



# THE CATHEDRAL OF THE SEA

Portsmouth Cathedral: The tower and chancel repair project by Simon L Ablett, Cathedral Architect, Ablett Architects Ltd

Extensive decay to the landmark seventeenth century timber belfry and corrosion to key support beams put the cathedral tower at serious risk.

Dedicated in approximately 1180, the church had been badly damaged during the English Civil War, which resulted in the Medieval tower being demolished and replaced from 1691 by the one we see today. With the establishment of the Diocese of Portsmouth the parish church of St Thomas became the pro-cathedral in 1927 and building works to enlarge the church commenced from 1935, including the new nave to the west of the tower. These plans were not

fully realised and a foreshortened nave was completed in 1991. Affectionately known as the Cathedral of the Sea it is located in the centre of Old Portsmouth.

The initial project scope was to carry out the replacement of the lead sheet to the tower dome, with timber repairs to parts of the structure and to the dormer windows. There was a problem with driving rain penetrating in through poorly detailed leadwork, especially to the lead covered rolls, which probably dated from the 1950's. Water was saturating the belfry, the clock chamber below and into the ringing chamber, several floors below. The rainwater from the



parapet gutter discharged via two chutes with the outfall saturating the masonry and causing deterioration to finishes in the nave. The mass concrete cast around parts of the timber frame in the belfry was also a concern and needed investigation. And, unnervingly, the structure at dome room level, could be felt moving in storms.

To enable the repair work a self-supported scaffold with sheeting and temporary roof was erected to allow access to the top of

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the tower, designed so that it wasn't attached to the grade one listed cathedral.

With the lifting of the lead to the parapet gutters, it was discovered that there were very significant structural issues requiring urgent attention. The octagonal timber framed belfry sat onto the square stone tower, but, as the opening up progressed, it became evident that many of the main timber beams spanning the corners had been cut into, most probably when the square steel bell frame had been inserted in 1912. It seemed that attempts had been made to com-

pensate for loss of key timbers by inserting steel channels across the corners. When these were exposed during the opening up work the outer channels were found to be very heavily corroded, with metal fragments falling away to the lightest touch.

The removal of the concrete in the belfry exposed completely rotten ends to key structural posts, some the timber had deteriorated to no more than a powdery dust, leaving pockets where timber had once been. There was also mass decay below the gutter timber-work. Water penetration must have occurred for a very considerable period of time as many timber connections, as well as key timber beams and supports, were completely rotten. >



PROJECT

PORTSMOUTH CATHEDRAL



Once the extent of repairs was realised, there were some serious logistical issues to overcome. The dome, which had already been re-leaded, had to be supported whilst extensive repair work was undertaken beneath.

The existing scaffold wasn't entirely appropriate for the job as it had not been designed as such, and access became an issue, as the frame housing 12 bells was located directly beneath the decayed steels. The site area was extremely constrained with mass tempo-

rary propping inserted and each area being repaired one corner at a time, with new oak lengths hoisted in, each adjusted and jointed to repair the existing. The philosophy was to retain as much sound original material as possible, however, the corroded steelwork was completely replaced.

The repairs and the rationalisation of parts of the structure, including the replacement steels located at a higher level than previously, have enabled easier internal access into and within the belfry, including for future inspection of the underside of the gutters and the timber frame. The reconfigured parapet lead lined gutters, laid to proper falls and detailed to cope with the exposed location, have a fall arrest cable at low level, ensuring that the gutters are easily and safely accessible for maintenance.

During the works there were four coastal storms, two of which occurred whilst the dome was being supported, and on one occasion temporary sheeting was ripped off. As no hot works were allowed on the scaffold, all of the lead had to be worked at ground level and hoisted up the scaffold to be fitted. Repairs to heavily weathered stone blocks and the redecoration of the clock face, with gilded numerals and hands, was also undertaken.

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Other works included repairs and repointing to the chancel, one of the remaining parts of the original cruciform structure. The heavy handed ‘crazy paving’ pattern of cement mortar was removed and some stone replacement was undertaken, including eroded Caen window jambs. The lime repointing work exposed the putlog holes at regular intervals to the east elevation and these were infilled with slips of stone laid horizontally so their locations are subtly visible. The chancel project included repairs to the stained glass lancet windows, not least because there was little holding the centre window in place.



There were a number of archaeological finds from the tower, included a fragment of a smoking pipe, shot and Medieval masonry (very probably reused from the demolished tower) and these were displayed inside the cathedral. Many visits and tours of the project were given to various civic societies, student architects from the local college, as well as members of the congregation and the community. Although the weather conditions throughout the job were very challenging at times, only one tour was postponed due to severe rain and wind.

The project team was successful in working around unforeseen limitations in order to make these repairs possible, heavily improvising in an effort not to increase the cost of the project. The essential repair work was possible due to substantial funding from the First World War Centenary Cathedral Repair Fund. To commemorate this funding two dated sand-cast lead rainwater hopper heads, with lead downpipes and brackets, were affixed to the west elevation of the tower, replacing the chutes.

The dome now stands proudly overlooking the city and coast as a major landmark, with renewed strength and stability and topped by the 1969 replica of the ‘Golden Barque’ weathervane with its new gilding. ■

**PROJECT TEAM:**  
 Client: The Dean and Chapter of Portsmouth Cathedral  
 Architecture: Ablett Architects Ltd  
 Main Contractor: Daedalus Conservation  
 Quantity Surveyor: Sawyer and Fisher  
 Structural Engineer: Hockley and Dawson  
 CDM Co-ordinator: Moran Architects Ltd  
 Photography: Jonty M Sexton

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**IMAGES:**  
**01** Exterior completed. **02** Dome repairs underway. **03** Decay exposed. **04** Golden Barque on display in the Cathedral. **05** Clock face. **06** Timber decay opened up in the belfry. **07** Work underway. **08** Compact working in the belfry. **09** Belfry completed. **10** Golden Barque being positioned at the top of the tower.

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The studio is proud to have been involved in the stained glass restoration at Portsmouth Cathedral

St John's School Chapel, Surrey ~ design, fabrication, installation by Sunrise Stained Glass studio