

RESTORATION OF CHELTENHAM WAR MEMORIAL

Condition survey and conservation options appraisal



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Index of contents

Section	Title	Page
1	The Memorial – an Introduction	3
2	Archive Material	4
3	Structure	7
3.1	Description of structure	7
3.2	Structural Condition	10
4.	Stonework	12
4.1	Description and causes of decay	12
4.2	Condition of stonework	15
	4.2.1 <i>South elevation</i>	15
	4.2.2 <i>East elevation</i>	17
	4.2.3 <i>North elevation</i>	20
	4.2.4 <i>West elevation</i>	22
5.	Lettering	24
5.1	Style of lettering	24
5.2	Condition of lettering	25
	5.2.1 <i>South elevation</i>	27
	5.2.2 <i>East elevation</i>	30
	5.2.3 <i>North elevation</i>	32
	5.2.4 <i>West elevation</i>	34
6.	New Inscriptions	35
7.	Restoration of lanterns	35
8.	Summary of issues	37
9.	Options for treatment	38
9.1	Structural intervention	39
9.2	Mitigating causes of decay	39
9.3	Restoration of lanterns	41
9.4	Restoration of lettering	41
9.5	New inscriptions	44
9.6	Conservation and repair of stonework	44
10	Maintenance	45
11.	Summary of recommended treatments	46

1. THE MEMORIAL – AN INTRODUCTION

The design and construction of the Cheltenham Town War memorial in 1921 was the culmination of a process that had been bedeviled by delay and indecision. The full story is summarized very effectively in '*A Condition Survey of Cheltenham Cenotaph War Memorial*' prepared for Cheltenham Borough Council in March 2011 by Centreline Architectural Sculpture.

This tells the story of the difficulties of choosing an appropriate site and of the thirty five designs that were submitted. Unfortunately, most of the archive material relating to these designs was destroyed in the fire that gutted the Municipal Buildings in 1960. Four designs were shortlisted and these varied from the flamboyant sculpture of H.H.Martyn (copies of the model are in the Cheltenham Art Gallery and in the Imperial War Museum) to the more austere granite monolith submitted by R.L.Boulton & Sons, a local masonry company.

At this stage, cost became the dominant issue. Appeals for funds had failed to reach the required level to be able to commission any of the designs so Boultons were asked to submit a revised scheme at a reduced cost. Thus the memorial that is seen today was constructed and unveiled on 1st October 1921.

The memorial is curtilage listed Grade II* as part of the Municipal Buildings. Over the years, there have been a number of interventions and those who lost their lives in subsequent conflicts have been commemorated on inscriptions and plaques that are part of, or affixed to, the balustrade that surrounds the memorial.

The condition of this balustrade and the paving had deteriorated to such an extent that a major project of repair and conservation was carried out in 2014 as the first phase of an overall restoration of the memorial.

The second phase is the restoration of the memorial itself. This has the following objectives:

- Restoration of the 1284 names currently carved on to the memorial
- Restoration of the stone carvings of the memorial
- Restoration of four existing bases to lanterns and the reinstatement of four new historically accurate lantern tops
- Addition of names of Cheltonians who died during World War 1 and are not currently inscribed on the memorial
- Ensure that the nature of the restoration safeguards the longevity of the memorial as a focus of remembrance and commemoration into the next century.

This report has been compiled to present the necessary information regarding condition of the memorial and to explain the various options that need to be considered in order to achieve these objectives.

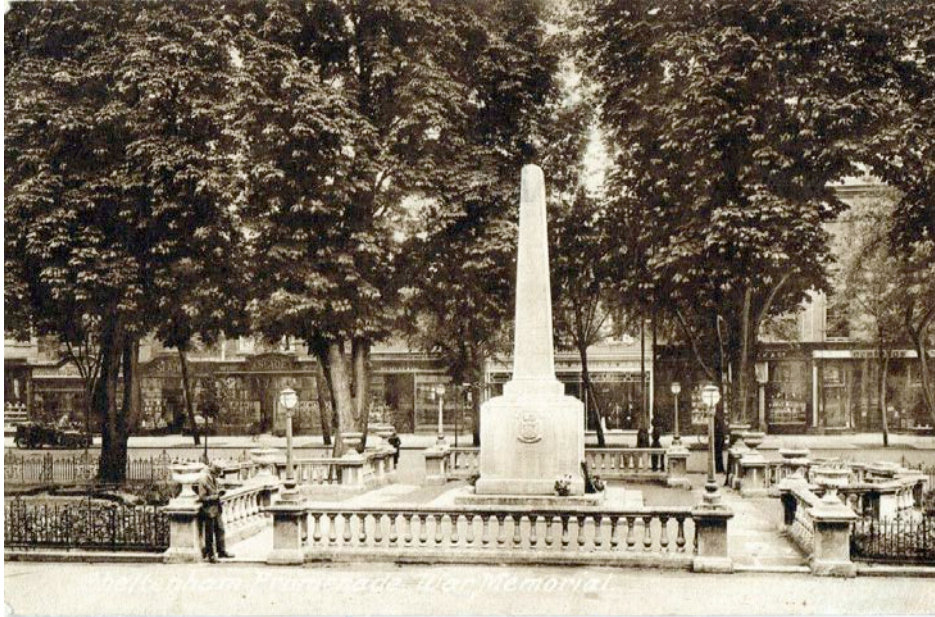


Fig 1: The memorial from the west (1925)



Fig 2: The memorial from the south showing the clarity of letters (date unknown)

2. ARCHIVE MATERIAL

Although there is a certain amount of archive material available, the original papers relating to the original schemes and construction were lost in a fire at the Municipal Offices on Boxing Day 1960. The available on-line archive is shown in the tables below but there may be other materials available from other sources.

SOURCE	INFORMATION	DESCRIPTION	LOCATION
War Memorials Online	CHELTHAM MAIN MEMORIAL	About, condition, very basic information	https://www.war memorials online.org.uk/node/154826?search=search_map%3Fsearch_value%3Dcheltenham%2520war%2520memorial
Website - War Memorials and Rolls of Honour of the Great War in the Cheltenham Area	Cheltenham War Memorial	list of all names on each elevation, dates, statistics,	http://www.remembering.org.uk/cheltenham_memorial.htm
Book	Leaving All That Was Dear: Cheltenham and the Great War by Joseph Devereux, Graham Sacker	This book is intended as a Roll of Honour, of interest to those with an interest in Cheltenham and its environs, members of family and local history societies, genealogists, social and military historians, Great War and regimental researchers, librarians and archivists, and students in human resource studies.	http://www.amazon.co.uk/Leaving-All-That-Was-Dear/dp/0952938200
Book, availability in Cheltenham libraries	Leaving All That Was Dear: Cheltenham and the Great War by Joseph Devereux, Graham Sacker	as above	http://capitadiscovery.co.uk/gloslibraries/items/205858?resultsUri=http%3A%2Fcapitadiscovery.co.uk%2Fgloslibraries%2Fitems%3Fquery%3DLeaving%2BAI%2BThat%2BWas%2BDear%253A%2BCheltenham%2Band%2Bthe%2BGreat%2BWar#availability
BBC News website	Cheltenham's war memorial to be refurbished' July 2014		http://www.bbc.co.uk/news/uk-england-gloucestershire-28390841
Cheltenham Borough Council website	Cheltenham's War Memorial	Info on restoration phases. Some useful links	http://www.cheltenham.gov.uk/info/20002/community_advice/1118/the_armed_forces/4
English Heritage Archives	TITLE	INFO	LINK
	The War Memorial, Cheltenham - Photograph, Black and white, 1921 - 1930	Low resolution scan £6.00. Suitable for reference, draft printing and web reproduction (subject to relevant permissions). Reference No. PC38022	http://www.englishheritagearchives.org.uk/SingleResult/Default.aspx?id=1736937&t=Quick&r=cheltenham+war+memorial&i=0=False&l=all
	The War Memorial, Cheltenham - Photograph, Black and white, 1921 - 1930	Low resolution scan £6.00. Suitable for reference, draft printing and web reproduction (subject to relevant permissions). Reference No. PC38023	http://www.englishheritagearchives.org.uk/SingleResult/Default.aspx?id=1736945&t=Quick&r=Cheltenham+war+memorial&i=0=False&l=all
Gloucestershire Echo	ARTICLE TITLE	DESCRIPTION	LINK
	More than 100 names to be added to Cheltenham war memorial in Promenade' Feb 2015	More than 100 forgotten heroes' names could soon be added onto Cheltenham's war memorial in the Promenade.	http://www.gloucestershireecho.co.uk/100-names-added-Cheltenham-war-memorial-Promenade/story-25967093-detail/story.html
	State of Cheltenham war memorials 'disrespectful', chairman of Civic Voice says' July 2014	The condition of Cheltenham's most poorly-kept war memorials is "disrespectful" to the war veterans whose names they commemorate, according to a civic society	http://www.gloucestershireecho.co.uk/State-Cheltenham-war-memorials-disrespectful/story-21465568-detail/story.html
	£450,000 plan to restore Cheltenham's war memorial to former glory' June 2014	To prevent the names of the fallen becoming illegible, Cheltenham Borough Council's finance chief, Councillor John Rawson (LD, St Peter's), will propose a £450,000	http://www.gloucestershireecho.co.uk/450-000-restore-Cheltenham-s-war-memorial-glory/story-21253802-detail/story.html
	War veterans slam Cheltenham Borough Council for blocking off memorial on First World War centenary day' August 2014	War veterans were left 'flabbergasted' when they arrived at Cheltenham War Memorial to mark the start of the First World War only to find the monument boarded up.	http://www.gloucestershireecho.co.uk/War-veterans-slam-Cheltenham-Borough-Council/story-22212688-detail/story.html
	Hoardings go up around Cheltenham's war memorial as restoration work begins' July 2014	Fences have been erected around the War Memorial in Cheltenham's for the start of restoration work.	http://www.gloucestershireecho.co.uk/Hoardings-Cheltenham-s-war-memorial-restoration/story-21741484-detail/story.html
	Cheltenham's war memorial to be restored from Monday with LED lights and York stone' July 2014	The restoration marks the centenary of the First World War and the first stage will be completed by September 5, in time for Battle of Britain Day on 21 September and Remembrance Sunday.	http://www.gloucestershireecho.co.uk/Cheltenham-s-war-memorial-restored-Monday-LED/story-21661416-detail/story.html
	Quango Unchained: We should not spend £450,000 on Cheltenham's war memorial. We must.' June 2014	Repairing the war memorial and remembering the sacrifices of the men and women who gave their lives for our freedom isn't something we "should" do. It is something we must.	http://www.gloucestershireecho.co.uk/Quango-Unchained-spend-450-000-Cheltenham-s-war/story-21254531-detail/story.html
	Forensic solution used to tackle Cheltenham war memorial thefts' March 2013	WAR memorials in Cheltenham are being coated with an anti-theft solution to catch criminals who try to steal the metal plaques.	http://www.gloucestershireecho.co.uk/Forensic-solution-used-to-tackle-Cheltenham-war/story-18530638-detail/story.html
	Brighter lights could shine on Cheltenham war memorial' December 2012	Brighter lights are set to shine on Cheltenham's war memorial as part of plans to give the landmark a makeover. Cheltenham Borough Council wants to place new, upward facing LED lights on the ground around the cenotaph to illuminate it and the surrounding memorial plaques in the Promenade	http://www.gloucestershireecho.co.uk/Brighter-lights-shine-Cheltenham-war-memorial/story-17556480-detail/story.html
	Intensive cleaning at Cheltenham war memorial' November 2012	SCAFFOLDING surrounds Cheltenham's war memorial as intensive cleaning takes place to prepare the monument for Remembrance Sunday.	http://www.gloucestershireecho.co.uk/intensive-cleaning-Cheltenham-war-memorial/story-17208463-detail/story.html

Perhaps the most relevant entry in the above table is the last reference to the 'intensive cleaning' that was scheduled to take place in November 2012. As with war memorials all over the country, the understandable desire to present a memorial in a clean state for Remembrance Day commemoration, means that a regular programme of cleaning is carried out in the autumn. Cheltenham war memorial has been no exception and it is known that recent cleaning has used 'jet washing'.

3. STRUCTURE

3.1 Description of construction

As has been documented, the design of the Cheltenham War Memorial was simplified in order that its cost came within the budget constraints. The masonry company responsible for the design and construction (Boulton & Sons) revised their original scheme and came up with the simple obelisk (24' (7.3 m) high) set on a base (4' 6" (1.37m)) square in plan. The panels which formed the sides of this base were large enough to take the 1284 names inscribed.

A schematic representation of the Memorial is shown in Fig 3. This shows how the base has a plinth, panels and panel moulding all built around a central core (which is almost certainly brick).

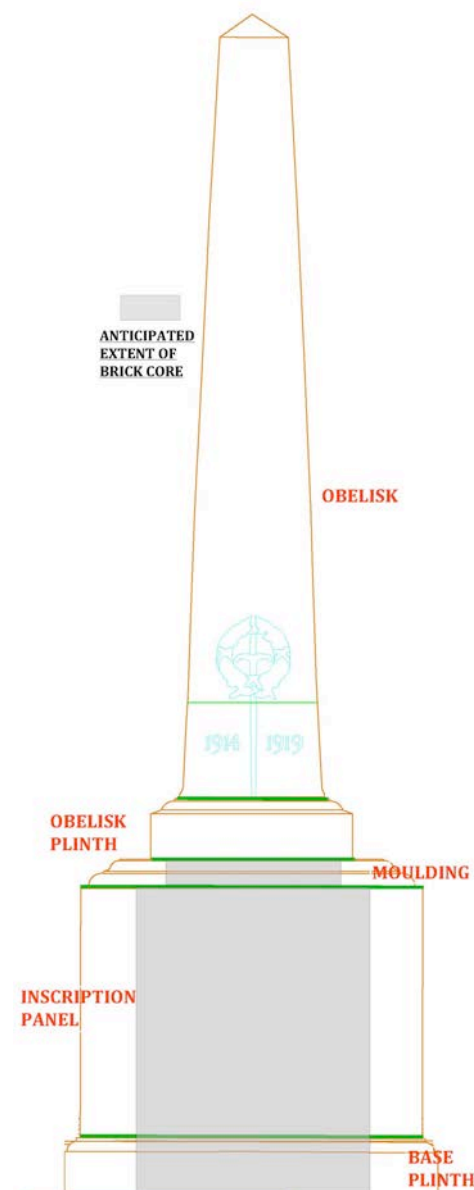
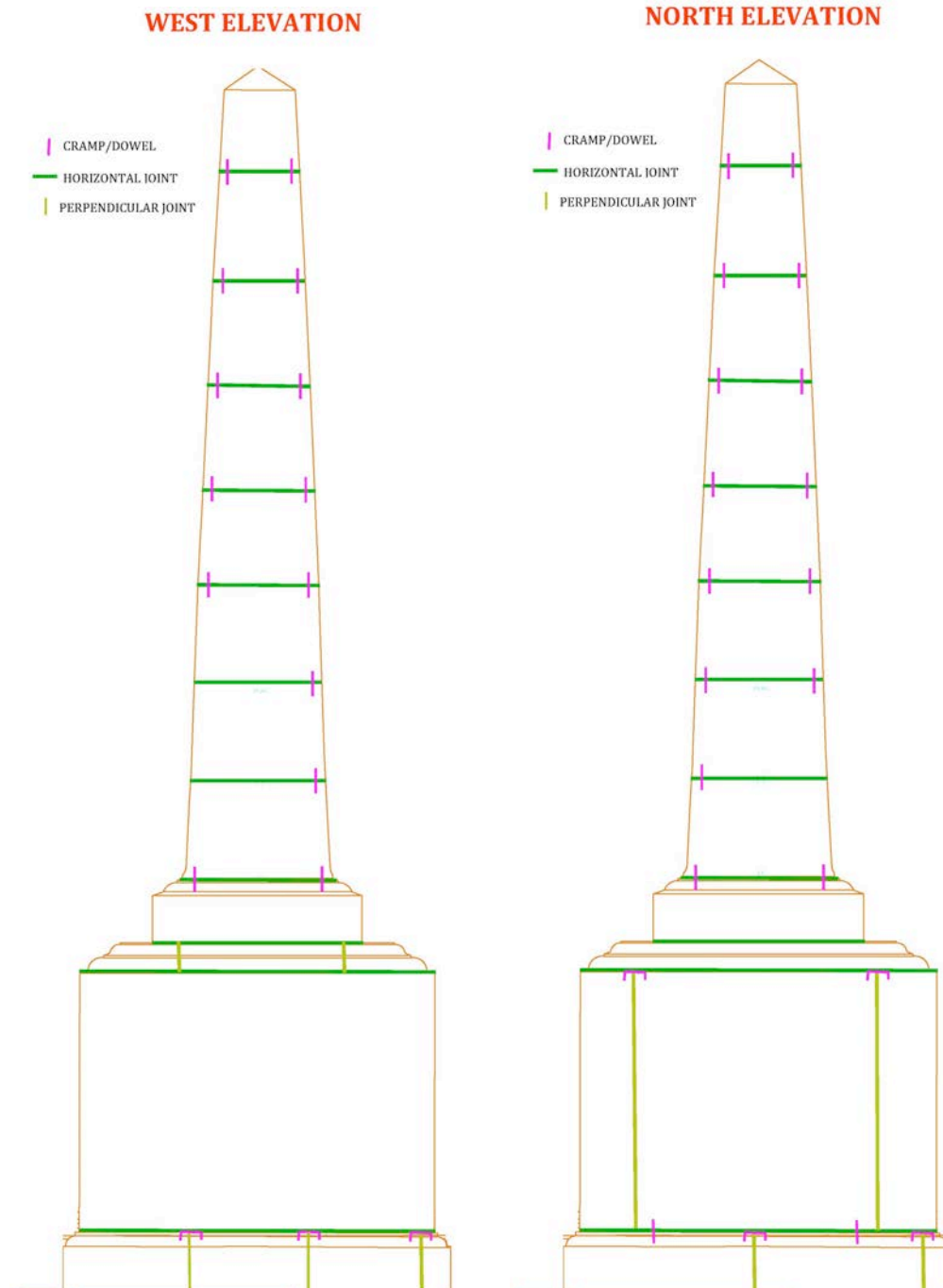


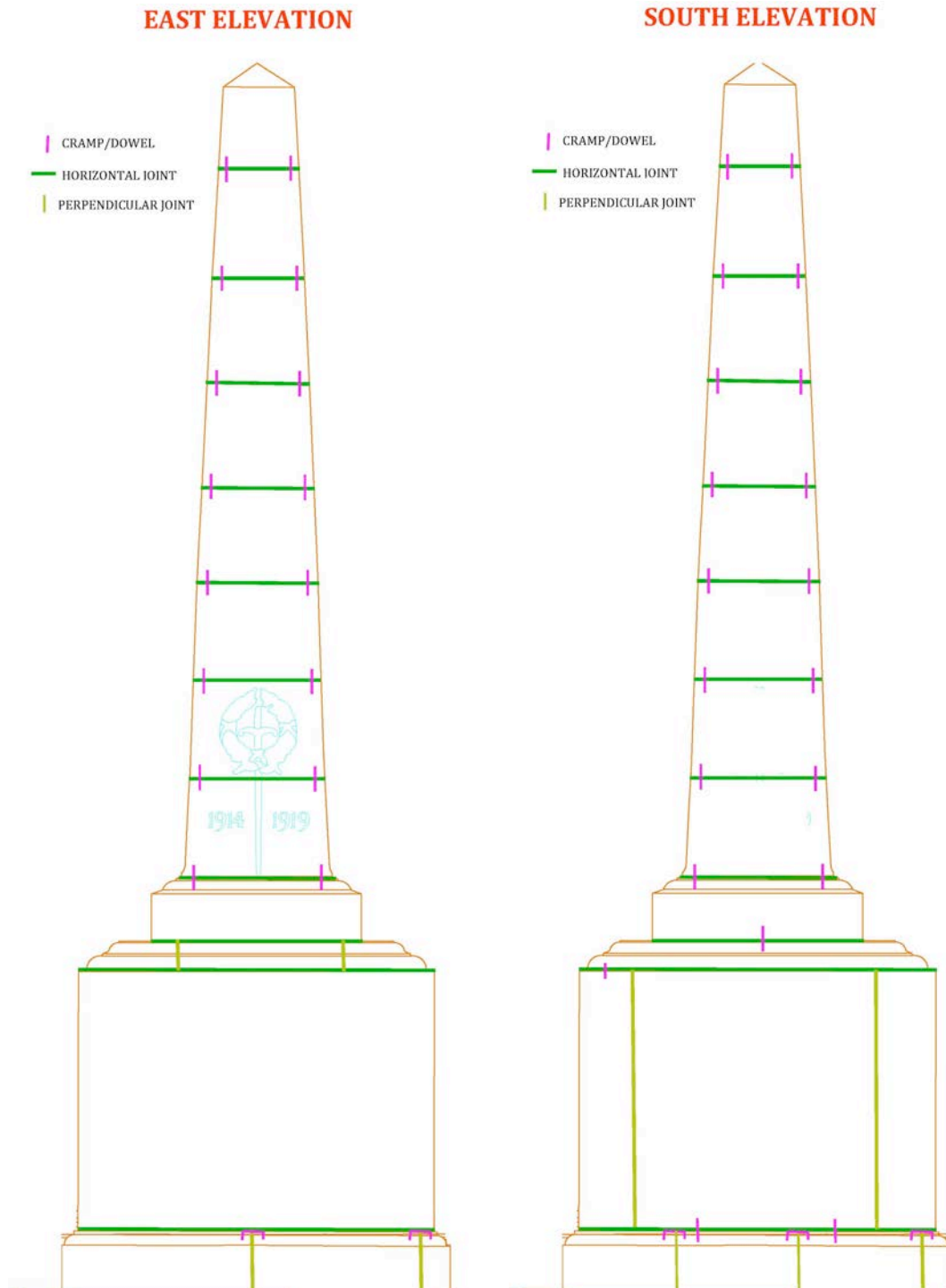
Fig 3: schematic presentation of the memorial showing the various components used in the construction

The base plinth is made up of ten stones each of which is secured to the adjacent one with a cramp. Figs 4 - 7 show the detailed construction of each elevation including the location of cramps as registered by a covermeter survey of the memorial.



Figs 4 and 5: construction and cramps of west and north elevations

The inscription panels on the west and east sides are made from a single stone with a depth of over 1' 3" (0.38 m); this dimension was established as the necessary width to receive a single column of inscriptions on the return (north and south) faces. Thus the smaller inscription panels on the north and south elevations contain four columns of names. These two smaller stones are secured to the base plinth using vertical dowels.



Figs 6 and 7: construction and cramps of east and south elevations

Above the inscription is a low moulded stone that makes the transition between the plinth and the obelisk. This moulding consists of a single stone on the north and south elevations with vertical joints on the east and west elevations. The monolithic obelisk plinth sits on top of the core and the moulding; this supports the eight courses of the obelisk, each course being a single stone. There appears to be a single dowel between the moulding course and the obelisk plinth (on the south side) and each course of the obelisk is secured to the one beneath with cramps at each corner. There seem to be a few exceptions (for example at the NW

corner) where no signal was received from the covermeter; this may be due to the cramp being at too great a depth to register on the surface mounted detector.

3.2 Structural condition

Overall the structure is in good condition. The Memorial continues to be upright and there are no signs of significant continuing structural issues. There is however some evidence of structurally related problems. These are:

- The west ends of both of the smaller inscription panels have moved slightly in relation to the plinth beneath. Measurement suggests a movement of 3 - 5mm outwards for each of the panels. This is despite (and perhaps because of) the dowels between these panels and the plinth. The result of this movement is shown in the small dislocation at the edge of the central inscription panels on the north and south sides (Fig 8).

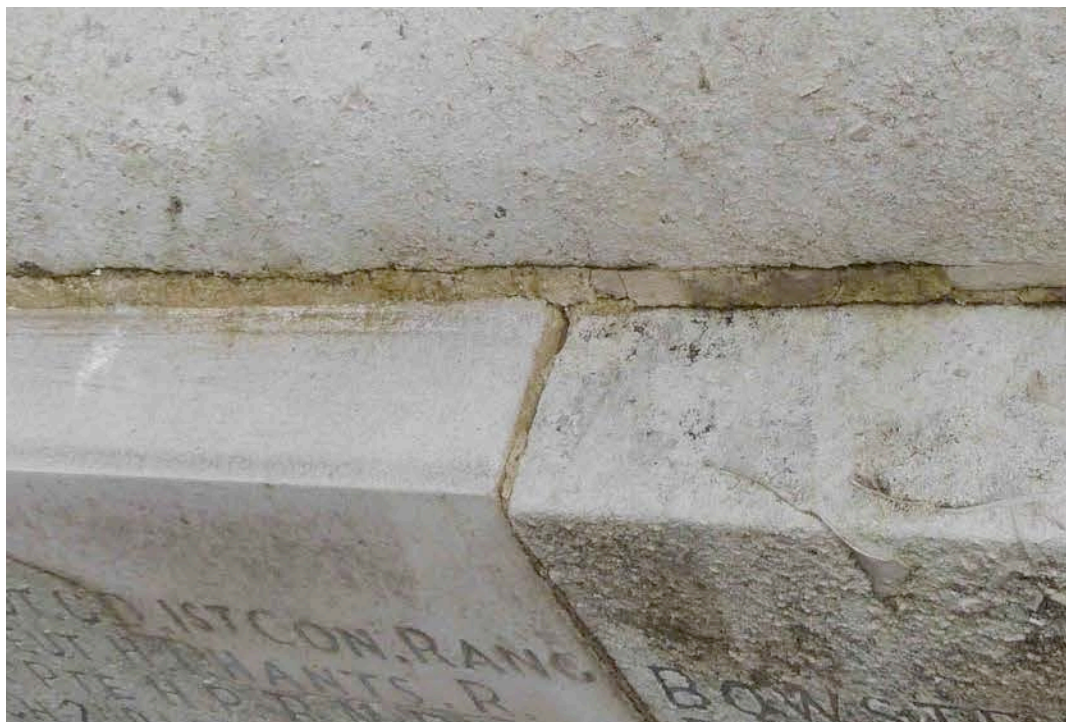


Fig 8: small dislocation between central panel on south side and adjacent stone

- The central plinth stone on the west side has a vertical crack running immediately above the joint in the top step beneath (Fig 9). This suggests that there has been some minor settlement. The crack is not recent and does not appear to be developing.



Fig 9: crack in moulded base plinth stone immediately above joint in step

- On the north, east and south sides, there are slight spalls of stone adjacent to joints in the plinth (Figs 10 and 11). These are due to tensions that have built up due to corrosion and expansion of the cramps across the joints of the plinth.



Fig 10 and 11: spalling of base plinth stone due to corrosion of cramps (south and north elevations)

4. STONEWORK

4.1 Description and causes of decay

All of the visible stonework of the main memorial is constructed from a Portland Whitbed stone. The stone is described as *'an open textured oolitic limestone from the Portlandian formation (Jurassic). Formed from micrite (fine-grained calcium carbonate) ooids with a small quantity of micrite occurring as matrix. The shell fragments are elongated to rounded and are typically about 4mm across. The stone generally appears to be moderately compacted although the degree of compaction is variable. Most of the areas exhibit a fairly high intergranular porosity with interlinking of adjacent pores. In some areas ooids are fused or are surrounded by a sparse carbonate matrix'*.

Portland stone generally has a low saturation coefficient, a low microporosity and an open oolitic structure which performs well over long periods. Although each situation will be different, the stone will weather at between 1 and 4mm per 100 years but it could be greater depending on local levels of pollution, degree of exposure and cleaning or other interventions.

The stone on the memorial is generally of good quality with variable shell content. As shells do not tend to erode, they are a good indication of the degree of general erosion (Fig 12). On sections exposed to weathering (for example the horizontal (sky-facing) part of the moulding), the erosion is at least 3mm.



Fig 12: detail of obelisk stone showing how shells (which do not erode) stand proud of adjacent eroded stonework

Deterioration of the stone has occurred through a number of mechanisms including:

- Erosion through the action of rain (often acidic due to dissolved

- pollutants)
- Wetting/drying cycle causing expansion and contraction of clays within the stone (Fig 13)



Fig 13: stonework on east side panel showing deterioration through clay swelling

- Corrosion of cramps used in the construction of the memorial
- Original design of the memorial (Fig 14) which means that certain parts of the stonework remain saturated; this makes them susceptible to freeze/thaw cycles and microbiological growth within the stone.



Fig 14: original design leading to saturation of inscription panel

- Growth of microbiological material due to combination of damp stone, environmental conditions and nutrients from adjacent trees (Fig 15)

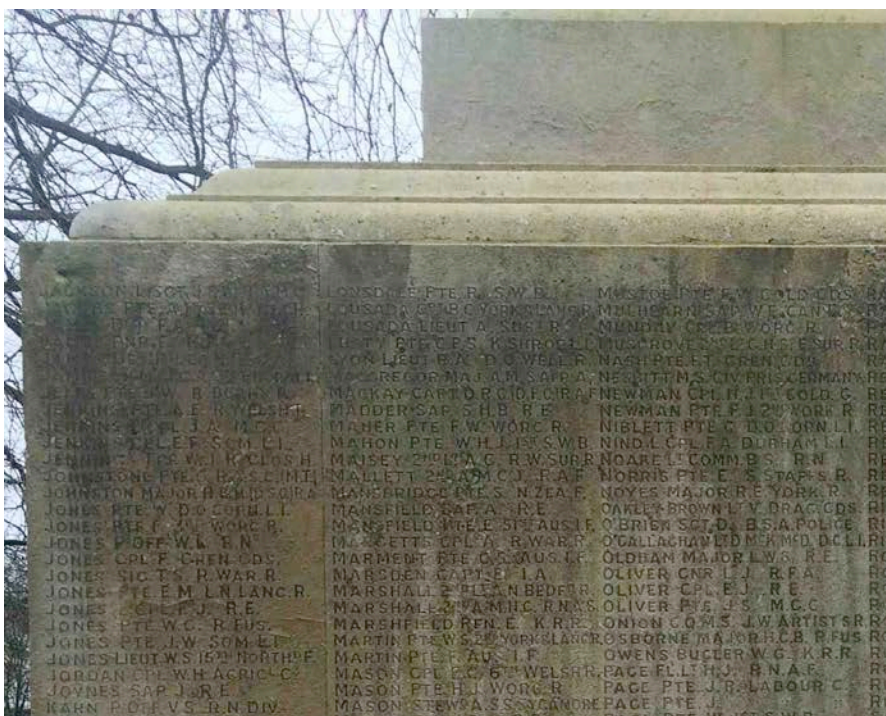


Fig 15: detail of north side inscription panel showing algae growth and how it obscures inscription

- Repeated cleaning of the memorial which has caused accelerated erosion and opened up the pores of the stone (Fig 16); this in turn encourages further microbiological growth (Fig 17).



Fig 16: detail of stone (x50 magnification) showing how cleaning has opened up the surface pores of the stone



Fig 17: detail from north inscription panel showing how microbiological growth (green) has colonized deep within the pores of the stone

4.2 Condition of stonework

4.2.1 South elevation

The condition of the plinth is generally good although there is some cracking of vertical pointing as well as the spalls in the stone adjacent to the joint (see 'Structure'). The inscription panel also has a repaired spall at the base (Fig 19). The stone of the inscription panel is generally sound but there is some algal staining and more general erosion at high level. The mortar joints are intact although there is some cracking and disruption in the vertical joint with the west elevation inscription panel. There are two indents in the return of the west elevation inscription panel and one in the corresponding stone on the east side.

The horizontal joint at the top of the inscription is cracked (Fig 20) and there is some mortar repair on the top (sky-facing) ledge. The moulding has a flat top surface where water tends to collect; as a result, it is generally eroded with localised cavities of up to 5mm depth; some of these are due to clay-rich pockets within the stone. The obelisk plinth also has erosion but not to such a great extent as water is able to run off easier.

The obelisk stones are generally sound with overall erosion of about 1 – 2mm; the evenness of the surface suggests that the surface may have been tooled off. This is supported by tool marks still visible on the third stone from the bottom (Fig 21) as well as a slight irregularity in the arris which does not have the precision that might be expected from the original masonry. The lowest stone has some slight surface deterioration and there is a very fine crack/shake in the stone just to the east of centre.



Fig 18: general view of south elevation

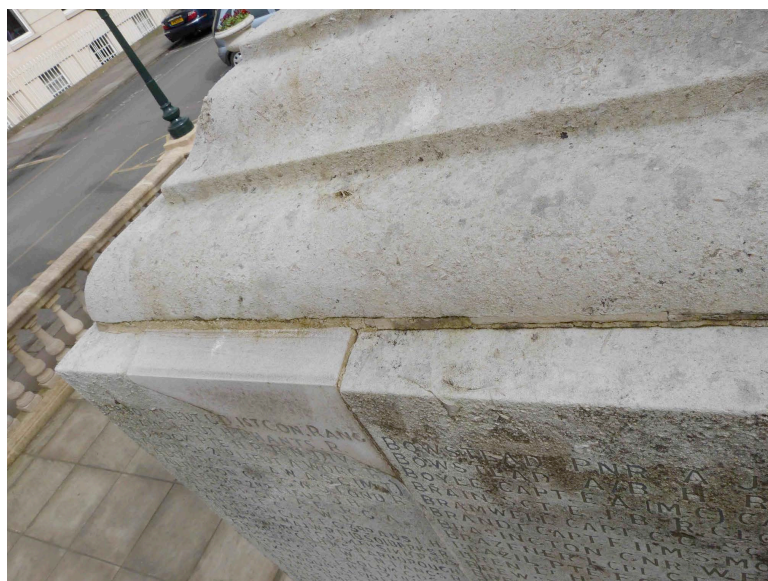


Fig 19: detail of moulding showing cracked pointing



Fig 20: repair at base of inscription panel



Fig 21: vertical tool marks on obelisk stone

4.2.2 East elevation

The plinth (which consist of three stones on this side) is generally sound with one of the stones being particularly shelly. The monolithic inscription panel has erosion and staining at high level and, at low level, there is some minor lamination of the surface. This appears to be due to a yellower clay-rich bed within the stone.



Fig 22: overall view of east elevation

The horizontal joint between the inscription panel and the moulding has previously been repointed but is now cracked (Fig 23). The moulding itself has two vertical joints; the mortar in both of these is cracked. The stone itself has general erosion but also a number of more localised cavities (Fig 24).



Fig 23: cracked pointing at base of moulding



Fig 24: erosion of sky face of moulding

The obelisk plinth stone, which contains an inscription, is quite eroded. The joint at the bottom of the stone is cracked and there are a number of minor cracks in the stone immediately above the joint (Fig 25). This seems likely to be due to thermal tensions arising from the very fine hard cement joint.

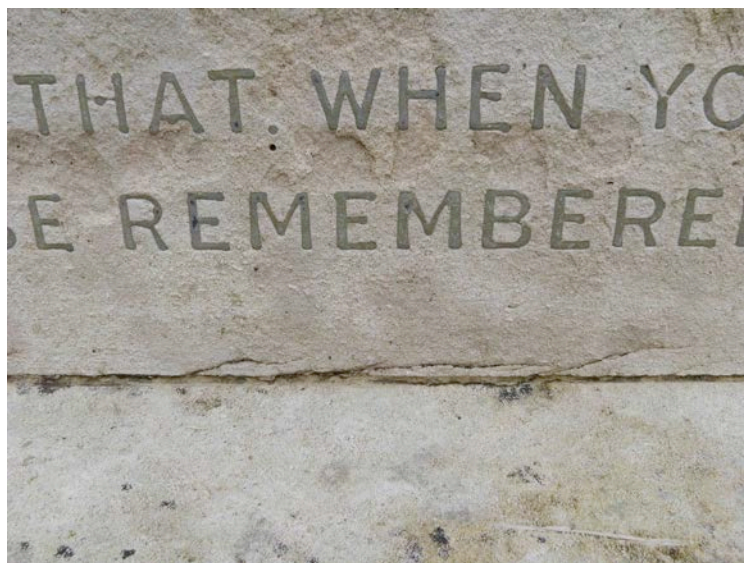


Fig 25: cracks in stone adjacent to joint

The obelisk stones are sound albeit eroded. There is again a discernible inaccuracy to the arris which suggest that the stones have been re-tooled but there is no evidence of this around the two lower stones, both of which have relief carvings. The wreath (Fig 26) and the sword (Fig 27) are sound except for the tip of the sword where there is slight lamination of the stone (Fig 28). The stone around the lower 'lip' is more generally eroded. The mortar in the joint between the lowest two stones of the obelisk is cracked.



Fig 26: detail of wreath



Fig 27: detail of sword and date inscription



Fig 28: detail of deterioration at tip of sword

4.2.3 North elevation

The plinth is generally sound but there are cracks in the pointing of both horizontal and vertical joints. There is a small spalled section of stone due to the corrosion of a cramp between stones of the plinth.



Fig 29: overall view of east elevation

The inscription panel is perhaps less eroded than on other sides. However, as this is north facing, it receives less sunlight and therefore remains wetter. This has allowed for more microbiological growth to become established. The eastern vertical joint is slightly cracked but the stones are flush. At the western vertical joint, there is a displacement of 2-3 mm between the two stones and the pointing in the joint is cracked (Fig 30).

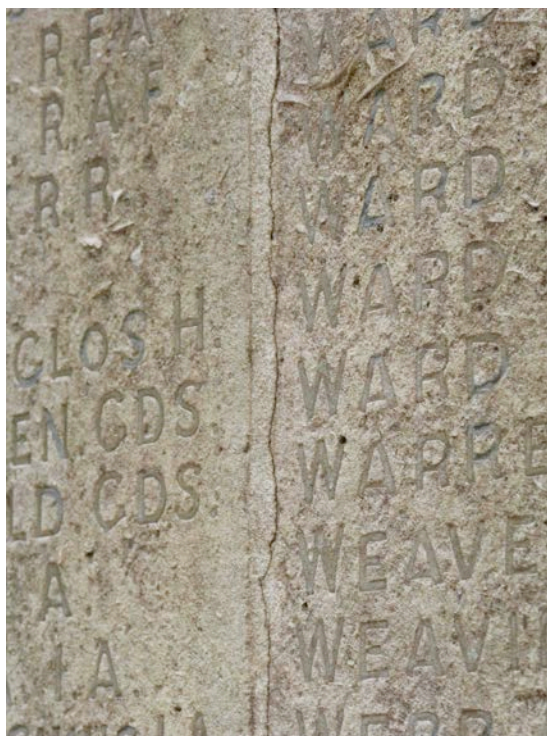


Fig 30: detail of vertical joint of inscription panel showing slight displacement and cracked pointing

The mortar in the joint between the inscription panel and the moulding is cracked. The moulding stone has less erosion than on other sides but there are still some localised pockets of decay. The obelisk plinth has some erosion and microbiological deposits.

The north faces of the obelisk stones are generally sound but there is a noticeable increase in the amount of microbiological growth compared with other sides. There are a number of visible geological faults in the stone; the stone second from the bottom has a number of vertical natural fissures and the middle stone has a diagonal fault (Fig 31). The pointing between the stones appears sound.



Fig 31: natural fault in obelisk stone

4.2.4 West elevation

The plinth stones are sound except for the vertical crack through the middle of the central stone immediately above the joint in the step (see 'Structure'). The pointing in both the vertical joints and the horizontal joint at the top of the plinth is cracked.



Fig 32: overall view of west elevation

The monolithic inscription panel has some staining at high level due to water run-off but the area beneath the protruding has differential staining. In general the protected areas are clean and without erosion but the exposed areas of the carving (lower half of shield and ribbon) are very worn and continue to decay (Fig 33). The lower section of the panel displays similar surface deterioration of clay-rich beds as was found on the corresponding stone on the east elevation.

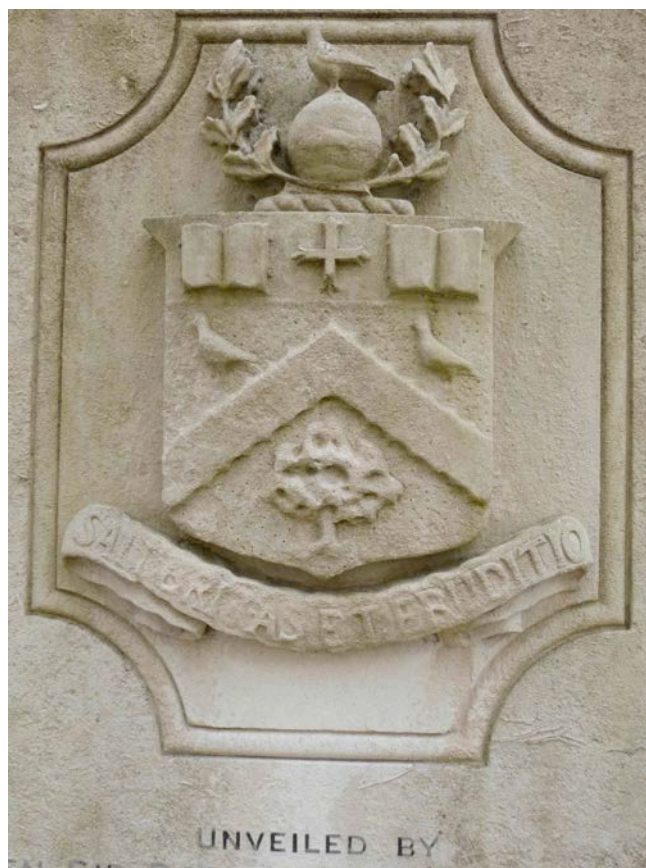


Fig 33: detail of carved shield

The horizontal joint at the top of the inscription panel has been repointed but the mortar is now cracked. The moulding has general and localised erosion but is in sound condition overall. The vertical joints have previously been repointed but are now cracked (Fig 34) and there are some associated parallel cracks in the adjacent stone. The obelisk plinth is sound with some microbiological growth. The horizontal joint with the moulding is mostly intact but there are some cracks in the adjacent stone (Fig 35).



Fig 34: detail of moulding showing cracked joints



Fig 35: detail of moulding and obelisk plinth showing cracks in stone

The obelisk stones are sound; once again the arris has some variation which suggests re-tooling. The fine joints are mostly intact.

5. **LETTERING**

5.1 **Style of lettering**

The quantity and quality of the lettering on the memorial is a tribute to the masons who originally carried out the inscriptions. Each letter was cut with a 'V' shaped incision and then small holes drilled at the ends and at intersections of each stroke of a letter. This is a technique normally associated with lead lettering; soft lead would be tapped into the incision and the holes acted as a means of securing the lead. Finally the lead would be trimmed with a knife or chisel. Small holes have also been used for the dots between initials and for abbreviations.

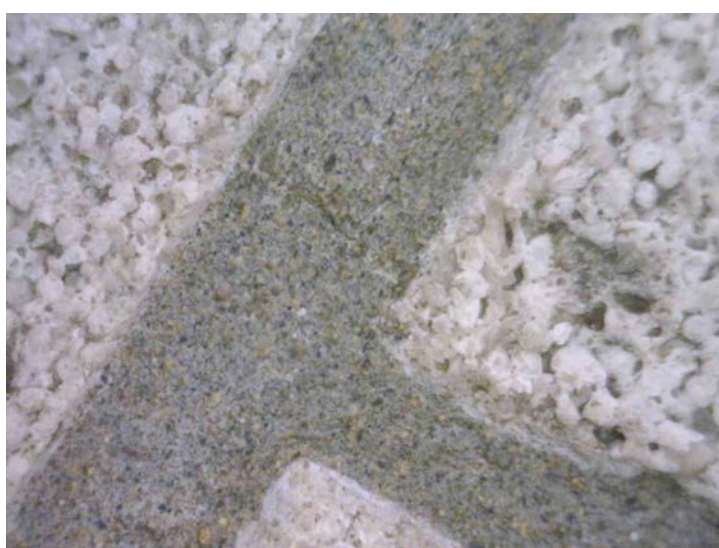


Fig 36: detail of mortar fill (x50 magnification) also showing faint white margin which is probably glue applied to lettering to aid adhesion

It seems likely that lead lettering was the original intention but it is known that there was little money available during the design and construction so, instead of lead, the letters were filled with fine cement based mortar containing sand and some wood ash (Fig 36). This seems to have been applied over a thin coat of adhesive and then given a polished finish (Fig 37) to resemble lead. It may be that the mortar had a small amount of oil included in order to facilitate this polish.



Fig 37: small section of original finish showing dark grey polished appearance

5.2 Condition of lettering

The current condition of the lettering is generally fair but many areas have suffered from a variety of effects that have combined together to make some areas of the inscriptions faint although still legible. Problems have arisen because of:

- Erosion and surface deterioration of the stone through weathering has left the mortar fill without support
- Erosion of the mortar through weathering
- Repeated cleaning of the lettering using high pressure water or other inappropriate methods has abraded both the stone and mortar

Over the years, there have been a number of attempts to improve the legibility of the lettering. This mostly has been carried out by using grey paint to fill areas of missing or fading mortar fill (Fig 40). However the erosion of the surface has meant that introducing a sharp precise line with paint has been impossible (Fig 41).



Fig 38: detail of mortar fill missing from incision



Fig 39: detail showing erosion of both incision and mortar fill

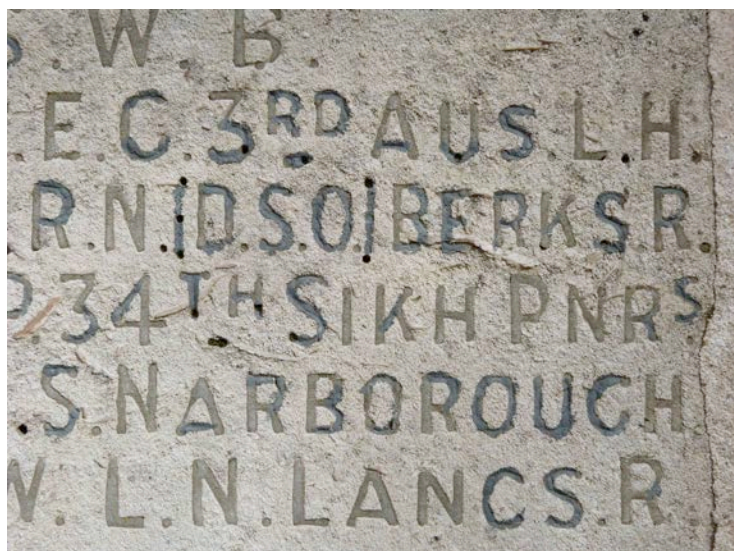


Fig 40: typical example of repainting



Fig 41: detail of repainted lettering (x50 magnification) showing inaccuracy of line compared to precision of original (see Fig 36)

A detailed analysis of the lettering has been carried out to try and quantify the extent of the following:

- Loss of infill (marked orange on drawings)
- Fading of incised detail (marked blue on drawings)
- Areas of repainting (marked green on drawings)

Note: drawings have been intentionally manipulated to show up colours

In addition, there are three sections on the south face that have been indented with new stone which has then been inscribed using a similar technique to that used originally. On the east face, there are also a number of names that have been re-filled using a hard grey resin. Unfortunately the letters do not match the originals in dimension or style so, as a consequence, they stand out from those around them.

5.2.1 South elevation

This is exposed to the prevailing weather and therefore would be expected to suffer from increased erosion compared to the more protected east and north sides. It appears that the upper section of the stonework (where the lettering is generally obscured by algae and other microbiological growth) has quite extensive areas of re-painting and, towards the east side, there are more areas of faded incisions. The lower west quadrant is in better condition but the lower east quadrant has some localised areas where the infill is missing; this may be due to variations in the stone or excessive cleaning near the corner.



Fig 42: upper west quadrant of south inscription panel



Fig 43: upper east quadrant of south inscription panel



Fig 47: upper north quadrant of east inscription panel

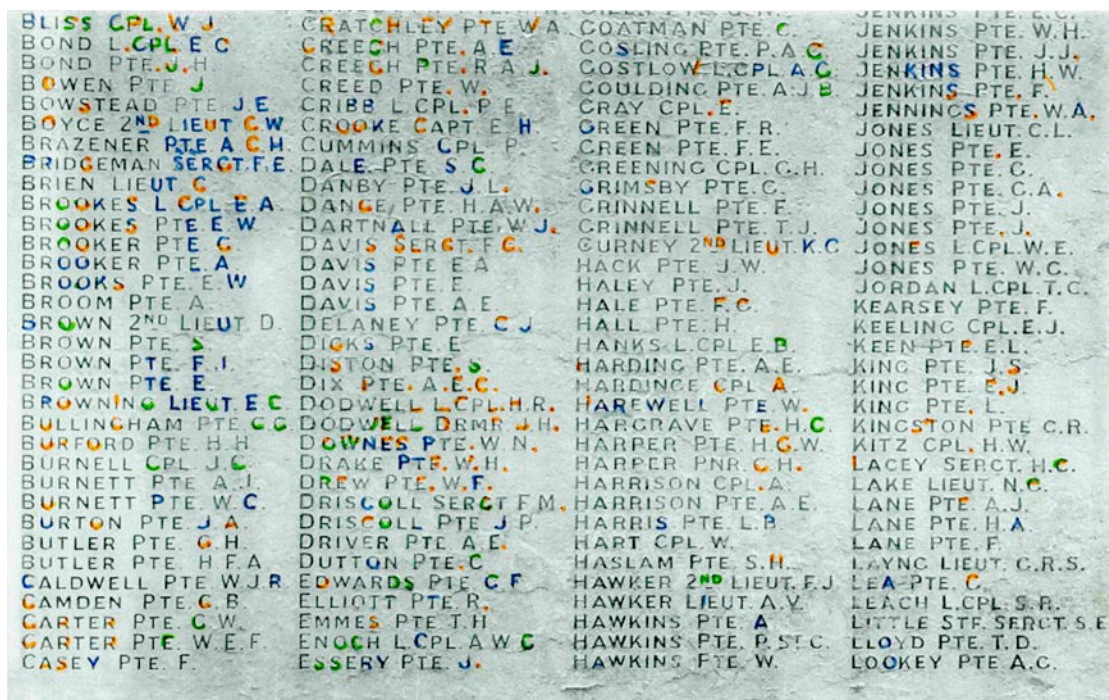


Fig 48: lower south quadrant of east inscription panel

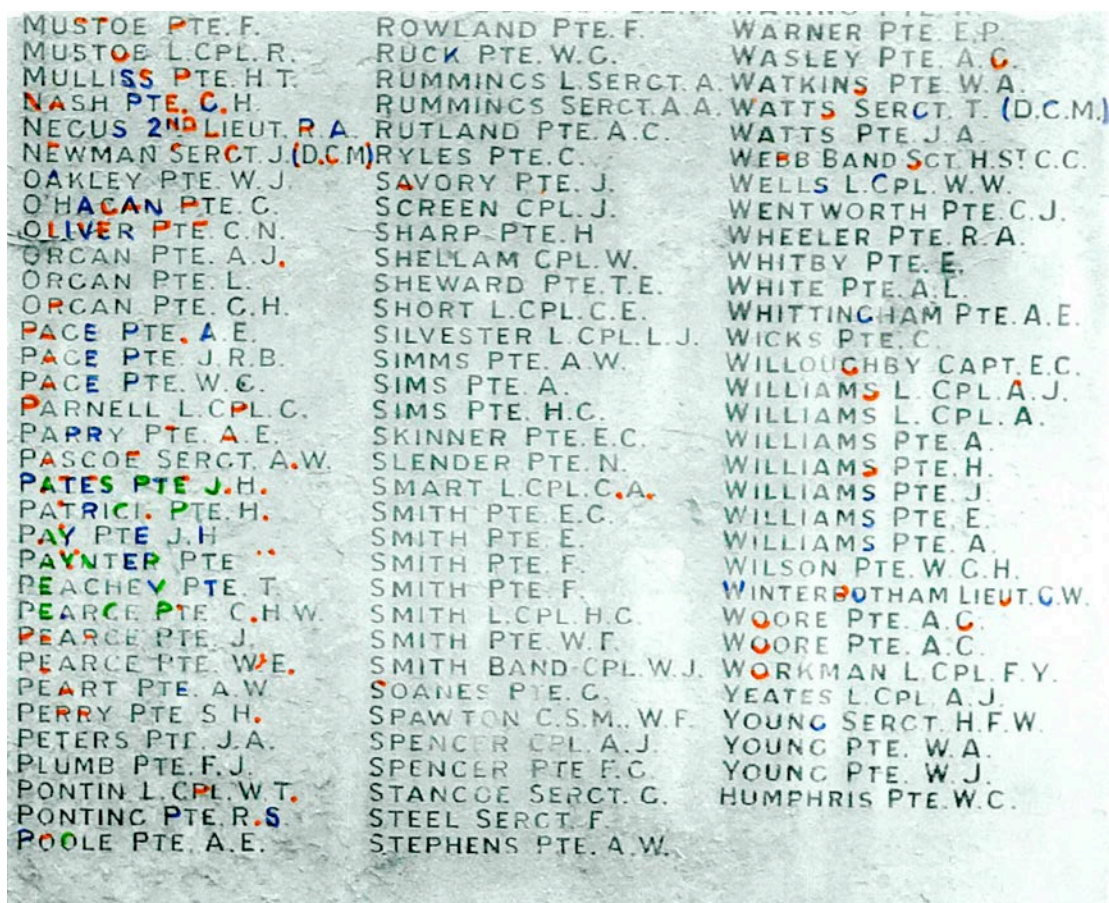


Fig 49: lower north quadrant of east inscription panel

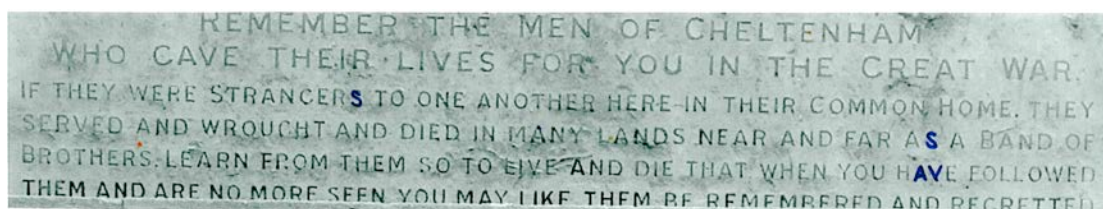


Fig 50: inscription on base of obelisk on east elevation

5.2.3 North elevation

This is more protected from the weather and as a consequence is less eroded but is subject to increased microbiological growth. The current condition shows how the lettering on the upper part of the inscription panel can become obscured by algae. The resulting cleaning of the stonework has resulted in considerable erosion of the infill and loss of detail in this area. The lower half is generally in much better condition with almost all of the lettering still retaining full detail.



Fig 53: lower east quadrant of north inscription

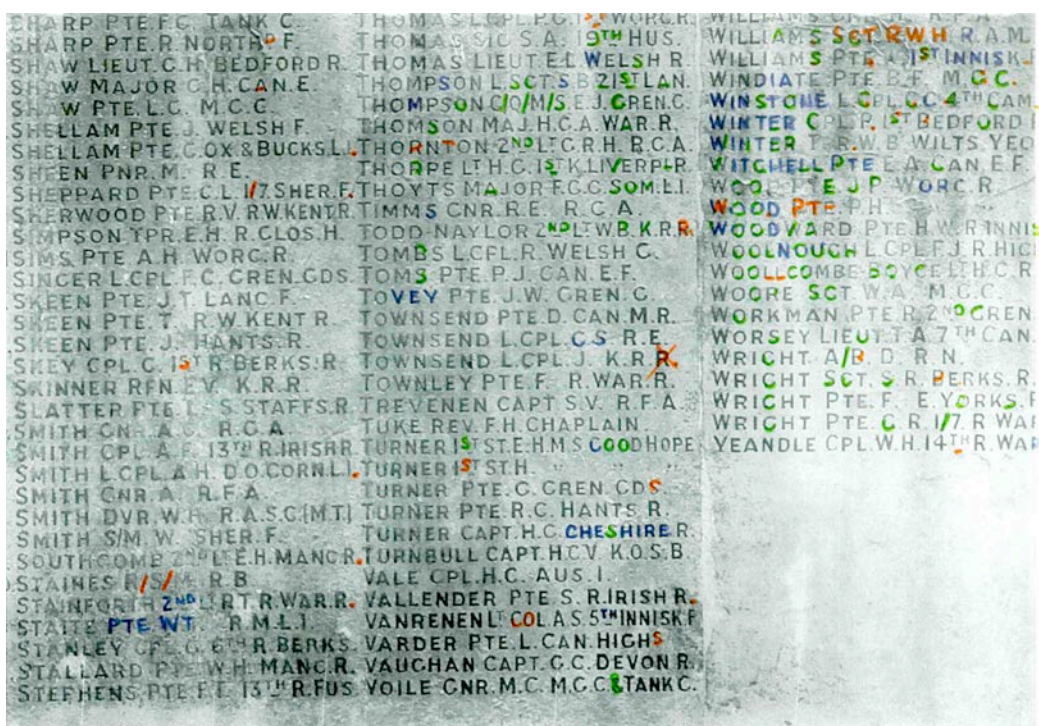


Fig 54: lower west quadrant of north inscription

5.2.4 West elevation

This elevation has much less lettering and some of the infill retains an original dark grey polished surface. The names on the lower south side have been affected by the surface spalling of the stone but the letters remain legible; the lower north side is in better condition. The larger central inscription is in good condition.

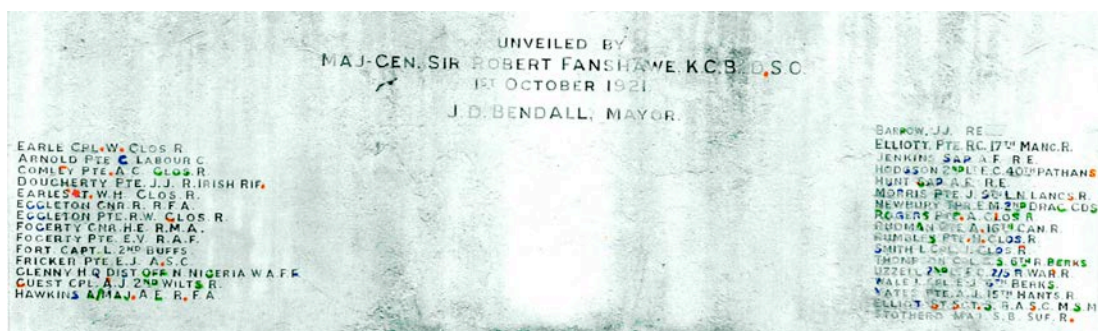


Fig 55: inscription on west elevation

6. NEW INSCRIPTIONS

The original memorial had names inscribed on three sides (north, east and south). Subsequently, after the unveiling, a further 31 names were added on the west elevation.

Considerable work has been carried out by Gloucestershire Family Archives and a local historian into establishing whether the names on the memorial are an accurate record of those Cheltonians who lost their lives in World War 1 and it is believed that a number of names are missing. The original eligibility criteria, detailed within the Council minutes of 1919 and as designated by CWGC at the time, was as follows:

- Men fallen whilst engaged in active service during WW1 or who lost their life from injuries sustained in active service up until 31st August 1921
- Born or resided within the Borough of Cheltenham

After consultation with the War Memorial Trust, War Graves Commission and project stakeholders, the project team propose to expand the criteria to include women and those who were born or resided within the current town boundary, unless their names are featured elsewhere. Advice received from the War Memorials Trust indicated that the following evidence must be in place:

- A copy of a military record
- A copy of an official birth, death or marriage certificate
- Confirmation that the individual is not commemorated on another local war memorial

Initially, it was thought that over 100 names needed to be added but further research using these criteria has reduced the number to less than twenty.

A number of additions have been made to the memorial over the years including commemoration of those that fell in the 2nd World War, Korean War, Oman, Aden and the Falklands. These memorials have all been inscribed on to the stone balustrade either directly through letter-cutting into stone or by applied bronze plaques fixed to stone panels.

7. RESTORATION OF LANTERNS

Four lanterns stand at each corner of the memorial and there are a further six along the Promenade. Originally these had a circular stem and, at the top, a glass orb set within a bronze frame (Fig 56). Although examination confirms that the existing stems are original, the tops of the lanterns have been replaced (Fig 57) with the new top secured to the original stem with a collar and hexagonal nut. This is thought to have taken place sometime in the 1950s as a glimpse of the lanterns in a video of the fire at the Municipal Offices on Boxing Day 1960 (https://www.youtube.com/watch?v=oA7_C7mih3I) shows the current lamps to be in place.



Fig 56: detail of original lantern

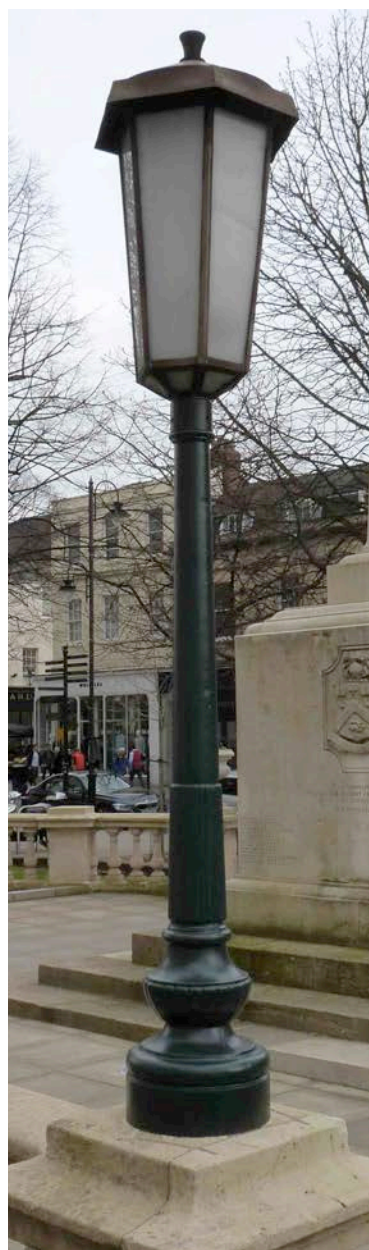


Fig 57: detail of current lantern

As part of the process of restoring the original lanterns, certain patterns are being examined by Barr & Grosvenor Ltd. Further information is awaited.

8. SUMMARY OF ISSUES

As with any historic structure, the causes of deterioration and decay are a complex mix of factors including design, nature of construction, type of stone, local environment and previous interventions. In the case of the Cheltenham war memorial, it is possible to identify a number of major issues that will need to be assessed in order to be able to devise an effective response in terms of anticipated repair and ongoing maintenance.

These issues can be summarized as follows:

- **Structural.** Although the overall structure is sound, there are a number of places where the corrosion of cramps used in the construction of the memorial have led to localised spalling of the stone, the opening of joints and minor displacement of inscription panels on the north and south sides.
- **Design.** The interaction of water with stone is key to understanding decay processes. In the case of the memorial, there is a fundamental design flaw that allows rainwater to run down from the obelisk and moulding and to saturate the upper parts of the inscription panels. This, along with the presence of nutrients from adjacent trees (that collect on horizontal surfaces) means that conditions are perfect for the colonisation of the pores of the stone by algae and other microbiological growth. In the normal course of events, this might not be a problem but, in this case, the growth of the algae obscures the inscriptions which are the most significant part of the memorial.
- **Previous interventions.** Many people would consider that reduced legibility of names on the memorial is inappropriate and some would claim it to be disrespectful. The objective to keep the inscription clean and legible is therefore understandable but, in cleaning the stonework (particularly if methods such as pressure washing are used), the surface pores are damaged and opened up. This open texture creates even more ideal conditions for colonisation by algae and this leads to further compromise of the legibility. There exists therefore a cycle of algae and cleaning and more algae. This causes damage to the stone but more particularly to the lettering itself.
- **Lettering.** It seems likely that the lettering was designed to take a lead fill but, for whatever reason, a mortar was used that originally closely resembled lead. As the mortar has become eroded or detached either through the effects of weathering or through repeated cleaning, so legibility has become compromised. However there are no names on the memorial that are currently illegible. Some interventions have been made to improve the situation; on the south elevation, three stone indents have been inserted and new letters cut. This generally has worked well although the depth of the indent as viewed from the side (Fig 58) sits unhappily with the bulk of the monolithic panel. The other major change to the lettering is the attempts to re-paint faded letters. This has been generally unsuccessful; it may have temporarily enhanced the legibility

but the crudeness of the edges stands in contrast to the precision of the original lettering.

9. OPTIONS FOR TREATMENT

This section has been drawn up to show the full range of options that would be available for the restoration of the memorial. One of the objectives laid down by Cheltenham Council was to “*ensure that the nature of the restoration safeguards the longevity of the memorial as a focus of remembrance and commemoration into the next century*”. This objective, albeit laudable, should not and cannot be taken to mean that the current restoration should be of sufficient extent that it will last until the end of the 21st century. What can be achieved during the current restoration are the following;

- A more detailed assessment and understanding of the existing and future issues face by the memorial
- Establishing correct methodology to ensure the condition of the memorial is as good as it could be given the fact that it is constructed of a natural material that will continue to weather
- Ensuring the highest quality of work is carried out

None of these will preclude the need for future and regular maintenance and repair (see section 10).

The following tables include a range of practical options with a brief summary of the advantages and disadvantages. Some interventions (for example the treatment of the stonework with waterproof coating) have been rejected on the grounds of either:

- being an inappropriate treatment that is likely to cause further damage in the long term
- treatment would compromise ability for further treatment in the future
- the difficulty of getting listed building consent
- unlikely to qualify for grant aid

In general the options have been organised so as to start with the option of least intervention. The ticked boxes relate to the recommendation of the author.

Budget costs do not include for access and preliminaries (e.g. welfare, protection, health and safety, site set up and clearance, etc).

9.1 Structural intervention

OPTION	ADAVANTAGES	DISADVANTAGES	Recommended	Possible	Not recommended
a) Repair spalled stonework	<ul style="list-style-type: none"> Minimum intervention 	<ul style="list-style-type: none"> Corroding cramps remain in place Possible continued disruption 		✓	
b) Cut out spalled stonework, remove underlying cramps and indent new stone	<ul style="list-style-type: none"> Removes potential for further spalling 	<ul style="list-style-type: none"> More sections of indented stone 	✓		
c) Cut through cramps and remove dislocated inscription panels on north and south elevations. Replace any revealed cramps and set panels back flush with adjacent stone	<ul style="list-style-type: none"> Removes potential for further spalling Removes dislocation 	<ul style="list-style-type: none"> Potential for damage to lettering Considerable disruption 			✓

9.2 Mitigating causes of decay

OPTION	ADAVANTAGES	DISADVANTAGES	Recommended	Possible	Not recommended
a) Increasing periods between cleaning	<ul style="list-style-type: none"> Reduces damage to stonework 	<ul style="list-style-type: none"> Legibility of inscriptions would be reduced 	✓		
b) Using only superheated steam for cleaning for restoration	<ul style="list-style-type: none"> Established as good practice Reduces damage to stonework 	<ul style="list-style-type: none"> Clean stone will continue to be colonized by algae growth 	✓		
c) Inserting rigid stainless steel flashing above inscription panel (see Figs 58 and 59)	<ul style="list-style-type: none"> Throws water clear of lettering and reduces algae growth 	<ul style="list-style-type: none"> Changes appearance of memorial Potential for damage and theft 	✓		

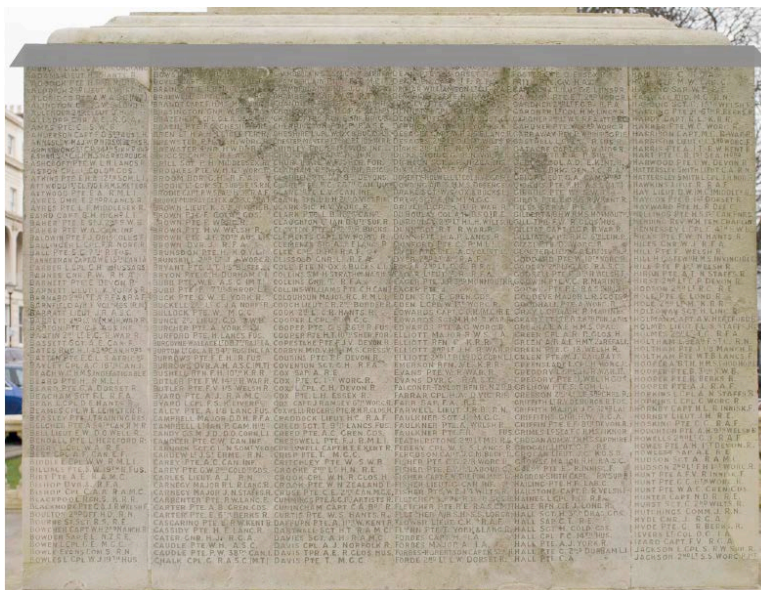


Fig 58: image of inscription panel with imposed impression of stainless steel flashing

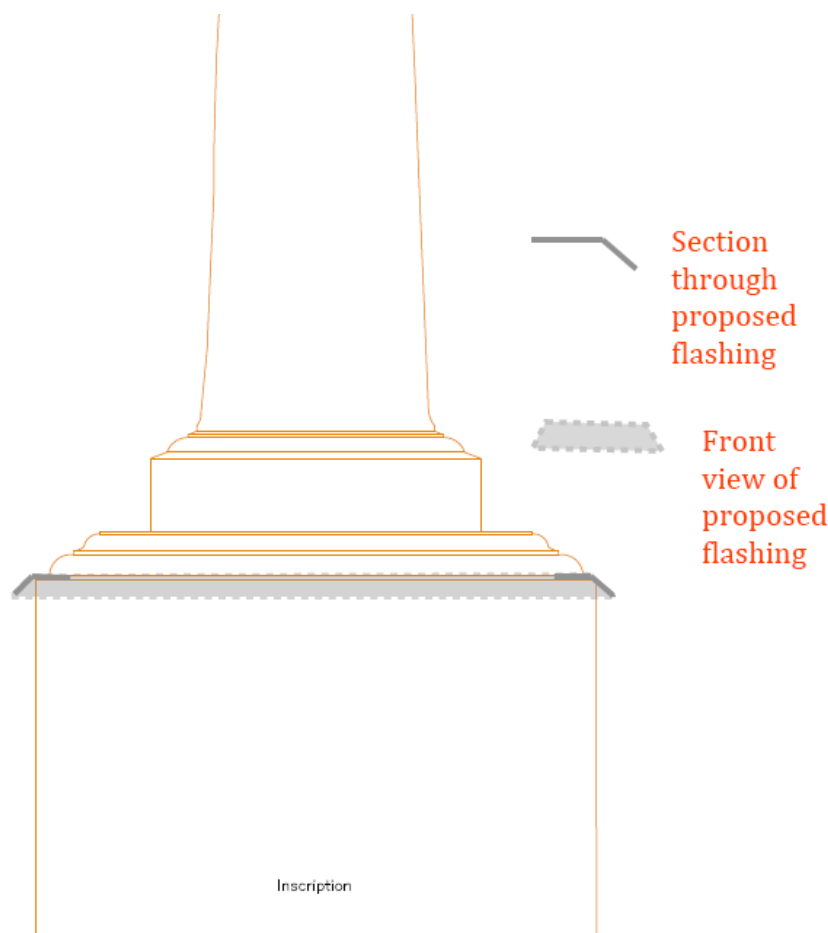


Fig 59: schematic representation of proposed flashing to be made from rigid burnished stainless steel with rolled edges. The flashing would be set in the flat joint between the top of the inscription panel and the moulding.

9.3 Restoration of lanterns

OPTION	ADAVANTAGES	DISADVANTAGES	Recommended	Possible	Not recommended
a) Refurbish existing	<ul style="list-style-type: none"> Low cost 	<ul style="list-style-type: none"> Unlikely to be opportunities in the future to restore to original design 			✓
b) Design and provide pattern for new head of lantern based on the archive evidence	<ul style="list-style-type: none"> Allows agreement on design Provides design for possible replacement of 6 No further lantern heads along the Promenade 	<ul style="list-style-type: none"> High cost 	✓		
c) Manufacture and install 4 No lantern heads	<ul style="list-style-type: none"> Restores original appearance 	<ul style="list-style-type: none"> Potential for damage and theft High cost 	✓		

9.4 Restoration of Lettering

Before setting out the options for this work, it is worth looking at the current guidelines for the repair of lettering contained within *'The Conservation, Repair and Management of War Memorials'* published by War Memorials Trust and English Heritage in 2013:

Whereas it might be comparatively easy to justify the replacement of illegible inscriptions, the arguments for replacement or enhancement of partially legible inscriptions are more complex. Each situation will have to be treated on merit and although general rules may not apply, there are a number of options available. These apply principally to stone inscriptions which are the ones that are most likely to suffer problems of deterioration and illegibility. In general, decisions on the way forward should be taken after the inscriptions have been cleaned using the appropriate techniques (see Section 13 – Cleaning).

- ***Legibility affected by microbiological growth or other surface deposit.*** If the letters are in good condition beneath, gentle cleaning should increase the legibility sufficiently; this should always be the first stage and subsequent decisions only made after cleaning has been completed.
- ***Majority of letters are legible although slightly weathered.*** Even though a few individual letters may not be clear, the inscription may be legible overall. No work should be necessary although the names should be recorded for future reference.

- **Many of the letters are losing definition but the inscriptions are still legible.** Consideration should be given to slightly sharpening the letters but not to totally re-cut them since re-cutting can only take place once.
- **Stone is continuing to decay and causing the inscriptions to become illegible.** A first step should be to identify the causes of the decay and carry out any necessary repair to the stone. Lettering could then be re-cut as long as there is a record of the names.
- **Stone has decayed beyond repair and inscriptions are lost.** In this case, it will be necessary to replace the whole panel (including the inscriptions) as long as there is a good record of the names. In no circumstances should the new panel be fixed over the decayed panel. If the original stone is no longer available and the design would be compromised by including a different stone, then the original inscription panel may have to be left in place and the names recorded elsewhere in a local amenity (for example the church or town hall) or by making a new plaque that can be set in the vicinity (for example on an adjacent wall).

With the Cheltenham War Memorial, it is certainly the case that the names have been recorded. It is also true that the current condition is somewhere between 'majority of letters are legible although slightly weathered' and 'many of the letters are losing definition but the inscriptions are still legible'. Without attention and if the current cleaning regime were allowed to continue, then within 20 – 30 years, the situation might have got worse so that the inscriptions might then be becoming illegible.

At the moment, the situation is compromised by the fact that the re-painting is obscuring the condition of the underlying letters.

OPTION	ADAVANTAGES	DISADVANTAGES	Recommended	Possible	Not recommended
a) Remove re-painting from all letters (approx. 1000 letters)	<ul style="list-style-type: none"> • Allows accurate assessment of condition of letters • Removes crudely applied repair 	<ul style="list-style-type: none"> • Technique of removal would involve localised application of paint softener so very time consuming 	✓		
b) Remove resin lettering from four names on east elevation; recut-letters and fill with mortar (30 letters)	<ul style="list-style-type: none"> • Removes inappropriate materials • Reduces contrast with other lettering 	<ul style="list-style-type: none"> • Newly cut lettering may contrast with original lettering 	✓		

c) Re-cut/sharpen letters that have become faded; re-fill with mortar to match original (900 letters)	<ul style="list-style-type: none"> Will enhance legibility 	<ul style="list-style-type: none"> Procedure requires some smoothing of rough surface of stone so may be patchy contrast with adjacent stone 	✓		
d) Re-fill existing incisions with mortar where original mortar has come out (mostly dots and part letters – approx. 600 No)	<ul style="list-style-type: none"> Will enhance legibility 	<ul style="list-style-type: none"> Difficulty of getting mortar to set when applied thinly to existing incisions 		✓	
e) (Alternative to (d) Re-cut/sharpen and deepen incisions where mortar has come out; re-fill with mortar (mostly dots and part letters. 600 No)	<ul style="list-style-type: none"> Will enhance legibility Easier to get mortar to set 		✓		
f) Smooth out decayed surface of inscription panels and re-cut/sharpen all lettering and then re-fill with mortar and polish surface (say 20000 letters)	<ul style="list-style-type: none"> Inscription would be good for many decades 	<ul style="list-style-type: none"> Inscription still subject to further decay from weathering, algae, cleaning etc 			✓
g) As above but fill letters with lead	<ul style="list-style-type: none"> Much more resilient to weathering Possibly in keeping with original 	<ul style="list-style-type: none"> Possible vandalism and/or theft Expensive 			✓
h) Allow current inscription panels to continue to decay and provide alternative record on glass panels set around the balustrade	<ul style="list-style-type: none"> Current memorial retains its appearance and significance 	<ul style="list-style-type: none"> Overall significance of the memorial site is changed 			✓

It is strongly advised that small-scale trials of the options should be carried out on a small test area such as the top corner of the upper north segment of the east panel. This would have the following advantages:

- Identify precisely the techniques required
- Provide better pricing information
- Allow the client (Council Members) to inspect so they would have realistic expectations of what could be achieved

9.5 New inscriptions

The number of new names to be included on the memorial is still under review but there are likely to be less than 20 in total. Given this, it would seem appropriate that the names are included on the main memorial. There already

exists a precedent as 31 names were added after the unveiling on the lower part of the west elevation inscription panel. There is room beneath the main inscription (without crowding or compromising the main inscription) for two columns of ten names (see Fig 58)



Fig 58: proposed location for new names

9.6 Conservation and repair of stonework

The techniques for the repair and conservation of the stonework are well understood. There could be no justification for replacement of carvings.

OPTION	ADAVANTAGES	DISADVANTAGES	Recommended	Possible	Not recommended
a) Rake out all cracked joints and re-point	<ul style="list-style-type: none"> Reduces water ingress into stonework 	<ul style="list-style-type: none"> 	✓		
b) Flush out and fill cracks in stone (especially on moulding, obelisk plinth and main plinth)	<ul style="list-style-type: none"> Prevents water ingress 	<ul style="list-style-type: none"> 	✓		

c) Clean stonework using superheated steam	<ul style="list-style-type: none"> Established as good practice Reduces damage to stonework 	<ul style="list-style-type: none"> Clean stone will continue to be colonized by algae growth 	✓		
d) Carry out mortar fill to localised areas of erosion and decay	<ul style="list-style-type: none"> Reduces ongoing decay of stonework 	<ul style="list-style-type: none"> Mortar will require maintenance and periodic replacement 	✓		
e) Carry out consolidation and repair to carvings	<ul style="list-style-type: none"> Will protect decayed areas Provides temporary strengthening of the surface 	<ul style="list-style-type: none"> Will not prevent decay Does not recreate lost detail Needs periodic maintenance 	✓		
f) Apply shelter coat to all areas of carving and inscription panel (except on lettering)	<ul style="list-style-type: none"> Fills surface pores of stone and reduces further weathering 	<ul style="list-style-type: none"> Requires regular maintenance and replacement 	✓		

10. Maintenance

Whatever treatment is carried out on the war memorial, regular maintenance will always need to be carried out; this is not an option. The nature and extent of the maintenance will depend on the work carried out as part of this restoration as well as the degree of continued weathering. It is likely to involve some or all of the following:

MAINTENANCE ACTIVITY	REGULARITY
Cleaning with DOFF or Thermatech superheated steam cleaner	<ul style="list-style-type: none"> Two to three years (see section 4.1)
Re-application of shelter coat	<ul style="list-style-type: none"> Five to six years
Assessment and repair of stonework including pointing, mortars	<ul style="list-style-type: none"> Five to six years
Continued treatment of lettering	<ul style="list-style-type: none"> Five to six years

It is strongly recommended that the maintenance should be carried out by a suitably experienced contractor with a known track record. The contractor should be able to assess the requirements of the maintenance including the possibility that certain elevations require different degrees of maintenance. It is also recommended that maintenance should be let as a term contract.

A more detailed maintenance plan (including lighting and paving) should be produced as part of the restoration programme and submitted prior to handover.

11. Summary of recommended treatments

The recommended options can be summarised as follows:

Stonework:

- Cut out spalled stonework, remove underlying cramps and indent new stone
- Clean stonework using only superheated steam
- Inserting rigid stainless steel flashing above inscription panel
- Remove re-painting from all letters
- Remove resin lettering from four names on east elevation; recut-letters and fill with mortar
- Re-cut/sharpen letters that have become faded; re-fill with mortar to match original
- Re-cut/sharpen and deepen incisions where mortar has come out; re-fill with mortar
- Incise new names in west face of monument and fill with mortar to match existing
- Rake out all cracked joints and re-point
- Carry out mortar fill to localised areas of erosion and decay
- Carry out consolidation and repair to carvings
- Apply shelter coat to all areas of carving and inscription panel (except on lettering)

Lanterns:

- Design and provide pattern for new head of lantern based on the archive evidence
- Manufacture and install 4 No lantern heads