

# Back in working order

Refurbishment of Windsor Castle Canons' Cloister has revealed details of its original structure, as **Martin Ashley** reports

**W**indsor Castle's College of St George was founded in 1348 as the spiritual home of the Order of the Garter, and its chapel – St George's Chapel at Windsor Castle – is familiar to millions in the complex of Grade I-listed and Scheduled Ancient Buildings. One of the earliest surviving parts of castle is the Canons' Cloister, built around 1350 as lodgings for the canons and priests serving the order. The buildings still house the canons and lay clerks of the Order, making the Cloister the earliest surviving collegiate range in Britain. Refurbishment work found important evidence of the floor plan and structure of the 1352 and later buildings and this, together with the urgent need for repair of the historic fabric, made the project one of national significance.

The quadrangle of timber-framed buildings is tightly positioned between the chapel and the castle wall. Its construction is unusual, having two storeys with a sloping lead covered roof. Each bay contained a small room and covered walkway at ground floor level, a large first-floor room with gently sloping ceiling and large windows and in some cases a later mezzanine floor inserted at the back of the room. A ground floor covered walkway opened onto the cloister garth, with trefoiled tracery spandrels between the principal posts.

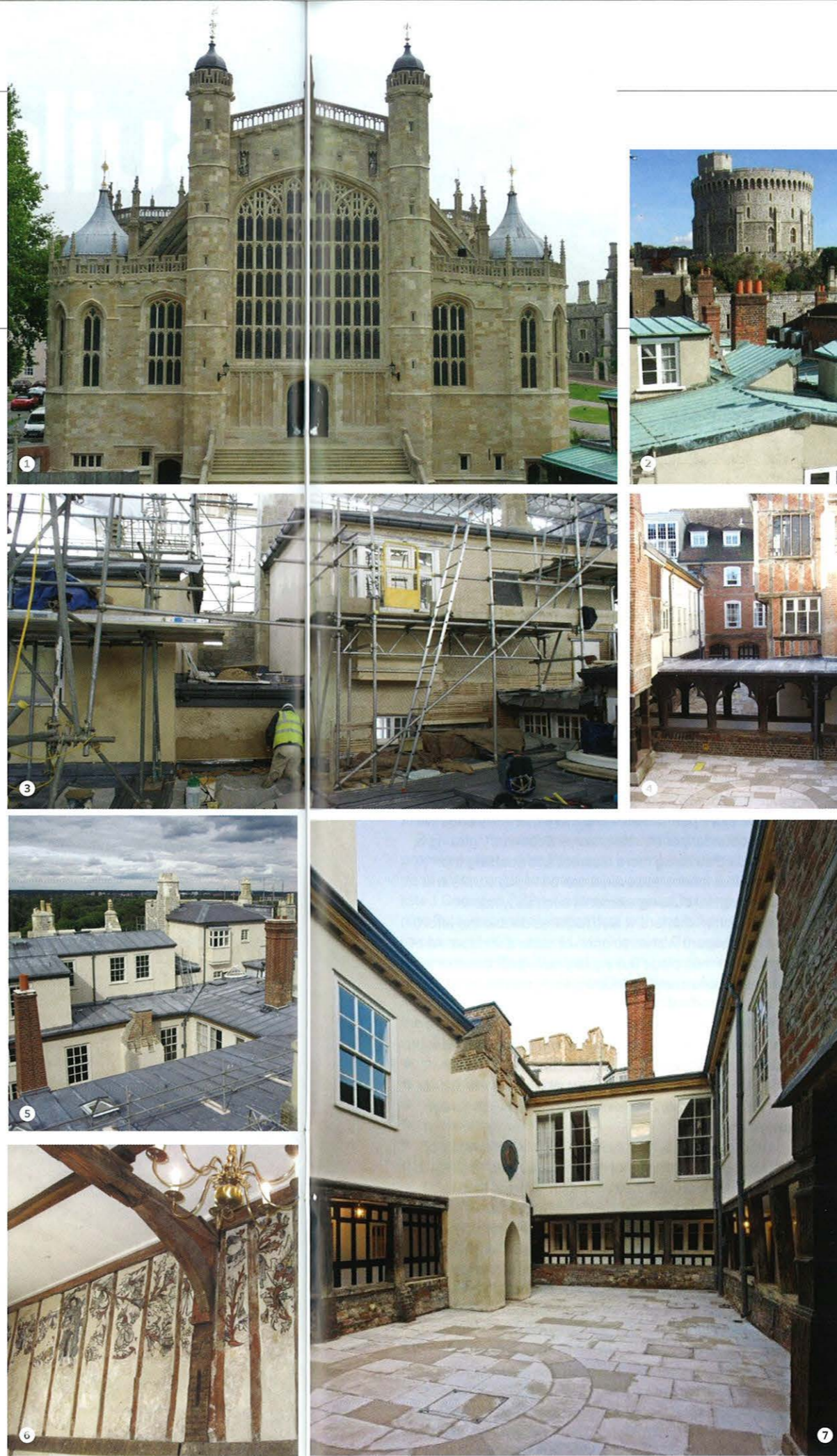
Incremental changes throughout the centuries have allowed the original timber frame substantially to survive behind a 19th-century restoration, while much of the internal medieval structure and original floorboards also survive beneath Georgian and Victorian panels and floors. Conservators were therefore faced with the challenge of conserving both the original fabric, and later additions in order to preserve the buildings' authenticity.

The project was the first major refurbishment of the cloister since the 1960s, when copper sheeting was used to replace the original lead roofs. This had begun to leak and the statutory authorities approved our proposal to reinstate a traditional sand-cast lead roof, and repair a wind-damaged series of clay tiled and slated roofs elsewhere. We also used the opportunity to improve insulation, ventilation and fire protection, as well as to ensure safer access for maintenance. Roof lights were overhauled or replaced, and a new lightning protection system was installed.

Opening up the roofs revealed fascinating new knowledge about the buildings and the wider architectural history of Windsor Castle. For instance, we noticed an unusual yet regular pattern of gaps at the end of 15 rafters, which gave them a tuning fork-like appearance. Project archaeologist John Crook, recalled a medieval reference to "the 15 images", leading us to conclude that the gaps were in fact sockets for a series of lost

statues. Once any archaeology had been recorded we connected damaged rafters using trimmer joints, allowing them to withstand the load of the new lead roof. Other damaged elements of the roof structure were strengthened using traditional carpentry techniques, and carefully detailed stainless-steel members. Despite numerous interventions, we took nothing away from the original medieval frame.

In other places a careful study of the building and its archives gave clues about its original appearance, and allowed us to address earlier interventions. At some point in the building's history, for example, the rafters had been cut back from the edge of the roof. This had damaged its original profile, which led our 1960s predecessors to conclude that a box gutter was the most appropriate method of water management. This in turn was causing harmful water ingress to the walls of the cloister. We were reluctant to retain the gutter, not only because it had proved ineffective, but also because reinstating a lead roof would have added to the gutter's height. However, finding stubs of projecting tenons on some rafters supported our alternative theory that the Cloister once had a cornice, which we reinstated in oak together with a more effective fascia-fixed cast iron gutter.



1 West front, St George's Chapel

2 Roof of the Canons' Cloister

3 High level scaffolding was needed

4 Refurbished cloister garth

5 Refurbished roof

6 Medieval wall paintings

7 Refurbished cloister garth

Cantilevered timber supports were installed to support the new gutter, and to recreate the appearance of the original projecting rafters.

Around the cloister a cementitious 1960s render had cracked, giving us concern about water damage to the 14th-century timber frame beneath. The render was removed and replaced with a more appropriate lime render once the frame had been surveyed and repaired where necessary. Perimeter repointing of the brick noggin panels in a soft lime mortar was undertaken, and three or four 20th-century panels were replaced following the basket weave of adjacent counterparts. The remarkable range and chronology of doors, leaded and plain-glazed oriel windows, casements and sash windows were thoroughly overhauled, repaired and decorated. Within the cloister garths, the lower arcade walls were cleaned and conserved where necessary, and modern cement pavoids were replaced using Purbeck Downvein.

Other paving was cleaned and repointed, and gratings were overhauled and redecorated.

The project also included extensive conservation and refurbishment work to the

interiors of the Canons' Cloister. Decayed ceiling joists were repaired, and modern ceilings were replaced using riven chestnut laths and lime plaster. A series of medieval wall paintings was carefully monitored to protect them from the load and vibrations of lead 'bossing' works above. Work also included the internal refurbishment of three lodgings within the cloister. New modern kitchens, bathrooms and utility rooms were installed, and all mechanical and electrical services systems were completely renewed.

The conservation programme was supported financially by the Bray Fellowship, a philanthropic body established to support the College of St George's. At the end of the works a wall-mounted bronze sundial was mounted on a newly rendered chimney in the cloister garth. It features the hours of service picked out in gilded highlights, and a hemp bray gnomon.

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