



# STRUCTURAL REPORT

**Client:** PCC

**Project :** The War Memorial  
St Mary's Priory Church  
Tutbury  
Staffordshire



**Job No. :** 24/862

**Date :** 17<sup>th</sup> March 2014

**Engineer :** A DEMPSTER BSc CEng MStructE MICE

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# **REPORT OF A STRUCTURAL INSPECTION OF THE WAR MEMORIAL AT ST MARY'S PRIORY CHURCH, TUTBURY, STAFFORDSHIRE**

## **1.00 INTRODUCTION:**

- 1.01 At the request of Tutbury War Memorials Preservation Committee, the war memorial was visited on 17<sup>th</sup> March 2014 for the purposes of carrying out a visual structural engineering inspection. Concern had been expressed about the apparent settlement of the foundations to the war memorial, cracking evident to some of the masonry units and the structure's future stability. This report relates specifically to the structural condition of the war memorial and recommends appropriate repairs.
- 1.02 Details within this report are confined to the structural aspects as detailed in paragraph 1.01 above. The report does not constitute a full building survey and excludes certain items such as those listed below.
- a) The decorative condition of the war memorial.
  - b) The condition of the war memorial with respect to dampness, dry rot, timber infestation and the like.
- 1.03 No testing of materials, monitoring, breaking out or long term investigation has been undertaken. We have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the structure is free from defect.
- 1.04 The war memorial, which was erected in 1920, has been described in detail in the report prepared by Smith & Roper, Architects, dated April 2014. The detailed description is, therefore, not repeated here.

## 2.00 EXTERNAL OBSERVATIONS:

- 2.01 Elevations and plans of the war memorial and its surrounds have been prepared by James Brennan Associates and have been included in Appendix A to this report. At the time of the visit, an access scaffold had been erected around the memorial so that close inspections of the cross and cross shaft could be carried out.

Above ground level, the war memorial has been constructed on five levels. It is surrounded at ground level by a single width of stone pavers and access is gained from the north of the memorial via a path extending from the main pathway adjacent to the south elevation wall of the church.



The plinth base, or lower plinth, has been constructed out of several sections of masonry and contains a carved inscription around its circumference. The top of the base is slightly out of level, sloping downwards towards the south western corner. The effect of this is rather exaggerated by the fact that the stone path around the circumference of the base slopes inwards towards the memorial. There are a number of open mortar joints between the two sections but, in general, the masonry is in fair condition.





At the western side of the capping to the lower plinth, there is an indent repair which, it is thought, was repaired after the cross fell onto it during the 1980's following a minor earthquake.

Above the plinth base is an upper plinth which is also constructed out of several sections of masonry and contains plaques on some of the elevations. Most of the mortar joints between the masonry units are weathered and open and some spread appears to have occurred between the stones.



Some diagonal cracking is evident to the stone masonry unit below the capping stone in the south west corner. As with the lower plinth, the upper plinth is also slightly out of level, sloping downwards towards the south west corner.

Above the upper plinth is the base to the cross shaft which has been carved out of a single masonry unit.



At the northern corner, just above the upper plinth level, significant cracking has occurred and this has been rather crudely repaired.



Weathering has occurred to the mortar joints between this base and the upper plinth and it was possible to push the whole length of the pointing trowel, approximately 150mm, into these joints in some places.



The cross shaft, built above its base, has also been carved out of a single masonry unit. The shaft is noticeably out of plumb, leaning outwards towards the south west corner, consistent with the movement noted to the lower sections of the memorial. It was possible to rock the shaft from the upper level of the access scaffold at the time of the visit due to the open mortar joint between the bottom of the shaft and its base.



The masonry to the cross shaft appears to be in reasonable condition but there is some weathering evident to the mortar joints between the bottom of the shaft and its base. Lead wedges are exposed where the mortar has weathered.



Weathering is also evident at the head of the shaft below the cross. Some cracking is also evident around the top of the shaft.



It is understood that the cross, which sits on the top of the shaft, was renewed in the 1980's. The masonry to the cross appears to be in reasonable condition, but, as noted in the architect's report, it has not been accurately positioned at the top of the shaft.

A metal detector survey was carried out at the time of the visit and some metal fixings were detected between stone masonry units. It is possible that corrosion of these fixings has caused some of the cracking which is evident to individual masonry units.

### **3.00 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS:**

3.01 The plinth base, or lower plinth, is slightly out of level and it is considered that this has been caused by minor differential settlement of the foundations in the past. This movement appears to be old and long standing and there is no evidence of any significant recent or ongoing movement. It is therefore considered that it would not be justified to recommend major remedial works to the foundations, e.g. underpinning. It is therefore recommended that the lower plinth is left in situ with appropriate repairs being carried out to the mortar joints and to the indent repair at the west side, as recommended by the architect.

3.02 Above the lower plinth it is recommended that all the sections of masonry to the memorial are carefully dismantled and rebuilt using non ferrous cramps across the vertical mortar joints and non ferrous dowels across the horizontal mortar joints. Where cracking has occurred to the cross shaft base stone at its northern corner, it is recommended that a proper indent repair is carried out. It is also evident that some renewal of masonry at the top of the cross shaft is required, prior to re-fixing the cross itself.

When the sections are dismantled as recommended above, the opportunity should be taken to remove any timber packs and ferrous metal dowels and cramps which are buried in the masonry. If these are left in place, further deterioration is likely to occur.

3.03 It is recommended that the stone pavers around the base of the war memorial are lifted and reset such that they slope away slightly from the base and prevent water penetration into and below the lower plinth.

**FOR AND ON BEHALF OF WARD COLE**

A handwritten signature in black ink, appearing to read 'A. Dempster', followed by a large, stylized flourish or checkmark.

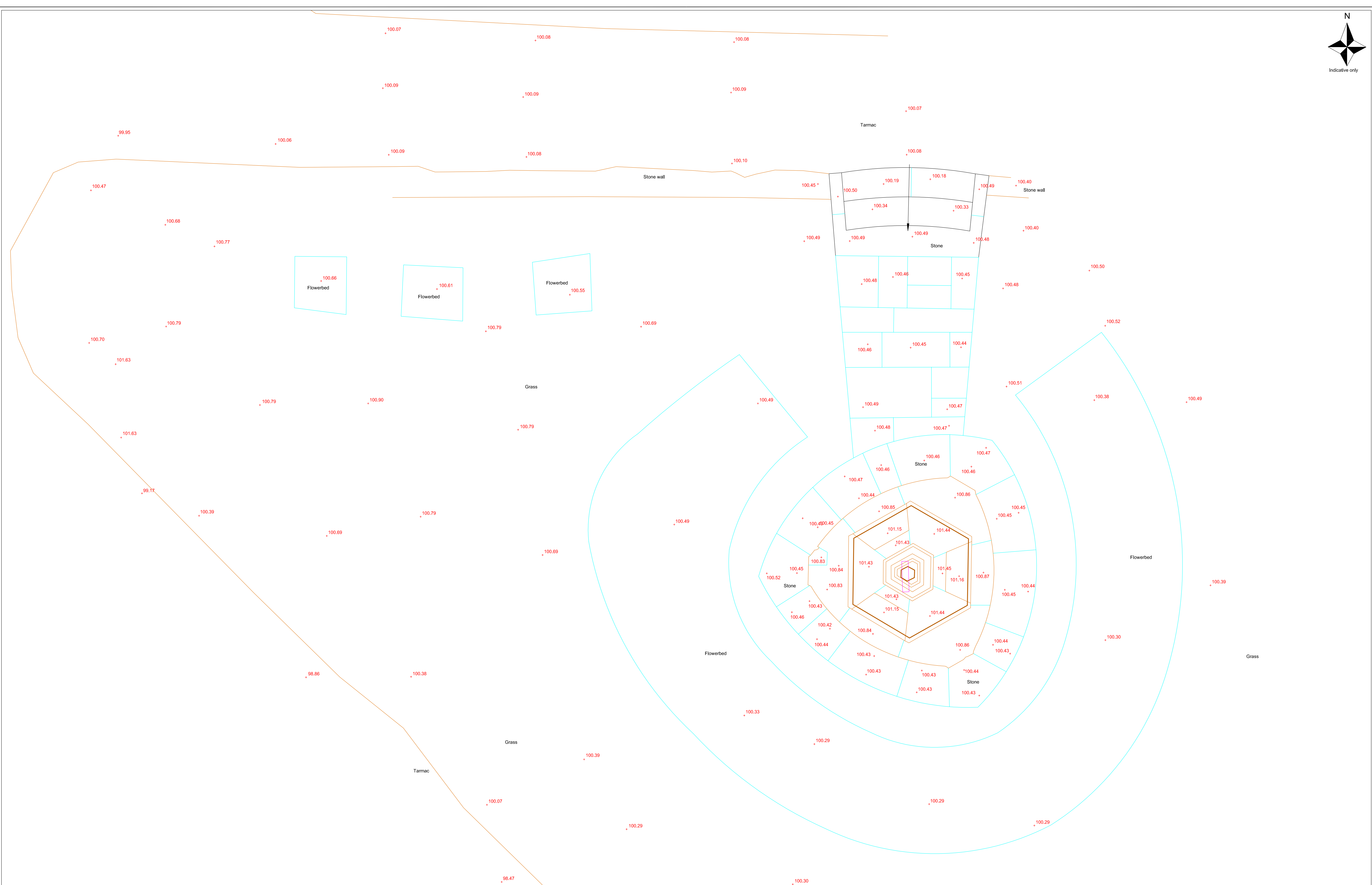
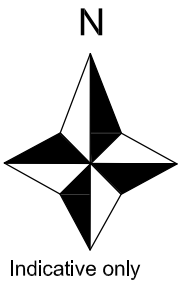
**A DEMPSTER, B.Sc., C.Eng. M.I.Struct.E. M.I.C.E.**



# **APPENDIX A**

**External Elevations and Plans**

**Prepared by James Brennan Associates**



<p>Notes:</p> <p>Drawing units are metres.</p> <p>Stair/ slope arrows point up</p> <p>Direction of floor boards</p> <p>Direction of roof slope (up)</p> <p>Floor to Ceiling Height</p>	<p>Location Diagram:</p>	<p>Notes:</p> <p>THIS SURVEY HAS BEEN CARRIED OUT WITH AN ACCURACY CONSISTENT WITH A SCALE OF 1:50. INTERROGATED DIMENSIONS WILL BE WITHIN THE TOLERANCE ASSOCIATED WITH THIS AND SMALLER SCALES ONLY.</p> <p>ALL LEVELS ARE IN METRES, RELATED TO AN ARBITRARY SITE DATUM.</p> <p>UNITS ARE METRES.</p>	<p>0 1.0 2.0 3.0 4.0 metres</p>	<p><b>SITE PLAN</b></p> <p><b>TUTBURY WAR MEMORIAL</b></p>	<p>SURVEYED &amp; DRAWN BY:</p> <p><b>James Brennan Associates</b></p> <p>Chartered Surveyors</p> <p>www.jbrennansassociates.co.uk</p> <p>CASTLE TOP FARM, BOW WOOD</p> <p>LEA BRIDGE, MATLOCK</p> <p>DERBYSHIRE DE4 5AB</p> <p>TEL: 01629 530716</p> <p>EMAIL: mail@jbrennansassociates.co.uk</p>	<p>Archited/ Surveyor:</p> <p><b>Smith and Roper</b></p> <p><b>Architects and Surveyors</b></p> <p>Buxton Road</p> <p>Bakewell</p> <p>Derbyshire</p> <p>DE45 1BZ</p>	<p>Client:</p> <p><b>TUTBURY WAR MEMORIALS</b></p> <p><b>PRESERVATION COMMITTEE</b></p>	<p>Drawing no. 14-33-FP-01</p> <p>Issue date Apr 2014</p> <p>Issue status A</p> <p>Scale 1:20@ A1</p>
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