

Peterborough DAC

Bells and bell frames

Guidance notes

DAC policy

The DAC has a policy of encouraging PCCs to conserve their bells and bell frames by using them. Many bells in the Diocese are of considerable age or have other special features that mean that they must be treated with particular care. In other cases it is the timber bell frames that are especially significant. The DAC uses the Council for the Care of Churches *Code of Practice on the Conservation and Repair of Bells and Bellframes* (ISBN 0 715 75998 0 available from www.chpublishing.co.uk telephone 020 7898 451)

Most works to bells are either repairs and maintenance – good housekeeping – or major projects such as provision of additional bells or a new frame. The following broad guidelines apply:

- Most works will require a faculty and may require additional consultation with other bodies e.g. English Heritage. The DAC will advise when this is the case.
- Some minor maintenance and refurbishment works can be done with the Archdeacon's permission. The Archdeacon may nevertheless wish to discuss the proposals with the DAC and its advisors before authorising such works.
- Bells and bellframes are not only instruments but machines taking continual wear and tear. They must be conserved in a way that makes them fit and safe for use.
- Wherever possible existing bells and frames should be retained.
- With historic bells the presumption is that they are left as found - any changes must be demonstrated to be absolutely necessary.
- Before any works can be considered by the DAC an assessment of the historic significance and an analysis of the current defects is required. All possible remedies should be included in the report with their pros and cons.

In all cases where work is to be undertaken on bells or frames the DAC consults with its experienced bells advisors. There are also ringers on the Committee who understand the technicalities of this aspect of church maintenance and repair. If you are thinking of undertaking any work at all, no matter how minor, please consult the DAC at the earliest possible stage.

Archaeology advice

Although at first sight works to bells and bell frames may not seem to have archaeological implications such works can be an intrusion or development of the historic fabric of the building. Bell frames can be ancient structures in their own right and alteration or removal of these components may be undesirable.

Any works involving a bell frame should allow for detailed and measured recording of that bell frame before any work is done. If a new bell frame is constructed the strengthening and other works required to the fabric of the tower may also demand an element of building recording before changes take place.

In deciding whether the proposed works have an archaeological implication the DAC will take into account:

- The information provided in the PCC's Statement of Significance
- The accurate plan of the tower and belfry as existing

- What is known about the bells and bellframe, including any information gained from the Country Record Office or other sources.

The archaeological implications of the project will be evaluated by the DAC on the basis of key issues:

- How much of the original bell frame is to be retained/reused?
- What is the significance and date of the existing frame?
- Can the existing frame be kept in situ, if not what is to happen to it?
- What is the impact on the tower walls of a new frame and how significant are those areas; could an area of lesser sensitivity be chosen?
- What is the impact of the proposed works?

Depending on the assessment of the situation the DAC is likely to advise that the bell frame and surrounding areas is recorded by measured drawing and photographs and that a archive record should be made and lodged in the Diocesan Record Office.

Basic principles underlying the DAC's approach to works to bells and bell frames

1. Historic bells to be preserved include:

- All bells cast before 1550
- Important later bells
- Certain complete rings by one founder

2. Cast - in Crown Staple Stumps

- It is desirable to remove as much of the iron stumps as possible to avoid future cracking
- At the very least a stress relieving central hole may be drilled.

3. Turning Worn Bells

- If the bell is reduced by 10% of the unworn thickness at the point where the clapper or hammer strikes the bell it should be rehung 45 degrees on an unworn thickness.

4. Chime Hammers

- Should strike on an unworn section of the bell.

5. Clocks and bells

- Should not interfere with one another
- Tune players should be retained wherever possible and brought back into a usable condition.

6. Recasting and Replacement

- Listed bells should not be recast
- Unlisted bells pre 1700 should not be recast if welding is possible
- Unlisted bells post 1700 must be assessed on a cast by cast basis
- Where a bell is recast all inscriptions and marks are reproduced in facsimile and the date of recasting and founders name/make added.

7. Welding can be used effectively to:

- Repair cracks
- Replace missing pieces
- Build up soundbow thickness in uncracked bells that have worn so much it is impossible to find a full-thickness section for clapper or hammer to strike.

8. Tuning

- Tuning produces a small but irreversible change in appearance and sound.

- There is a presumption against tuning bells worthy of preservation, even if they have been tuned in the past.
- The bell founder's advice should be sought.

9. Canons

- As a general principle canons should not be removed although unholed, post 1700 bells, may be exceptional cases.

10. Hanging methods

- Where fewer than six canons remain and there are no holes through the crown U bolts may be fitted and deadstock or headstock extended
- Where a bell is hung for full-circle ringing bolts may be used. Existing holes should be used to avoid or minimise the drilling of new ones.
- Where bells have weak crowns the best option is to spread the loads over the bell bolts in a wide area to minimise local stressing.

11. Augmentation

Additional bells should match the existing in pitch, tone and strength rather than the originals being altered to suit the new. Each case is judged on its own merits.

12. Bellframes

- Wherever possible an historic bellframe should be retained in use.
- Where frame is damaged repair must always be considered. Details of essential structural work, option and outline of how much original timber can be retained should be included in any assessment. Drawings as well as written description and photographs should also be part of the assessment.
- Repair of timber bellframes to arrest decay and carry out repairs should aim at achieving a structure capable of carrying the dynamic forces whilst conserving as much original timbers as possible.
- Where it cannot be used it should be retained in the tower, if at all possible, and a new frame lower in the tower.
- There may be the need for recording action where any part of a significant frame is to be lost.

Information about your bells and frame that the PCC should keep (and update):

- A measured drawing of the frame itself
- Written description
- Photographs
- Audio recording
- Details of age and founder of each bell
- Estimated age of frame and fittings
- Points of special interest
- All work should be recorded in the log book.
- Details of bells, frames, peal boards and ringing relics should be in the inventory.

Information that will be needed for major works to the bells and/or bellframe

1. Drawings of the installation in relation to the whole tower as existing (elevation drawing) and as proposed – showing access routes, the clock, trapdoors etc.
2. Drawings showing the present and proposed lay-out of the bells
3. A structural assessment of the condition of the tower as it is and the likely impact of the proposed changes.

Cont overleaf

4. A full specification for builder's work, drawn up by the architect or surveyor whom the PCC is to appoint to manage and co-ordinate the entire project. This should include a specification for any electrical work that will be necessary, including new lighting or changes to the heating or power supplies and lightning provision.
5. A report on the proposed impact of the work on the clock from a clockmaker and a specification for its proper protection during works (where a clock exists)
6. The bell hanger's report on the present installation and specification/drawings of the proposed works.
7. An assessment of the bells and frame in the light of the proposed works. This should include:
 - A. Technical information:
 - The position of each bell in the ring, the identity of its founder and date of casting
 - Its diameter (across the mouth of the bell) and weight
 - Its strike-note and, if possible, the principal harmonics
 - Its scale of thickness
 - Whether the bell is sound or, if cracked, the extent and possible cause
 - The overall casting quality
 - The detail and overall quality of inscription, special features, shape and position of moulding wires
 - Whether it has canons and argent, their condition, and any special features
 - Whether the bell has been drilled and to what extent
 - Whether the bell has been tuned and to what extent
 - Whether the bell has been turned
 - The extent of clapper and hammer indentations
 - Whether it retains its cast-in crown staple
 - B. Qualitative Considerations
 - Is the bell/ring/frame historically noteworthy locally or nationally?
 - Is any bell an important or rare example of the founder's work?
 - Is the ring (or any individual bells) unusually fine in tone and tune?
 - Does the combination of shape, quality of casting, inscriptions, and canons create a bell/ring of particularly fine appearance?
 - Does each bell relate in size, pitch, tone, and style to the other bells in the set?
 - Are there any other noteworthy features?
 - C. Specific issues in considering the Augmentation of Rings
 - Is there enough space for any proposed additional bell, its hanging, equipment, access to it, and space for the bellringer?
 - Can the tower safely and rigidly support an additional load?
 - Has the means of sound dispersal been considered?
 - Will the mechanical performance be satisfactory?
 - D. Historical Evaluation of Bellframes
 - Of what material(s) is the bellframe constructed?
 - How old is the bellframe: are there any dates or inscriptions?
 - Is it by an identifiable maker and what is the documentary evidence?
 - Is it a rare example of the maker's work or a special example of bellframe evolution?
 - Is it completely original or does it provide evidence of the evolution of the ring?
 - How was the bell rung originally?
 - Does it incorporate pre-Reformation features, such as curved side frame braces, king posts, or short heads (even when incorporated in a later bellframe)?
 - What is the quality of workmanship?