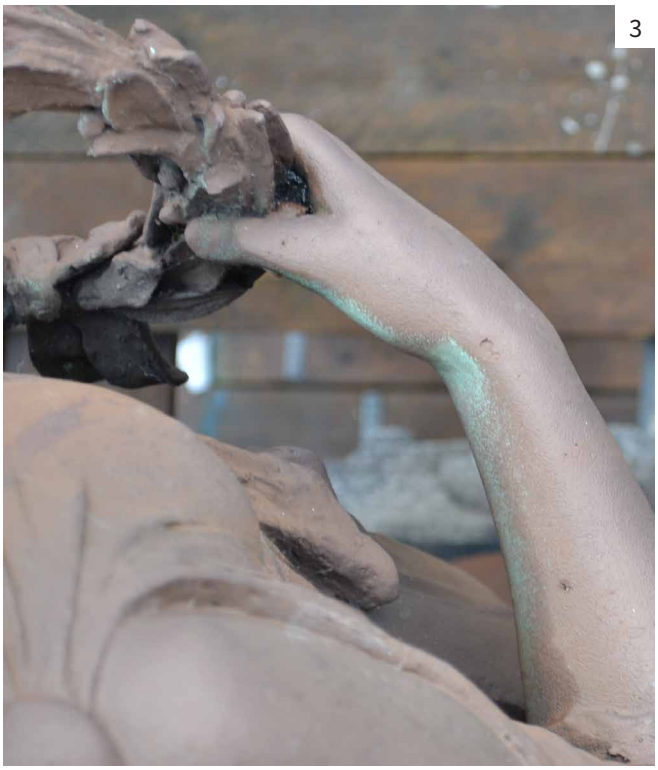
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2 Paint failure visible on drapery.

3 Corrosion present on the inside on the figure’s arm.

2 Remedial Options

When deciding on a conservation approach it is important to consider the possible remedial options.

Do nothing

The option of non-intervention was not advisable, as doing norhing would imply a lack of care for this culturally significant memorial. Without a full assessment, and initial investigations (including cleaning trials) it would not have been possible to fully determine the current condition of the bronze elements. This could have led to incipient or active deterioration processes being missed, to the detriment of the memorial.

Minimum intervention

A minimum-intervention approach might have comprised essential cleaning and stabilisation of the components of the memorial. However, this would have been unsatisfactory: issues such as the current appearance of the memorial, the degree of corrosion, and the potential for further deterioration of the statue would not have been resolved.

Removal of overpaint and provision of a protective coating

The approach taken was the necessary degree of intervention required to return the memorial to a stable condition and closer to its original appearance. The chosen intervention included: the testing of cleaning methods, the removal of the harsh and unsympathetic metallic paint; and the application of a suitable protective coating.

Cleaning trials were proposed in order to identify the best means to remove the modern paint layers and to establish the condition of the underlying bronze surface.

3 Solution

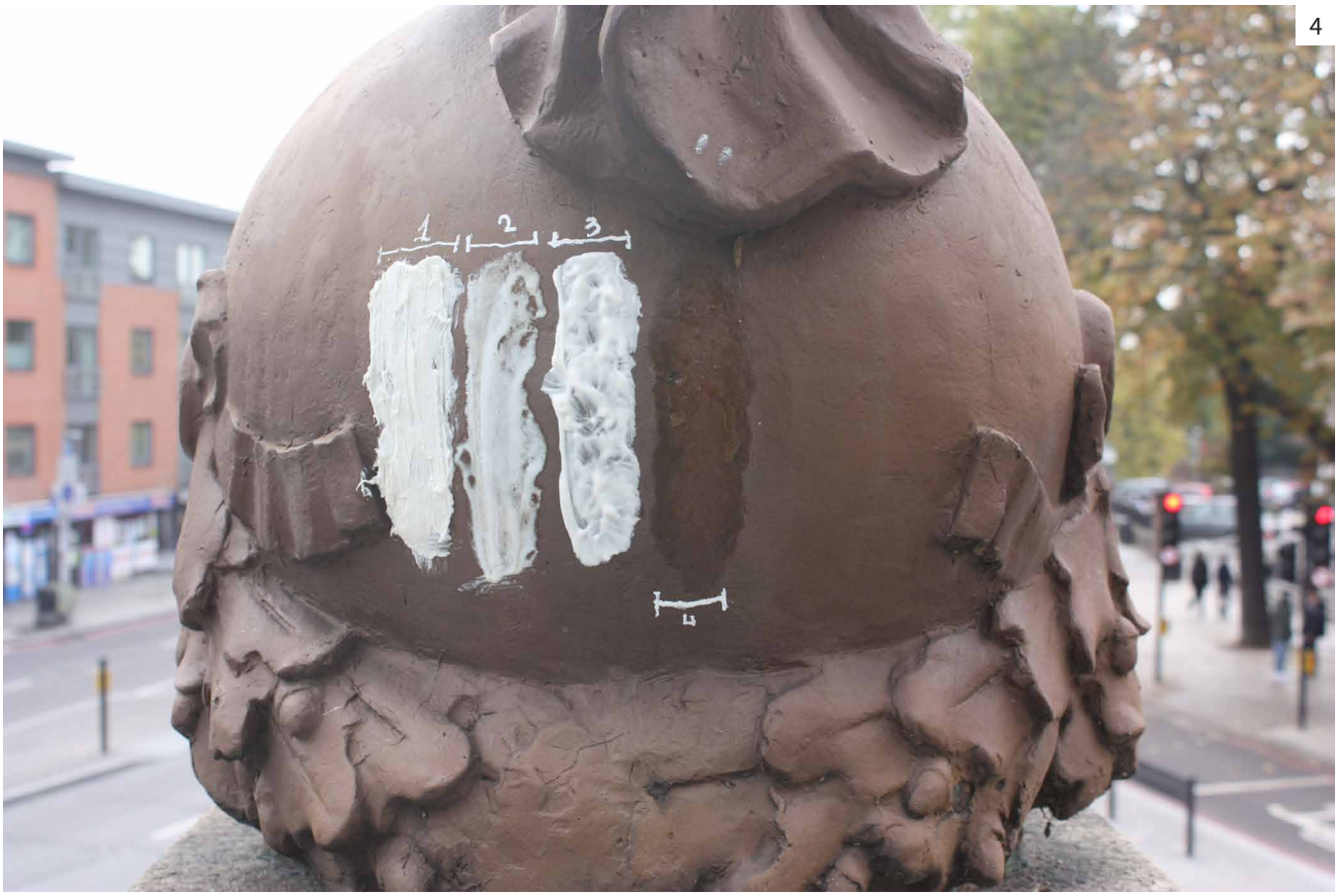
Cleaning trials

The cleaning trials were carried out on a small area to the rear of the half-globe (500mm x 500mm) that the statue stands on. Four proprietary paint removers containing solvents were tested within this area. The active solvents tested were benzyl alcohol, calcium hydroxide, methanol, and dichloromethane.

The solvents were applied by brush and left for a dwell time of 30 minutes, agitating the surface to aid the penetration into the paint layers. (Figures 4 and 5). An additional area was left so that it could act as a control (to see if high temperature steam cleaning would remove the paint without the use of solvents).

The trials demonstrated that the dichloromethane-based paint remover was the most effective solvent. It also became clear through the trials that the bronze surface had been air-abraded prior to the application of the metallic paint. Although a standard method of surface preparation for applying modern paints, this unfortunately stripped the patina from the surface. As well as permanently damaging the surface finish of the bronze, this removed evidence of its original appearance.

4 Paint removal trials: samples applied to the rear of the globe.



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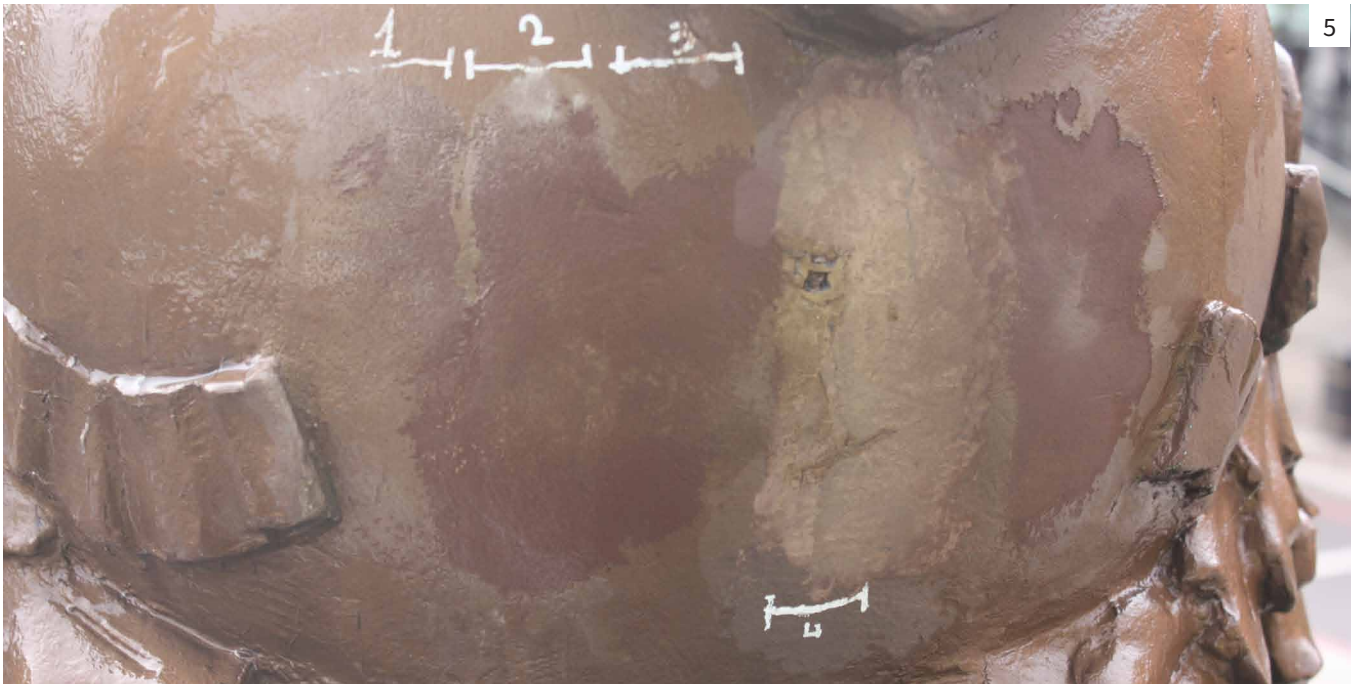

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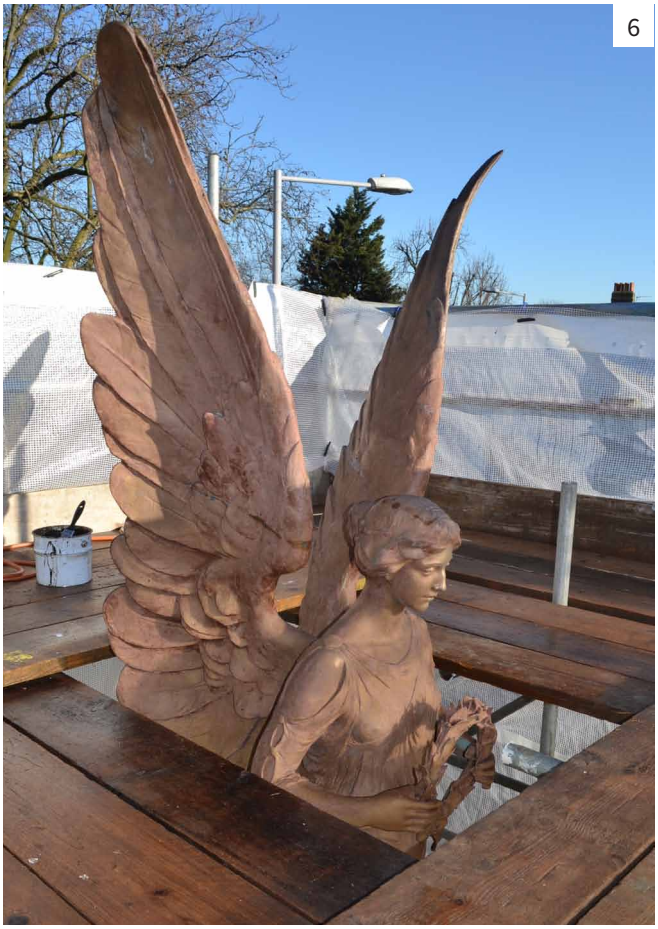
Paint removal

Treatment comprised the application of the dichloromethane-based paint remover for a dwell time of one hour or more. This was increased from the trial time to allow the paint remover to work. The surface was covered with cling film to slow evaporation. The residue was removed with a paper towel and the statue was then cleaned using the high temperature steam cleaning system. This removed any residual paint remover and paint. This process was repeated a number of times until the paint was completely removed. Following the removal of the paint, the condition of the surface could be fully assessed. This was essential in order to identify any evidence of active corrosion.

No active corrosion was found. However, had there been any, these corrosion products would have been mechanically removed by hand using picks and wooden scrapers and rinsed with an appropriate solvents (acetone or Industrial Methylated Spirits).

Some of the original surface finish would have been lost through the natural ageing of the bronze, but in this case aggressive abrasive blast-cleaning completely obliterated anything that may have remained, leaving an inert and lifeless finish.



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5 After 30 minutes' dwell time, the samples were removed and the area washed using high-temperature steam.

6 The statue after paint removal.

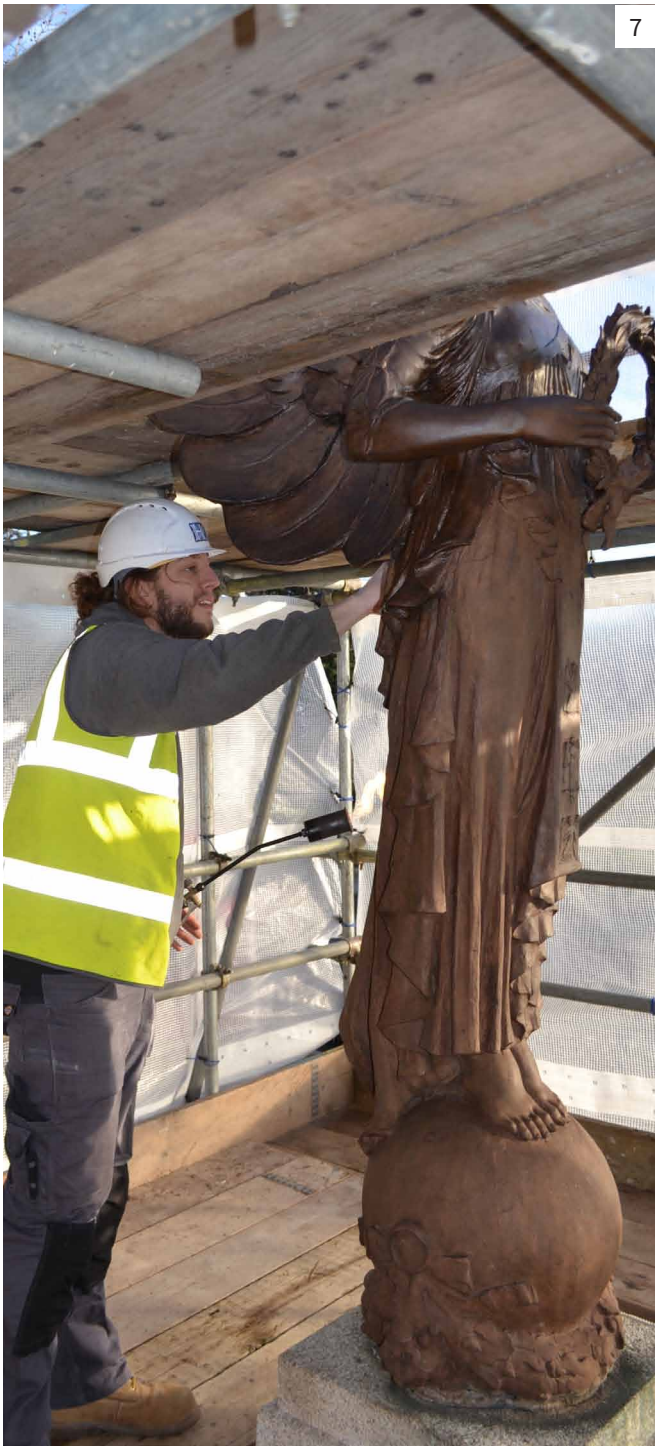
Re-patination

Removal of the modern paint left a raw bronze surface with no indication of original patina and no natural stable patina to work with. Research was required to determine what the original finish of the bronze might have been. By sourcing historic images of the memorial and by comparison with other similar works from the same artist, a dark brown was chosen.

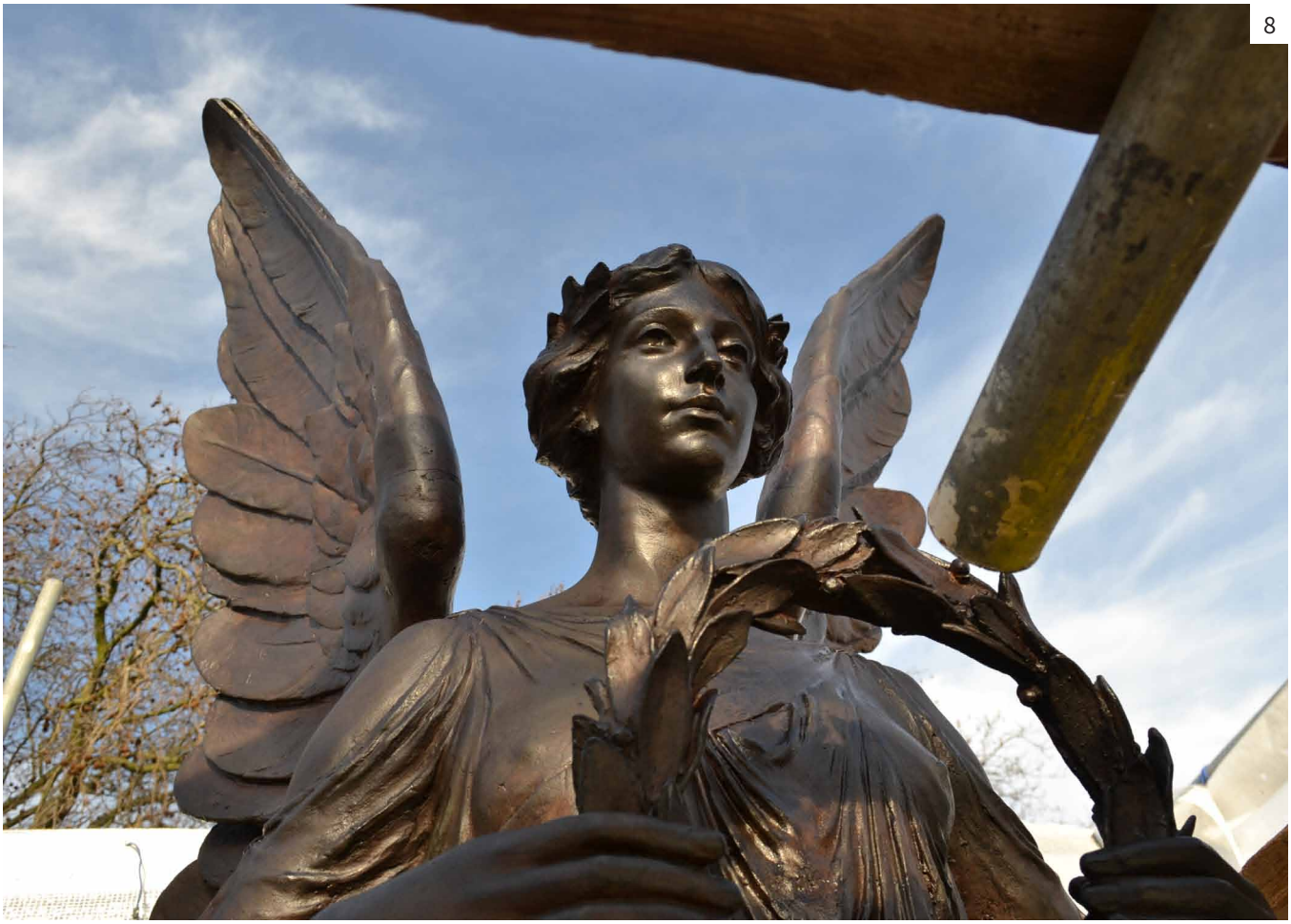
With high-quality sculptures, the sculptor would typically pay close attention to the surface finish of the bronze: the degree of smoothness or roughness determines its light-reflecting quality and the effect of the applied patination. Both of these affect the final appearance of the sculpture.

Loss of the patination means that some form of re-colouring has to be provided which may be chemical re-patination, paint or coloured wax. In this instance, a coloured wax, pigmented with earth pigments (burnt umber and terre verte) was used.

The new wax comprised a first coat of a mixture of microcrystalline and carnauba waxes. This was applied by first heating the bronze close to the melting point of the wax before applying it, then by 'flash' heating over the wax with a broad propane flame afterwards. The use of heat allows the melted wax to fill crevices and flaws, and bond with the bronze surface. This wax mixture can be pigmented with natural earth pigments to give a range of colours required to replicate a patinated bronze surface. It is important that the wax remains translucent and the colour is built up with multiple layers, shading and highlighting. The mixed wax coat is then followed by two coats of microcrystalline wax. These last two coats are sacrificial layers which must be maintained in order to preserve the coloured wax beneath.



7 Applying the wax coating to the heated surface.



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8 Statue after the application of the coloured wax.

9 Finished detail of the statue's drapery.

4 Lessons Learnt

Post-project reflections are useful for learning what could be done differently in the future. The nature of conservation often means that unforeseen dilemmas and situations arise and even the best planned projects require flexibility and adaptation to resolve them to produce appropriate outcomes.

All processes were carried out to exacting standards, following all appropriate conservation and health-and-safety procedures.

A key observation is the potential loss of original significance through unsympathetic restoration procedures and lack of regular maintenance. Annual conservation maintenance for the metal elements and five-yearly maintenance of the stone elements is recommended to ensure the continued stability of this memorial.

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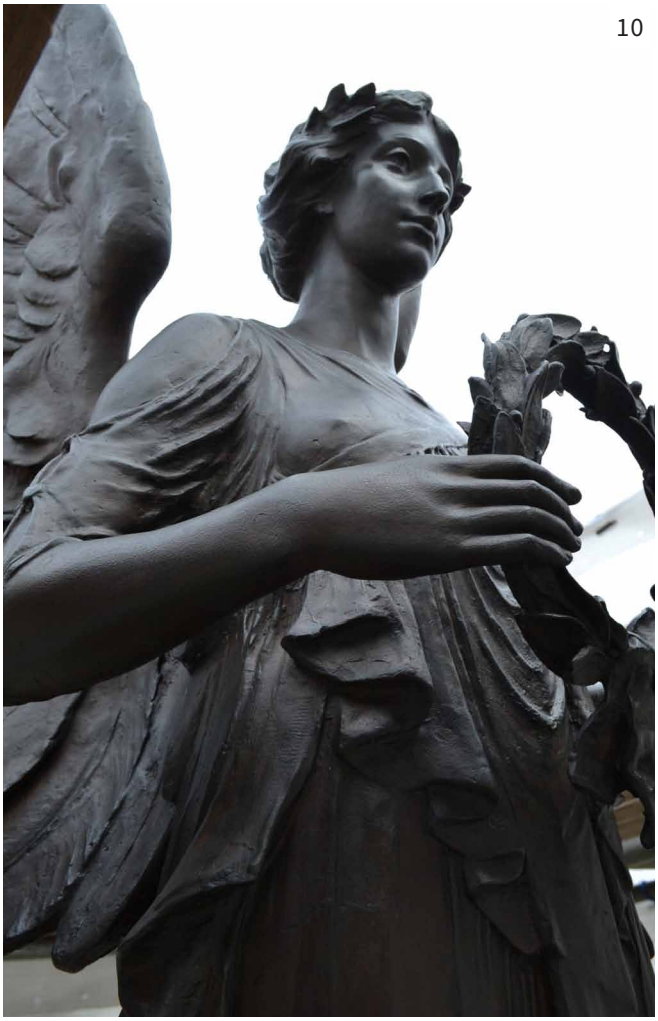

10 The statue after treatment.

5 Acknowledgements

Project Team

Client: Haringey Council

Architect: Paul Latham, The Regeneration Practice Limited

Principal Contractor: PAYE Stonework Ltd

Metals Conservator: Hall Conservation Ltd

Images

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