

**THE DOVECOTE, BREAKSPEAR HOUSE,
BREAKSPEAR ROAD NORTH, HAREFIELD,
HILLINGDON, LONDON, HA6 1BN**

A LEVEL 3-4 HISTORIC BUILDING SURVEY



September 2011



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LONDON, HA6 1BN
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Abstract

An historic building survey of the dovecote at Breakspear House, Harefield, Hillingdon, took place between January and April 2011. This was carried out as part of the 'Breakspear House Project' (site code BZH09), which consisted of other work undertaken by Compass Archaeology on the Breakspear House Estate (including a desk-based assessment, a level 1-2 historic building survey of the existing House, and field evaluations and watching briefs around the site). All of these were parts of planning and listed building conditions attached to consent for the refurbishment of the house and the construction of eight residential units with underground car parking. The survey of the dovecote was recommended by Kim Stabler at English Heritage.

There is some debate concerning when the first dovecote structure was constructed – possibly the 16th Century at some point. The structure is depicted on the earliest available detailed maps of the Breakspear Estate (1771 Estate Map), and is possibly mentioned in documentary sources from as early as the 1640s. The dovecote is depicted in a broadly similar way on all existing cartographic, documentary, and pictorial evidence, such that this evidence does not provide much evidence for how the structure was modified over the years.

The building survey had two main elements. Firstly, a mainly photographic record which included both the general setting and appearance of the dovecote as well as specific external and internal features. This was followed by investigation of the standing structure and its development. In particular this involved small-scale excavations of certain areas of the structure, further photography and where appropriate a drawn and annotated record. Comparison with the dovecote at Eastcote House was also undertaken.

This work has revealed a number of conclusions concerning the earliest dovecote structure, and its modification over the years (as well as raising a number of further questions). The earliest structure was brick-built, up to the moulded courses of brickwork, with chalk foundations, some 400 nesting-holes, and two possible doors in the eastern and western sides. It remains unclear as to when this structure was first built, however it seems likely that it was at some point in the mid-16th to earlier 17th Century.

A major phase of rebuilding of the dovecote structure occurred in the later 17th Century, possibly contemporary with a rebuild or extension of the House. This involved the construction (upwards) of the brick-structure to its present height (above, and including, the moulded courses of brickwork), the total rebuild of the western wall, and the construction of a timber roof.

Further modifications to the dovecote structure included the construction of a brick floor, French drain, and four exterior buttresses. In, or soon after, 1769 floors were added to the structure (along with a new roof) and the nesting-holes on the lower two storeys blocked up. The upper storey was retained as a form of 'dove loft', with the lower two storeys being converted into rooms. The new (western) doorway and raised ground-floor surface were also added soon after this date.

In 1894 the clock and bells, etc, were inserted, and the structure became a clock / bell tower, with no provision for doves in the upper storey. The only nesting-holes were contained within a small purpose-built structure attached to the western window.



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Acknowledgements

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1. Introduction

- 1.1** This report presents the results of a level 3 - 4 historic building survey on the dovecote within the grounds of the Breakspear House Estate, approximately one kilometre to the south-east of Harefield village (Figure 1: site approximately centred at National Grid Reference 506018 189690). The field survey was undertaken by Compass Archaeology between January and April 2011 and followed a previous desk-based assessment of the Breakspear House Estate, a series of field evaluations and watching briefs on the site, and a level 1 – 2 historic building survey of the existing house, all undertaken by Compass Archaeology.

The structure under investigation here is a square brick-built three-storey dovecote, with a cupola with weathervane and clock on top. The original date of construction is unknown (see discussion below), but it has clearly undergone a series of changes and modifications over the years.

- 1.2** The building survey formed part of the Breakspear House Project – part of a planning and listed building condition attached to consent for the refurbishment of the house itself and the construction of eight residential units with underground car parking. The dovecote itself is to be retained and refurbished.
- 1.3** Previous work on the dovecote, most particularly the 2000 Historic Building Report by Robert Lee, suggests that it was “not only an attractive early building but also a rare survival in the London area”, and that it was “felt strongly that the building should be preserved unaltered”, with a series of repairs required to stabilise and restore the structure.
- 1.4** The dovecote was listed as a grade II* structure in 1968, and included on English Heritage’s ‘Building at Risk Register 2001’, as the structure had deteriorating masonry and general deterioration of most elements of the building fabric, including external joinery.
- 1.5** The historic building survey that is described here was recommended by Kim Stabler at English Heritage and accompanied by a written *Method Statement* (Compass Archaeology, January 2011). The *Method Statement* also summarised the specific objectives of and scope of works for the project.

2. Acknowledgements

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3. Background

3.1 Location and topography

Breakspear House is situated approximately one kilometre to the south east of Harefield Village, lying within a rural setting in the Green Belt on gently undulating land that slopes down to the south. The site is possibly located at the junction of the London Clay and Head deposits at an approximate height of 80m above Ordnance Datum.

The dovecote itself is located just to the north-west of Breakspear House, at approximately 82mOD.

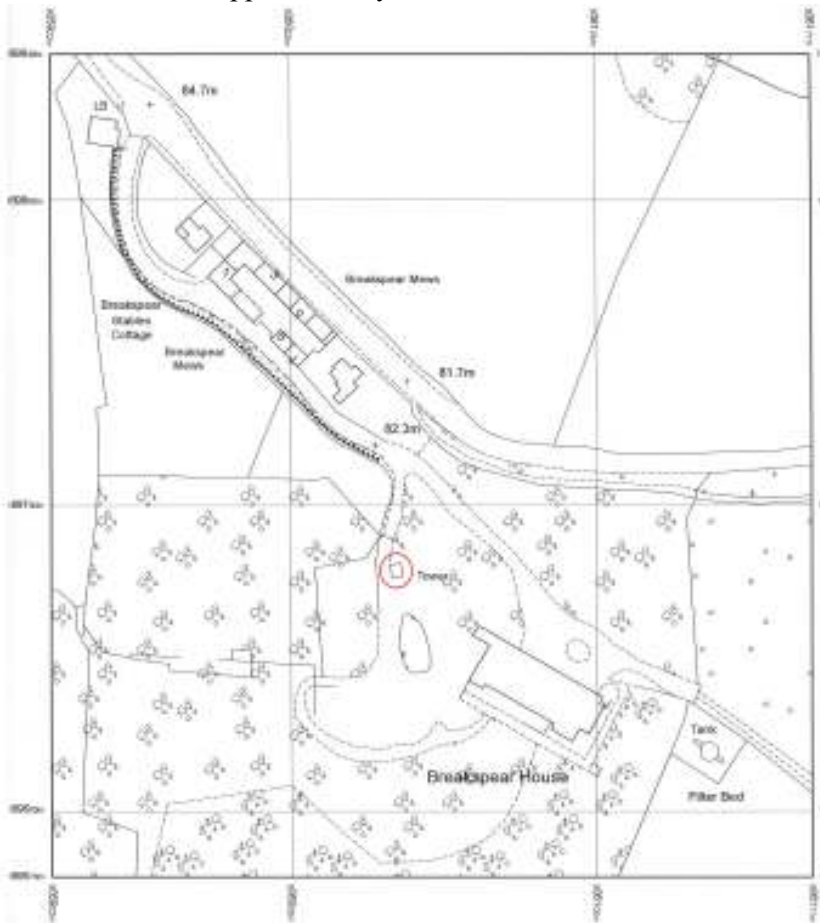


Fig. 1: Location of dovecote at Breakspear House (circled in red) based on current OS Maps

3.2 Brief summary of the historic development of the Breakspeare Estate:

- 3.2.1** The general historic background of the site has been discussed in detail within the desk-based assessment (Compass Archaeology, 2009) and therefore only a brief summary is offered below.

The Breakspeare family lived in Harefield at the end of the 14th Century, and gave their name to Breakspeare House and Little Breakspeares (now demolished). The first known house on this site dates from c.1514-1559 when documentary records refer to a Thomas Ashby being in residence at *Breakspeares*. The Estate remained in the hands of the Ashby family until 1769, when it was passed to Joseph Partridge (by his earlier marriage to Elisabeth Ashby), and it continued in the Partridge family until 1857. The house itself went through a number of changes / modifications throughout the 16th, 17th and 18th Centuries. A major phase of rebuilding took place under Joseph Ashby Partridge between 1820 and 1857 (most probably in the 1840s or early 1850s), when the main axis of the house was turned through 90° to its present alignment. Other buildings to the north-west of the main house, including the stables, were also built in this period. The Estate was in the ownership of William Drake (still a descendant of the Ashby family) from 1857 – 1886, was passed to Alfred Tarleton in 1886 (another descendent of the Ashby family), and was let to William Gilbert of Gilbert and Sullivan fame for a few years. Another major visible phase of construction took place under the Tarletons, including the building of the Upper and Lower lodges. The Tarleton family continued to hold the Estate until 1942, when it was acquired by the County Council, but did not leave the house until 1951 when it was converted into a residential care home for the elderly. The home closed in 1987 and has since been vacant, apart from the occasional use of the property as a film set.

3.3 Brief history of the dovecote:

3.3.1 Origins / Beginnings:

There is some debate concerning the date of the original construction of the dovecote. The first documentary mention of a dovecote at Breakspeare was in a survey from the 1640s, when there is reference to a dovecote located in the orchard (mentioned in 'Harefield: Manors', A History of the County of Middlesex: Volume 3: Shepperton, Staines, Stanwell, Sunbury, Teddington, Heston and Isleworth, Twickenham, Cowley, Cranford, West Drayton, Greenford, Hanwell, Harefield and Harlington (1962), pp. 240-246. URL: <http://www.british-history.ac.uk/report.aspx?compid=22351>; with this referred back to the Metropolitan Record Office (now Metropolitan Archives), Acc. 312/139).

The listed building description of the dovecote also suggests that it is 17th Century in date, however 'The Buildings of England, Ireland, Scotland and Wales' (Cherry, 1998) describes it as earlier in date than the surviving parts of the house, and as dating from the early 16th Century. Robert Lee, in his 2000 Historic Building Report, agrees with 'The Buildings of England, Ireland,

Scotland and Wales' in giving the original building an early 16th Century date. If it was originally an early 16th Century structure, then it may have been constructed along with the construction of the earliest house (see above – the first reference to Breakspear House is c.1514 – 1559).

3.3.2 Cartographic Evidence:

3.3.2.1 The first cartographic depiction of Breakspear House is in the Harefield Portion of the Estate Map of 1681-1685, however only the house is depicted, and not the dovecote. This is essentially because the depiction of Breakspear on this map is simplistic – with a single house depicted as representative of the whole Estate. It should not, therefore, be taken as evidence that the dovecote did not exist at this date. The dovecote was also not depicted on Rocque's 1754 'Map of the County of Middlesex', presumably because of the small-scale nature of this map.

3.3.2.2 The dovecote is depicted on the 1771 'Plan and actual survey of the estate of Joseph Partridge Esquire' by Joseph Cripps (fig. 2). Here, it can be seen as a simple square structure to the north-west of the house (at the top of the image), between the two smaller ponds. It is clearly in the same location as it stands today, and is positioned on the same alignment. At this point, the structure stands alone in the landscape away from the main house complex (possibly to make it distinguishable for the returning birds). It is also positioned between two ponds – as many dovecotes were – which would have provided a good supply of water for the birds.



Fig. 2: Extract from Joseph Cripps' 'Plan and actual survey of the estate of Joseph Partridge Esquire', 1771, with the dovecote circled in red

3.3.2.3 The 1813 Enclosure Map (fig. 3) depicts the dovecote in a slightly different location from where it is depicted on the 1771 plan and where it stands today. It is still depicted to the north-west of the house, however slightly to the east of where it was on the 1771 Map and its present location. This is almost certainly a cartographic error rather than depicting any move in the dovecote's location. Nonetheless, the dovecote is still depicted as a square-shaped structure on the same alignment. Buttresses are depicted on all four corners of the structure. This is the earliest evidence for the existence of such buttresses. Furthermore, some type of small structure is depicted projecting out of the southern wall of the dovecote, with two other walls connecting the house with the dovecote, and possibly some form of yard between them. This is more clearly depicted on an 1812 sketch plan of the parish. Changes in the Estate itself since the 1771 Plan area also depicted, with two north-south buildings constructed just to the north-west of the main house, thereby bringing the other buildings in the Estate closer to the dovecote.



Fig. 3: Extract from the 1813 Enclosure Map, with the dovecote circled in red

3.3.2.4 The dovecote is depicted on the First Edition 25inch OS Map,1866 (fig. 4) in the same location, shape, and alignment, as on the previous maps (except the 1813 Enclosure Map), and as today. The main difference however, is the construction of the stable block to the north-west of the house, between the main house and the dovecote, such that the dovecote has become less of an outlier to the Estate, and more of an integral part of it. Furthermore, it appears that some form of wall is attached to the stables and dovecote, directly linking the two buildings up, with, possibly, a yard between them. The practice of incorporating dovecotes into building complexes (stables, etc) became common from the 18th Century onwards – such as that at Hothfield Place in Kent where the dovecote abuts the stables, and at Chillington Hall in Staffordshire where the dovecote stands in the centre of the yard. The Estate itself has also changed massively between 1813 and 1866, with the main house being realigned and extended to form the large house that stands today, and the construction of the aforementioned stable block and coach house.

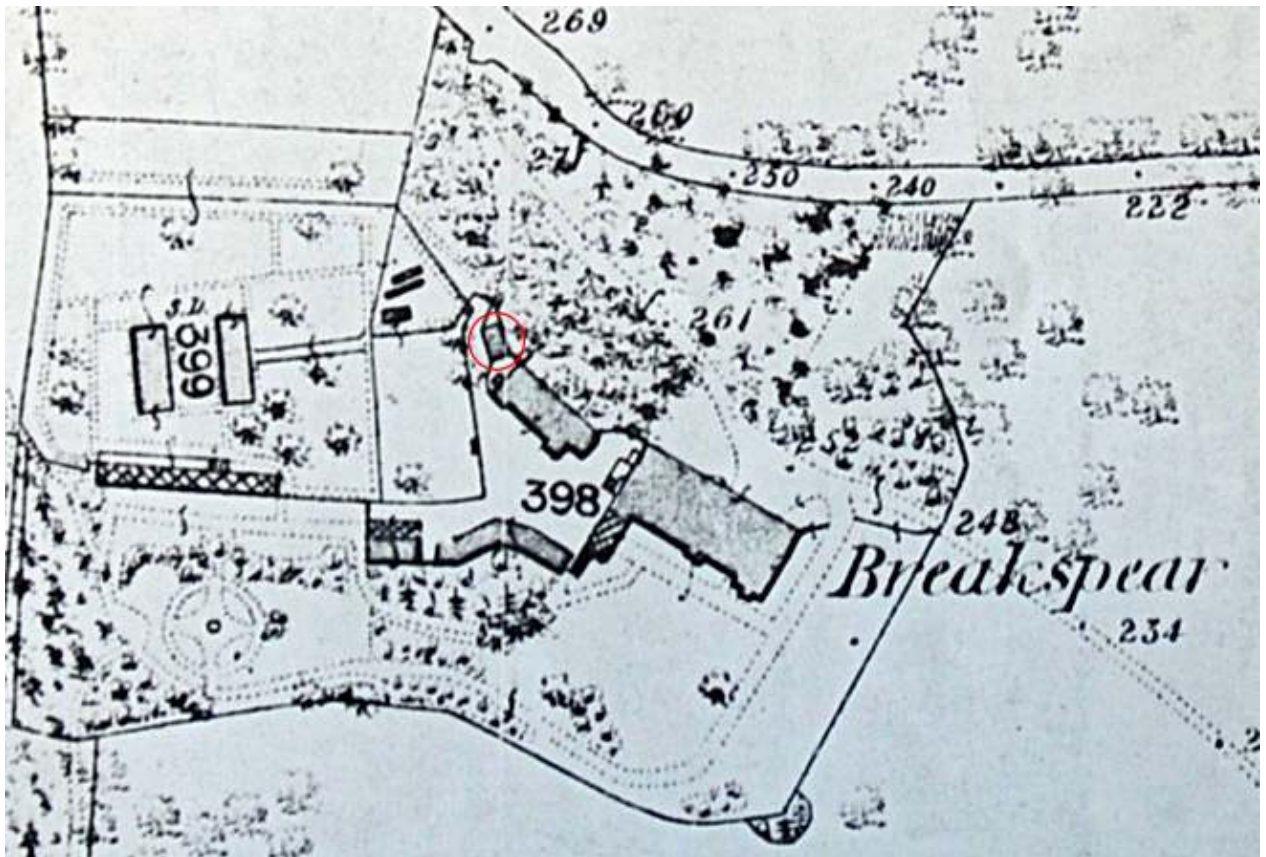


Fig. 4: Extract from the First Edition 25inch OS Map, 1866, with the dovecote circled in red

3.3.2.5 The 1890 OS 25inch Map depicts the dovecote in the same layout as the 1866 OS Map, with the structure attached to the stable blocks. A far clearer depiction of this layout is depicted on the 1894 Architect's floor plan and drainage of Breakspears, by Roger Field (fig. 5). This clearly shows the dovecote directly attached to the stable-block. This is through the southern side of the dovecote. One wall appears to be constructed onto the dovecote's south-western buttress (forming the entrance to some type of yard, etc). Another wall is constructed onto the dovecote's south-eastern buttress (this wall appears to be part of the main stable-block itself). Other less substantial walls, with a shaded area between them, are depicted adjoining the southern wall – possibly depicting some type of partly covered yard, etc.

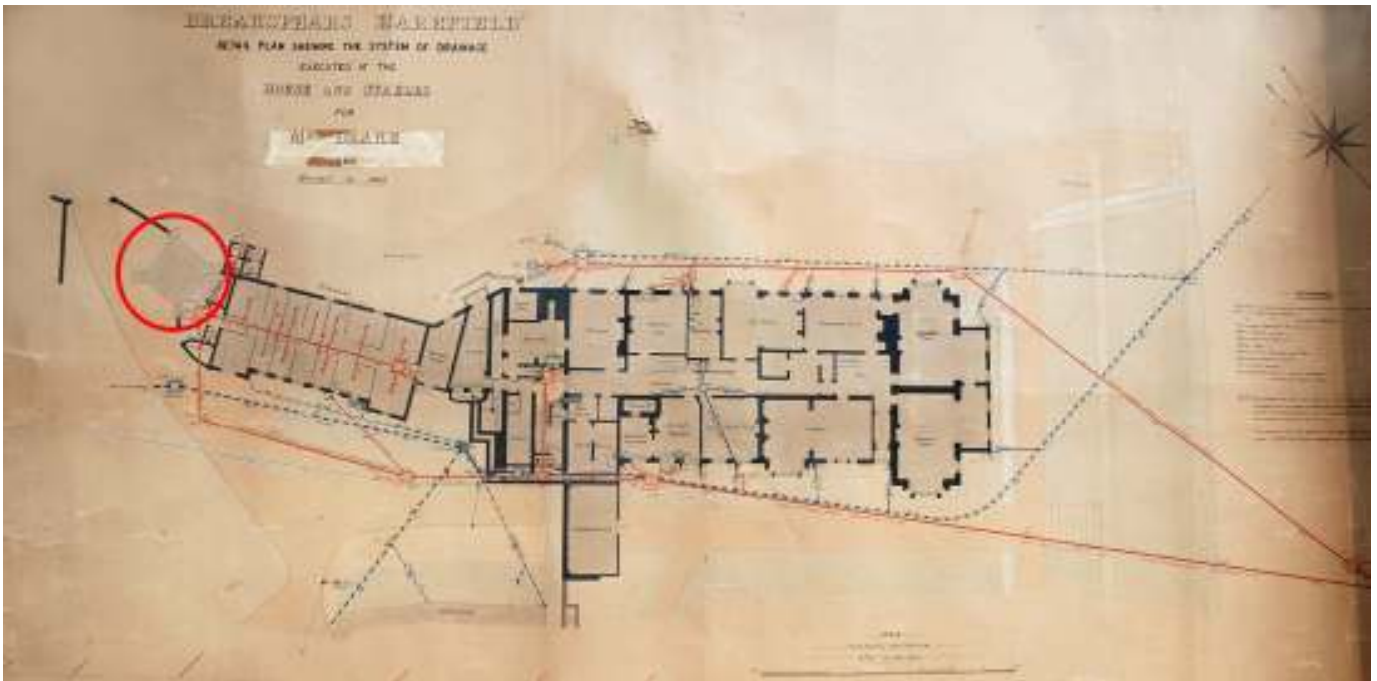


Fig. 5: Architect's floor plan and drainage of Breakspears, by Roger Field, 1894, with the dovecote circled in red

3.3.2.6 The stable block was destroyed at some point between 1899 and 1914 (between the two OS Maps), such that, once again, the dovecote was an outlying structure separate from the main house. It is depicted on this 1914 OS Map (fig. 6) as a simple square structure, in the same location as today, and on the same alignment.

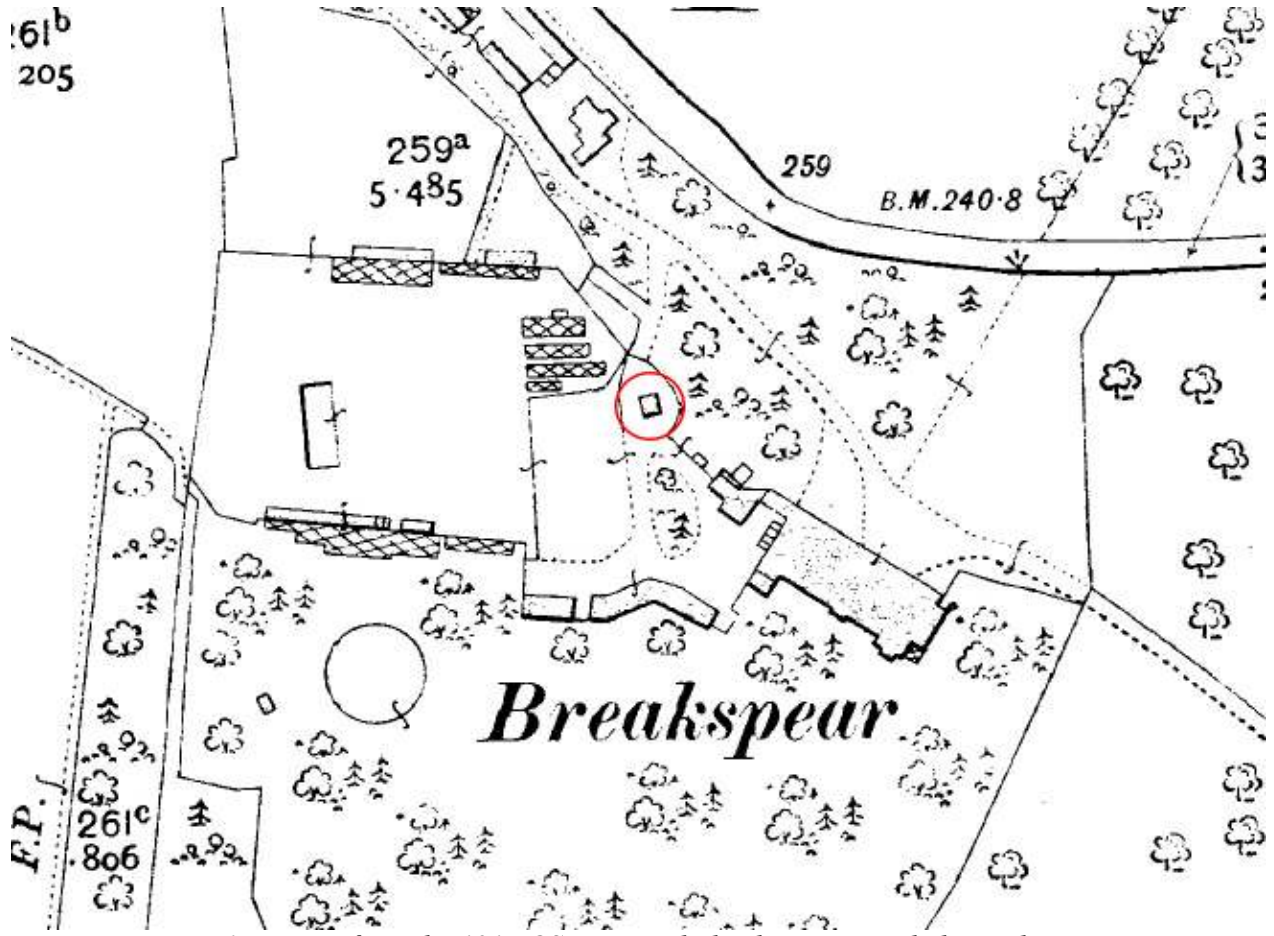


Fig. 6: Extract from the 1914 OS Map, with the dovecote circled in red

3.3.2.7 The later maps, up to and including the present-day maps, depict the dovecote in exactly the same way as it is on the 1914 Map – including the same location, shape, and alignment.

3.3.2.8 The cartographic evidence therefore depicts the dovecote from 1771. It presumably did stand from an earlier date (i.e. the Harefield Portion of the Estate Map of 1681-1685 and Rocque's 1756 'Map of Middlesex'), however this earliest cartographic evidence was at a small-scale so does not depict the dovecote. The basic structure and location of the dovecote do not appear to change from 1771 (with the apparent different location of the structure on the 1813 Enclosure Map presumably representing a cartographic error). The cartographic evidence does, however, show the existence of the buttresses from at least 1813; the small structure built onto the southern wall of the

dovecote in 1813; and the connection of the stables with the dovecote from the mid-19th Century until the early 20th Century.

3.3.3 Photographic / Visual Evidence:

3.3.3.1 A series of three photographs of the dovecote from 1923 (figs. 7 – 9; RCHME Record Card, NMR) depict the structure in broadly the same way as it remains today – with the same square structure, buttresses, timber roof, clock, cupola, doorways, and windows. This shows that the dovecote that stands today existed from at least 1923, and that the major changes and modifications discussed below must have taken place before this date.



Fig. 7: 1923 photograph of the western side of the dovecote, clearly showing the existing western door and window; timber roof; cupola; and buttresses.



Fig. 8: 1923 photograph of the southern side of the dovecote, clearly showing the existing southern window; roof; cupola; and clock-face.



Fig. 9: 1923 photograph of the south-western corner of the dovecote, clearly showing the southern and western walls of the structure roughly as they remain today.

3.3.3.2 Another image of the dovecote (fig. 10) shows it in broadly the same way as it is today and as it was in 1023. The date of this image is unknown. It must have been after 1894 (when the clock was inserted), and there is no indication of the stables, so it probably dates from some point in the earlier 20th Century.



Fig. 10: Image of the south-western corner of the dovecote (from E.M. Bowlt, "Ickenham and Harefield Past", 1996).

3.3.4 Other references to the dovecote / studies:

3.3.4.1 The listed building description of the dovecote describes it as follows:

"17th Century square red brick building with slightly jettied 1st floor over moulded string. Battered angle buttresses to ground floor. Pyramidal tiled roof has bell cupola with clock in base. Tudor arched entrances on east and west sides and lancet opening in south side."

3.3.4.2 Bridget Cherry's 'The Buildings of England, Ireland, Scotland and Wales' (1998) describes it as follows:

"Older than the surviving parts of the house, and indeed more enjoyable, is the dovecote to the west, a rare survival in the London area. A fine example of early 16th Century Tudor brickwork, square, with a cupola. Moulded brick jetty, small Tudor archways, and battered angle-buttresses."

3.3.4.3 Robert Lee's 'Historic Building Survey' of the dovecote (2000) described it as follows:

"The Dovecote is not only an attractive early building but also a rare survival in the London area. Most of its original features externally and internally are unchanged for over a hundred years."

3.4 Dovecotes in general:

The following discussion of dovecotes in general (covering their history, function, types, exterior and interior, and other examples nearby) is used as a way of understanding some of the features that were noted in the Breakspear dovecote.

3.4.1 The History of Dovecotes in Britain:

Dovecotes were introduced to Britain during the Norman period (although there is some suggestion that they were introduced earlier by the Romans). The earliest known examples of dovecotes in Britain occur in 12th Century Norman castles. In the Middle Ages only manorial lords could afford to keep doves and pigeons so medieval dovecotes were connected with manor houses, castles, parsonages, or former monastic sites. After c.1600, the laws relaxed so many later farms had dovecotes, until their use declined in the 18th Century.

3.4.2 The Function of Dovecotes:

It must be remembered that dovecotes were essentially, and especially in the earlier days, built to be functional buildings. This is because doves and pigeons were an important food-source (used in pigeon-pie, for example), and were also kept for their eggs and dung (which was used in both fertiliser and gunpowder).

Dovecotes were also, to some degree, a status symbol, and so were regulated by law such that only nobles had the privilege of having one (until c.1600 when this law was relaxed in England). After 1600, when the laws concerning the ownership of dovecotes were relaxed, they could still act as status symbol, particularly because they were often designed to be a feature in the landscape of a large house, sometimes built in flamboyant styles, etc.

3.4.3 Different Types of Dovecotes:

Free-standing dovecotes appear to have been most common in the medieval period, and many of these were round and built of stone. The roof was usually conical, although in Wales and Western England they sometimes had domed stone roofs.

Some dovecotes were timber-framed so had to be square, rectangular or polygonal in shape.

Brick-built dovecotes began to be used in the 16th Century and could be used to construct any shape of dovecote, although round dovecotes were still overwhelmingly popular.

Some dovecotes were incorporated into other buildings (such as castles, farm buildings, and houses), whereas others were converted from existing buildings that were no-longer in use (such as windmills).

Some of the dovecotes were built using vernacular materials, which accounts for a variety in different types of material used. For example, there are examples of dovecotes built in mud, clay and straw, wattle and daub, limestone and sandstone, flint, chalk, granite, slate, ashlar stone, etc.

The location of a dovecote was designed to make them easily distinguishable to the returning flocks of doves, so they were often positioned alone in the landscape and away from large trees (where hawks could hide to prey on them!), but also close enough to houses to shield them from the wind and to allow them to be monitored. Some dovecotes were located within the religious, agricultural, or manorial complex (as status symbols); whereas others were sited on common or waste land at the margins of estates, because doves and pigeons were sometimes seen as pests who ate corn. They were often sited next to fishponds or other water-sources (useful for the birds); and from the 18th Century began to be incorporated into building-complexes (stables, etc).

3.4.4 The Exterior of Dovecotes:

Most dovecotes had a cupola above the top opening on the roof, to allow the doves to enter the structure, as well as allowing light in and keeping the rain out. The early cupolas were made of stone, whereas later ones were highly decorative and often made of wood. Below the cupola was a trap door shut when there was a desire to keep the doves and pigeons inside.

Continuous ledges and gables were occasionally constructed on the outside of the dovecotes, to provide places for the birds to perch.

The dovecotes also had to prevent predators from entering. This meant that some dovecotes had shuttered louvered dormers (small flight holes which enabled the doves to enter but not their larger predators), reinforced tight access doors, and smooth walls with protruding bands of stones to stop climbing predators from gaining access.

Doors were often small and built low into the ground-surface (to reduce the silhouette of the person entering the dovecote, to prevent this from scaring the birds). They were often square, and some had decorative features / hoods, etc.

Windows were, however, less common, particularly in early dovecotes. Instead, glazed windows were sometimes inserted in the 18th and 19th Centuries, often in the wall nearest the house, so that the birds could be watched.

3.4.5 The Interior of Dovecotes:

Inside the dovecote were nest boxes located in the walls from the top to the bottom of the structure. The lower ones were generally off the floor to reduce the threat from predators (such as rats). These nest boxes had to be dark, private, and dry. Those in medieval dovecotes were often built into the walls, but by the 17th – 18th Centuries they were often built onto the wall. Some nest boxes were L-shaped to provide room for the doves' tails, and they were large enough to accommodate a sitting bird and two chicks. Ledges were also built on the outside of the nesting-hole, for the doves to perch on. These nesting-holes could be built of a variety of materials, including stone, brick, chalk, plaster, etc, however many original nest boxes have since been replaced by brick. Different ways of increasing the number of nest boxes within dovecotes were attempted, including the creation of partition walls and central columns full of extra nest boxes.

The interior of many dovecotes was covered in white plaster or lime-washed, as doves are attracted by white surfaces. This may also have aided visibility in what would have been a poorly-lit interior.

The interior floor of dovecotes was sometimes raised to above the level of the exterior ground-floor. This was to prevent problems of the damp and cold affecting the dovecote structure.

Potences were often found in circular dovecotes. A potence was a revolving wooden pole, mounted on a plinth, with arms onto which ladders could be attached. This enabled the eggs and squabs (chicks) to be collected, without having to continuously move the ladder round. Occasionally potences are also found in square dovecotes, although they would obviously have been of less practical value.

3.4.6 Dovecotes in Hillingdon:

Another dovecote is located at the site of the nearby Eastcote House (fig. 11), and formed part of the substantial 16th Century historic house complex. A dovecote was first built on this site in the late 16th Century, however only the lowest few courses of brickwork survive with the majority of the structure being rebuilt in the 18th Century. It is a square brick-built structure, much like that at Breakspear, and visually looks remarkably similar to that at Breakspear. This similarity suggests that there was a degree of localised style in terms of dovecotes, and that one dovecote influenced the other, or that they may even have been constructed at the same time by the same person.

The dovecote at Eastcote is significantly larger in plan than that at Breakspeare (approximately 5.55m square, in comparison with Breakspeare which is approximately 3.8m square). It is also significantly shorter than the Breakspeare dovecote, c.5.48m (height of wall), in comparison with c.6.60 – 7.6m at Breakspeare. It is not, however, of a similar height to the presumed earlier phase of construction at Breakspeare (c.3.85 – 4.65m), and, furthermore, the present structure at Eastcote dates to the 18th Century and so is not a direct comparison with the earliest phase of construction of the Breakspeare dovecote.

Compass Archaeology visited the dovecote at Eastcote and undertook a brief historic building survey as a comparative exercise. This will be referred to throughout the report, as each feature / phase is discussed in turn.



Fig. 11: Photograph of the dovecote at Eastcote House

4. Objectives and scope of the historic building survey

4.1 The objective of the project was described within the *CA Method Statement* (Compass Archaeology, January 2011) as follows:

“It is proposed that the record of the dovecote will be primarily analytical, that is to say a description of the building including consideration of its history/development, alterations and details of fittings and fixtures. The record will include written evidence and drawn/photographic illustration to support the accompanying description and analysis.”

The evidence and descriptions offered will be based mainly on direct examination and recording of the building, supplemented by documentary and cartographic sources (many of which have already been examined as part of the wider study of the estate).

The building will be briefly considered within the context of the surrounding historic estate, in terms of its role and status, and potential correlations made between developments in each area.”

- 4.2** The *Method Statement* included the following guidelines for the programme of works, as well as other comments on recording practice.

DRAWING (utilising existing Structa elevations & floor/roof plans)

1) Plans & vertical cross section – adding any detail necessary to existing drawings, either directly on the figure or by appended note.

2) External elevations – adding any detail necessary to existing drawings, on the figure or by appended note, and also a coloured copy of each elevation to show building phases/estimated date.

3) Measured drawings recording significant structural details, either overall or localised examples. To include the blocked door (with localised excavation to expose base), window openings, changes in wall construction where rebuilt, contrasting examples of nesting spaces, details of floor construction to demonstrate later insertion, evidence for earlier roof construction.

4) Measured drawings to show architectural decoration, in particular the profile of the external first floor moulded brickwork. Also moulding profiles of door/window surrounds, which may be combined with (3) above.

5) A general site plan relating the building to surrounding structures and features.

6) Where necessary, figures identifying the location/direction of photographs.

7) Copies of historic maps/plans/photographs, including any evidence for the building’s history.

PHOTOGRAPHY

1) External views of the building in its wider setting, including previous photographs taken before the start of major development works.

2) More formal views of the building’s external appearance, including separate views of each of the external elevations.

3) Detailed views of various external elements/phases of the structure, including rebuilds/patching of walls, individual buttresses, doorways & windows, moulded brickwork, roof construction.

4) The overall appearance of the principal rooms.

5) Detailed internal views to illustrate construction and the development of the building – covering similar ground to areas noted under drawings (item 3). Also views of the roof construction, evidence for previous lathe & plaster covering on ceilings, earlier timber floor surfaces now covered and localised excavation to expose the earlier ground floor.

6) Detailed internal views to illustrate usage and fittings. This will include examples of nesting openings, detail of earlier timbers in the roof space that probably gave under-eaves access to birds, the turret clock plus associated equipment/maker's plate close up, separate bell-pull arrangement.

WRITTEN ACCOUNT

1) General introduction to include the building's location (TQ reference), a note on statutory listing, plus the date, scope and circumstances of recording.

2) A summary of the building's overall form/materials, intended function, phases of development and approximate dates.

3) A survey of the source material, including any published references, historic map evidence and previous records of the building (eg., the examination undertaken in 2000 and more recent drawn survey by Structa). Where appropriate reference will also be made to dovecotes elsewhere, to illustrate the building's function and significance.

4) A discussion of the building's setting within the Breakspear estate. As originally built and substantially reconstructed, its potential importance as an architectural feature and relationship to the contemporary House. Following from this, possible parallels in dating of the building with the major phases of the House (Tudor/ later 17th C/ mid 19th C), and also the later impact of relocation of the stables, etc., to the immediate vicinity of the building in the 19th century.

5) A discussion of the successive phases of development/rebuild and changes in the building's overall form/use, in stratigraphic sequence. To include supporting evidence and reference to the appropriate illustrations.

6) As part of the discussion of function, details of specific arrangements, fittings and machinery in the building. This will include details of the nesting spaces, possible earlier under-eaves access for birds and potential means for egg-collection before the insertion of separate floors. Also a description of the working of the turret clock and chimes, plus reference throughout to appropriate illustrations.

7) A summary of the potential for dendrochronology.

8) Bibliographic listing and other references/ sources consulted.

5. Methodology

- 5.1** In line with the *Method Statement* the building and its setting were inspected, and a thorough photographic survey undertaken. This included the exterior as well as all interior floors, walls, and roof space. The photography comprised a mixture of general shots, more formal scaled views, and detailed studies of particular areas and features.
- 5.2** The photographic record was related as appropriate to the floor plans and elevations, which were provided by *Clancy Docwra Developments Ltd.* Where necessary additional drawings were undertaken, including drawings of the interior and exterior blocked-in doorway and foundations beneath this, the timber on the upper level, and the moulded courses of brickwork.
- 5.3** The basic record and photographic survey were followed by a more detailed investigation of the structure and its development. This included small-scale excavations of the foundations of the structure (both inside and outside the blocked-up doorway, and in other places on the ground floor of the structure), further photography and as appropriate a written or drawn record.
- 5.4** The ground floor plan of the building was related to the current 1:1250 Ordnance Survey plan. Levels were then taken from an Ordnance Survey benchmark at the north-east corner of the main house (value: 76.54mOD), and brought in to take levels of different parts of the dovecote structure.
- 5.5** In conjunction with the on-site survey reference was also made to a number of documentary sources, including historic maps, studies and records of the Breakspear estate.

5.6 The site archive

The site archive for all phases of work (field evaluations, historic building assessment and recording of the house, and the present study) is currently held by Compass Archaeology, and records for the building survey been given the previously-allocated the site code BZH09.

All of the projects share an Ordnance Survey plan base, topographical survey and development proposal drawings (paper and digital formats, supplied by Clancy Docwra Developments Ltd). The archive for the present project also includes scaled drawings and elevations of specific areas, written notes, a series of 35mm/digital images, some finds (pottery, glass, and bricks) from the small-scale excavations of the foundations of the structure, and some other brick samples from the structure itself.

An ordered and indexed site archive will be compiled in accordance with *Guidelines for the preparation of excavation archives for long-term storage (UKIC 1990)*. It is anticipated that the records will be placed in the Museum of London Archive.

6. The historic building survey – introduction and summary

The historic building survey took two basic forms:

- A record describing the existing external and internal features and appearance of the dovecote. This was principally undertaken by photography, with notes on particular aspects, dimensions, etc.
- Secondly, an interpretation of the standing structure and its historical development. This involved examination, further notes, drawings, and physical investigation, mainly by small-scale excavations of the foundations and ground-floor of the structure, particularly around the blocked-up eastern doorway.

This survey led to the conclusion that the structure had been constructed and modified at different times and in different phases. These can be summarised, in rough chronological order, as follows:

1) Original construction of the dovecote. The existing evidence for this includes the present northern, eastern, and southern walls, up to the base of the moulded courses of brickwork. Also includes the window in the southern wall, eastern doorway (now blocked-up), possible existence of doorway in the western wall, and chalk-rubble foundations. Late 16th – early 17th Century.

2) Interior re-facing of parts of the dovecote on the ground-floor northern, western and southern walls, to strengthen the structure. Mid-17th Century.

3) Major rebuild of the dovecote. The existing evidence for this includes the total rebuild of the western wall, and extension upwards of the northern, eastern, and southern walls (above, and including, the moulded courses of brickwork). Also includes the window in the western wall, and the large piece of timber running around the top of the dovecote (evidence for the previous roof). Late 17th Century.

4) Construction of the brick floor and surrounding French drain. Also includes the blocking up of the bottom part of the eastern doorway, with the insertion of the drain hole through this. Mid-late 18th Century.

5) Construction of the four exterior buttresses, to strengthen the structure. These may have been constructed at slightly different times. Unknown date – definitely before 1813.

6) Revision of use of the dovecote, with the lower two storeys being converted into rooms and the upper being retained as some form of ‘dove loft’. The existing evidence for this includes the construction of the present roof, the addition of floors, lathe-and-plastering of roofs / ceilings, the blocking-up of nesting holes at the lower levels, and the construction of the wooden ‘chamber’ surrounding the ladder on the first floor. Soon after 1769.

7) Blocking up of the eastern doorway and construction of the present western doorway. Also includes the construction of ‘plinths’ to raise the ground floor surface. Early 19th Century.

8) ‘Patching’ of parts of the exterior of the dovecote. This occurred in different places and possibly at slightly different times. This includes the patching on the southern wall which may have been associated with the construction of the stables, or the earlier structure built onto the southern wall of the dovecote. Continuous – 19th Century onwards.

9) The dovecote becomes a clock / bell tower. This includes the insertion of a turret clock with the associated bells, clock-face, and weights, etc, and the prevention of doves from entering the structure (thereby ending the period of the ‘dove loft’ in the upper storey). 1894.

10) Late modifications to the dovecote. This includes the re-boarding of the floors, the wooden panelling of the walls, and other features. 20th Century.

The text below (sections 7-16) and the accompanying photographs and drawings are set out in accordance with the above different phases of the dovecote. Structa’s plans and elevations of the structure are included directly underneath this, for ease of reference throughout the report. Similar plans and elevations of the structure were undertaken in 1966 (GLC, 1966, NMR LCC/GLC MD96/).

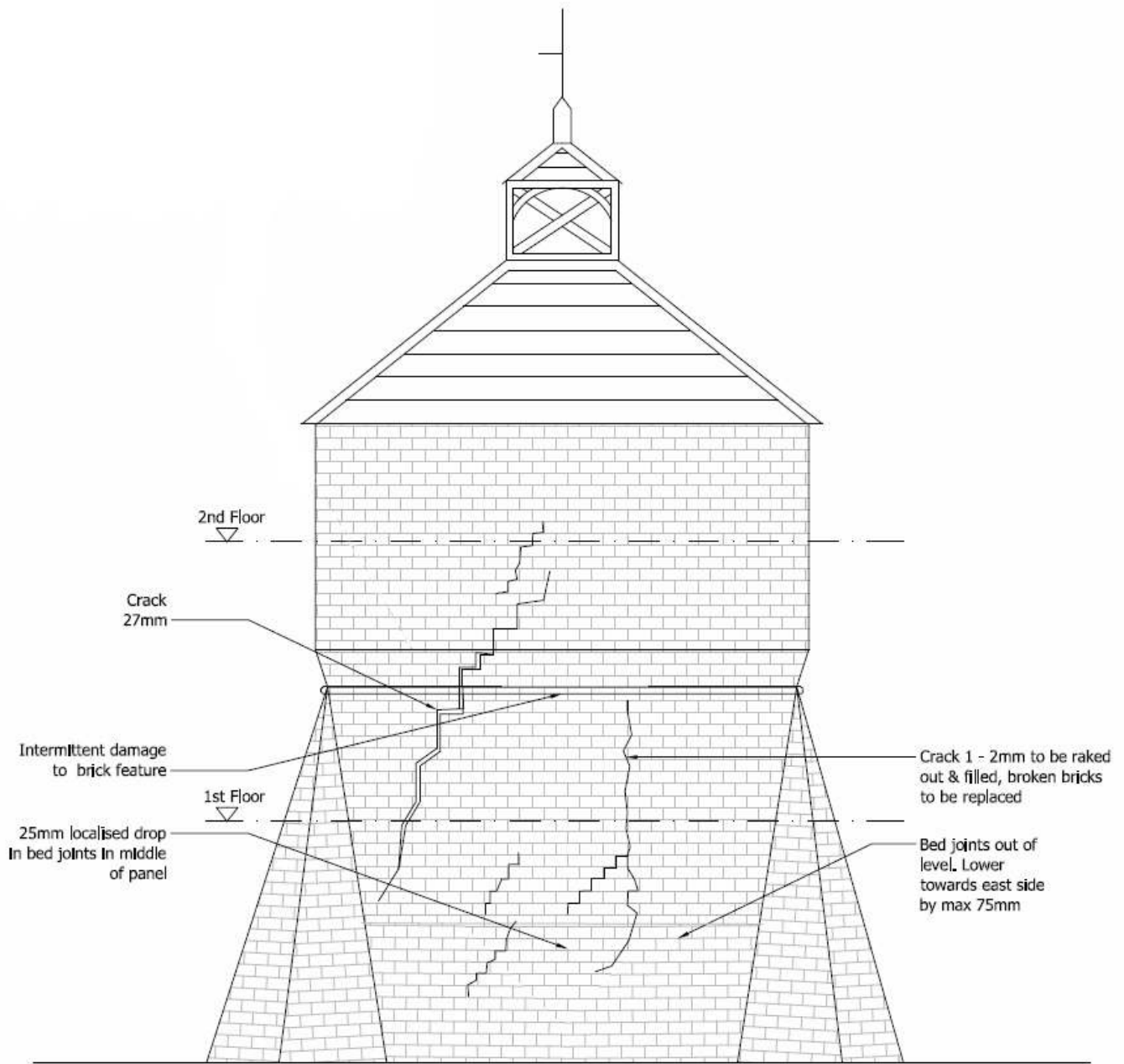


Fig. 12: Structa elevation of the northern external face of the dovecote.

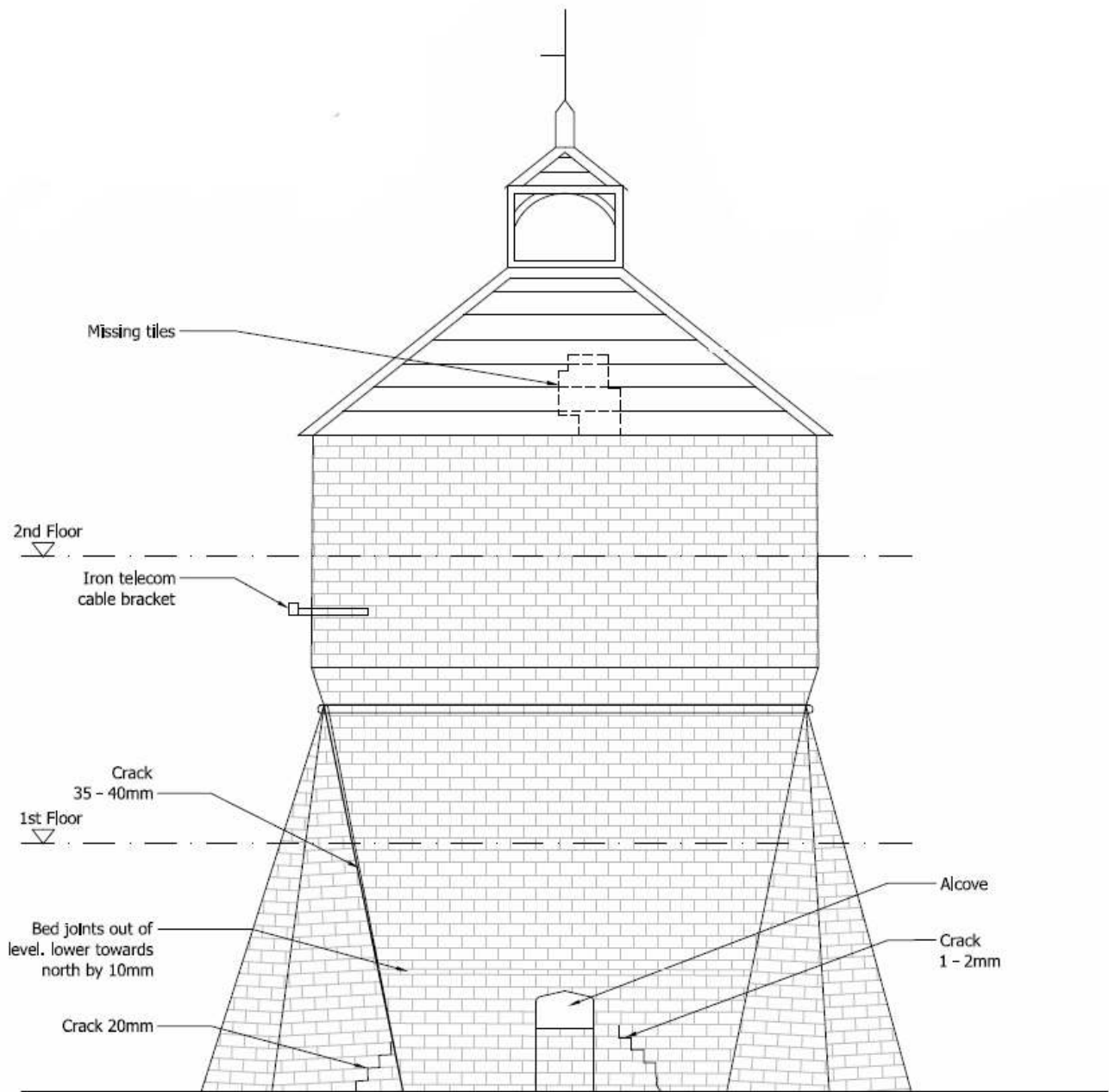


Fig. 13: Structa elevation of the eastern external face of the dovecote.

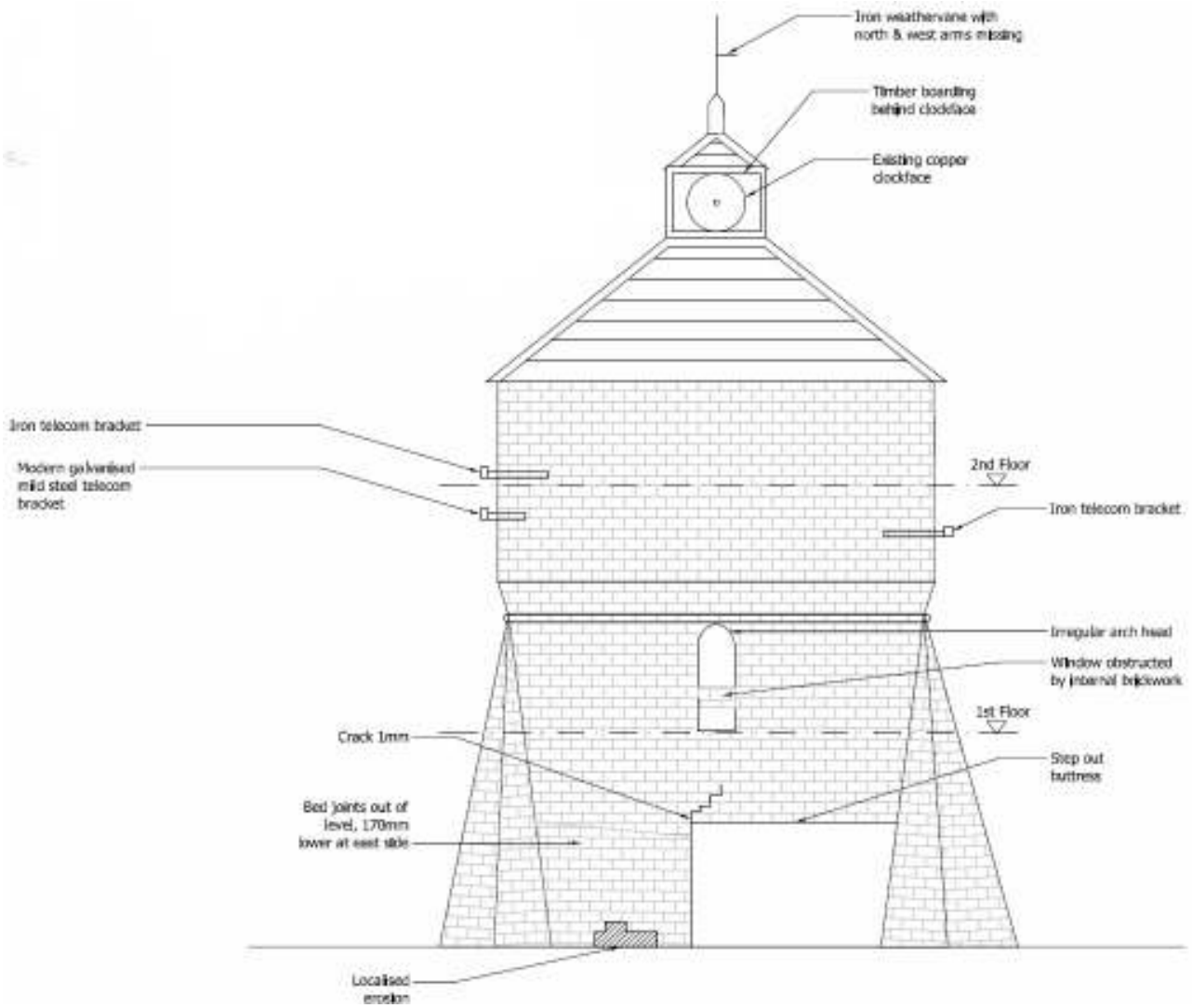


Fig. 14: Structa elevation of the southern external face of the dovecote.

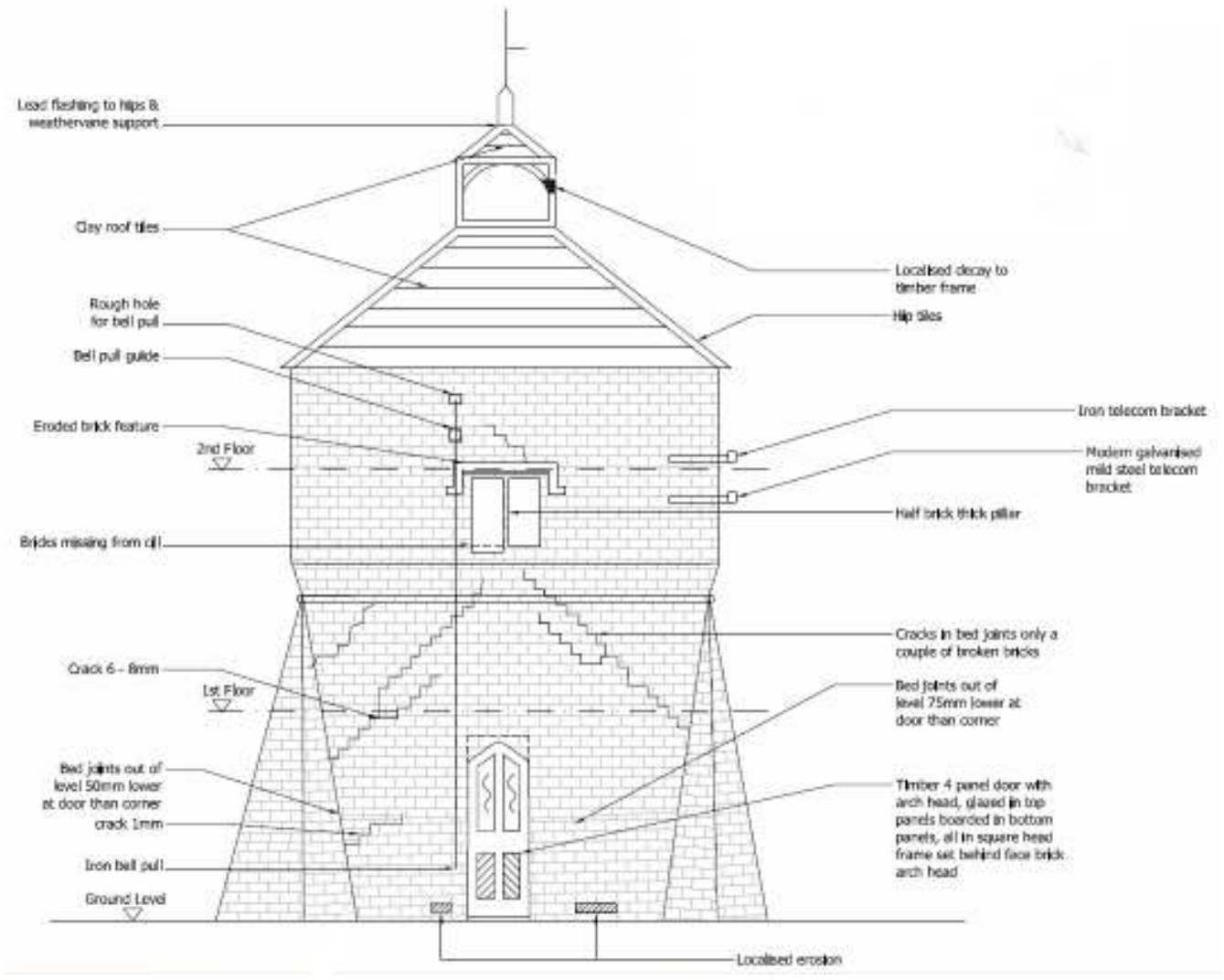


Fig. 15: Structa elevation of the western external face of the dovecote.

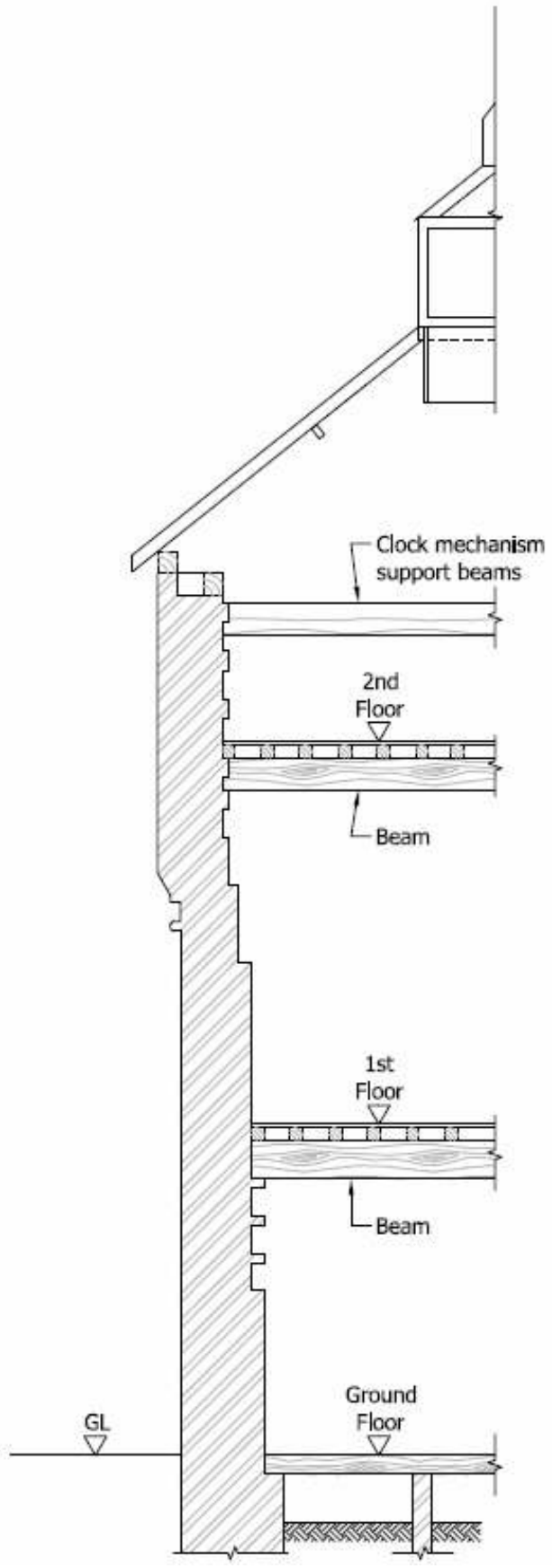


Fig. 16: Structa section of the dovecote.

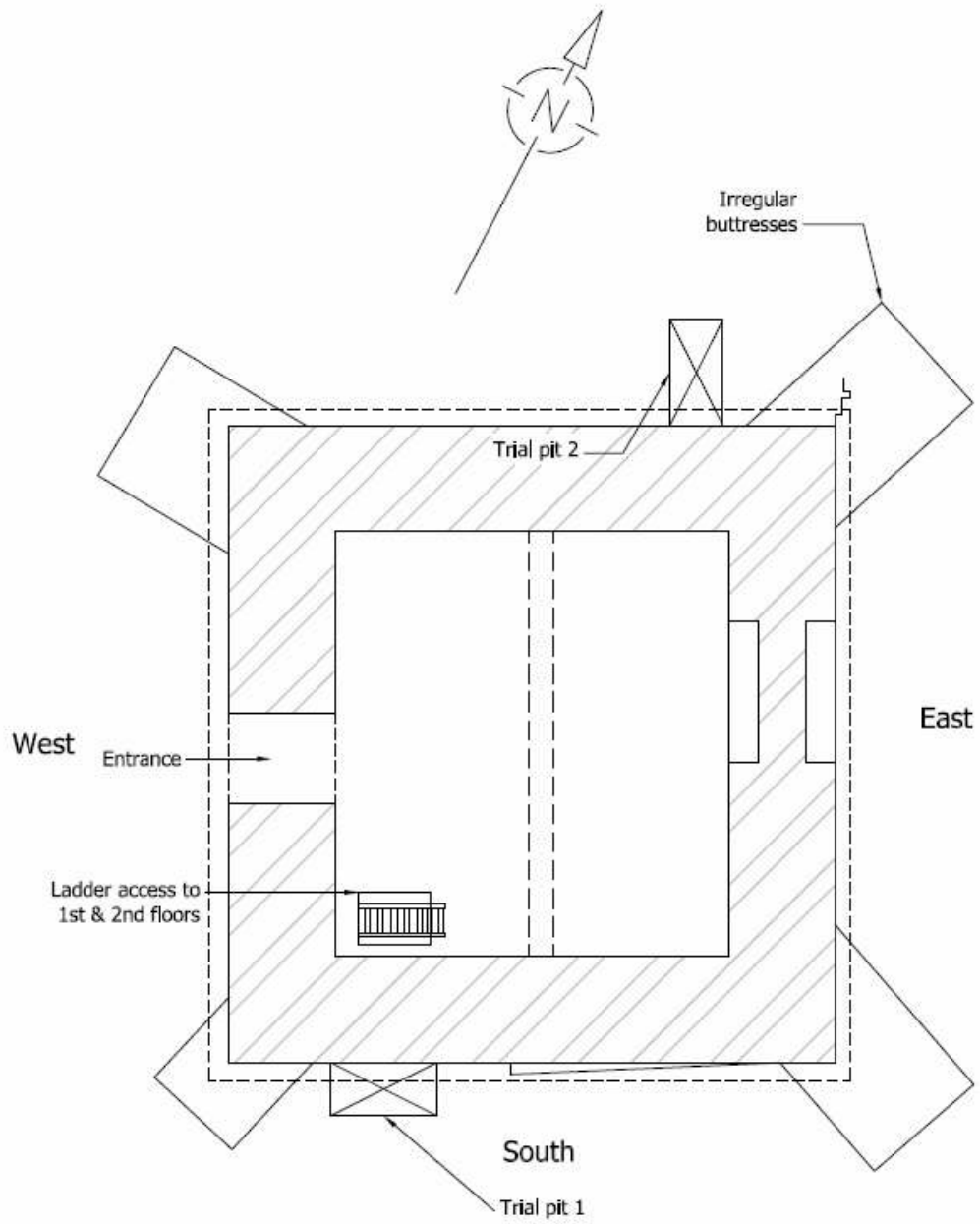


Fig. 17: Structa plan of the ground floor of the dovecote.

7. Original construction of the dovecote

7.1 There is no documentary or cartographic evidence as to the date of the first construction of the dovecote at Breakspeare. This has meant that suggestions have ranged from the early 16th Century to the 17th Century, with the earliest documentary reference to it probably being in a survey of *c.*1640 (see section 3.3.1). Analysis of the existing dovecote, and interpretations concerning which bits were part of its original construction, is therefore important in gaining an understanding of the earliest structure.

7.2 The northern, eastern, and southern walls of the present dovecote, up to, but not including, the moulded courses of brickwork, are the earliest part of the existing dovecote, and probably represent the original construction. This is with the proviso of the later patching / modifications / re-facing of parts of these walls (see following sections).

7.2.1 The height of the original northern wall (up to the base of the moulded course of bricks) was *c.*3.85m, the eastern wall *c.*4.65m, and the southern wall *c.*4.65m. These were external measurements, with that on the eastern wall taken to the offset brick course next to the blocked doorway, and therefore giving a maximum possible height of this wall. Internally, this encompasses the whole of the present ground floor and lower three levels of nesting holes on the first floor. This provides a rough indication of the possible height of the original dovecote structure. The apparent shorter northern wall may be accounted for because of the natural undulations of the land – which is lower on the southern and eastern sides such that these walls had to be taller.

7.2.2 The thickness of these walls varies throughout the structure, with Structa Consulting Engineers giving the ground floor walls an average thickness of 0.7m. The thickness of the eastern wall (at the base, measured through the drain hole) was *c.*0.72m. The thickness of the northern wall at the top of the original construction (i.e. just beneath the moulded course of brickwork) was 0.67m. The thickness of the southern wall (measured through the southern window) is *c.*0.73m. The walls are, therefore, relatively substantial, unsurprising for such a structure. They would also have needed to be thick because the nesting-holes were built into them.

7.2.3 The interior dimensions of the original ground floor (measured above the later battering out) were 3.88m (east-west, along the northern wall), by 3.75m (north-south, along the eastern wall), by 3.84m (east-west, along the southern wall). The interior dimensions at a higher level (on the present first floor) were 3.7m (east-west, along the northern wall), by 3.58m (north-south, along the eastern wall), by 3.76m (east-west, along the southern wall). The original structure, therefore, clearly narrowed as it went up, which makes structural sense.

7.2.4 The exterior of these three walls consisted of red-orange bricks (with the occasional vitrified brick), set within a grey-ish lime mortar. Some of the bricks in the walls have been weathered or affected by the ivy growth over them. The walls were regularly coursed, but not in a regular formal bond. Instead, it was a mix of different bonds, with some areas of stretchers over headers (English bond), some areas of stretchers over stretchers, and some pieces of half and quarter bricks, etc. This suggests that the walls may have re-used earlier bricks in their construction, and that they were constructed in something of an ad hoc fashion.



Fig. 18: Photograph of the exterior southern wall of the dovecote. The original build was up to the lower part of the moulded courses of brickwork, and included the southern window.



Fig. 19: Photograph of the exterior northern wall of the dovecote. The original build was up to the lower part of the moulded courses of brickwork.



Fig. 20: Photograph of the exterior eastern wall of the dovecote. The original build was up to the lower part of the moulded courses of brickwork. Sadly, the blocked doorway is directly behind the machine bucket in this photograph.

- 7.2.5 This brickwork is similar to that observed in the lower courses of the Eastcote dovecote (c.9 courses). They are not regularly bonded, but, instead, are a mix of headers, stretchers, and $\frac{3}{4}$ bricks. They are thinner bricks, and set within a grey mortar – similar to that at Breakspear. The original dovecote at Eastcote was thought to have been constructed in the 16th Century, thereby fitting with that at Breakspear.

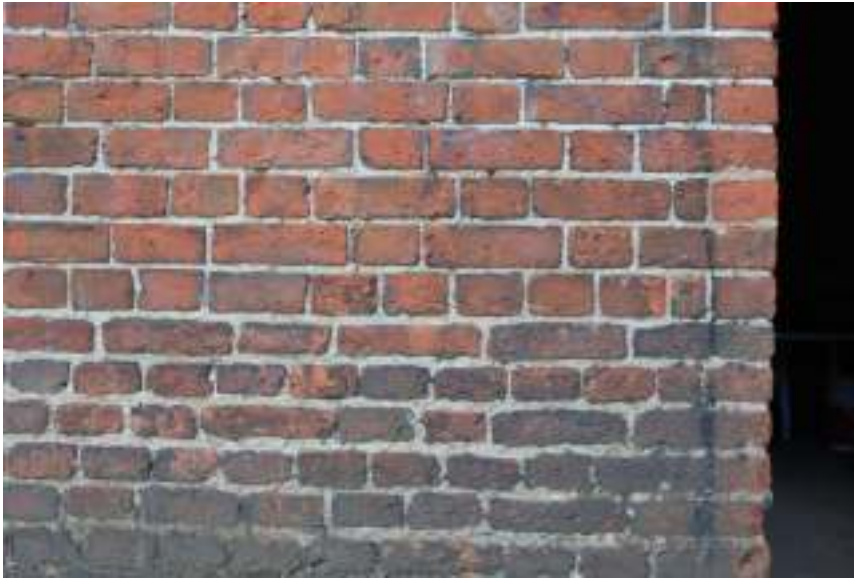


Fig. 21: Photograph of the lower (16th Century?) courses of brickwork on the Eastcote dovecote, overlain by the larger and more regular brick of the 18th Century rebuild.

- 7.2.6 The interior of the entirety of these three original walls of the Breakspear dovecote has been whitewashed over. It seems likely, however, that this occurred after the dovecote fell out of use as a dovecote, rather than as having been done because the colour white attracts doves, because the whitewash also covers the blocking of the nesting holes.
- 7.2.7 The lower part of the interior of the three walls was devoid of nesting holes (at least the lower 1.57m on the eastern wall). This lower section, without nesting holes, was probably kept as such to protect the doves from any predators entering the structure. It also batters out into the centre of the structure, by c.0.15m (northern wall), c.0.14m (southern wall), and c.0.14m (eastern wall). This is, however, part of the later internal refacing of the walls (see section 8), rather than the original build. Investigations behind the battered lower section of the southern wall, however, revealed an earlier wall-face c.0.11m behind the current wall face. This was probably the earlier wall, and therefore suggests that the earlier wall may have also battered out slightly (c.30mm).



Fig. 22: Photograph of the interior southern wall of the dovecote – ground floor. Original build visible from c.100mm above the scale (battered re-facing below this). Rows of nesting-boxes are visible, although the holes themselves have almost all been blocked.

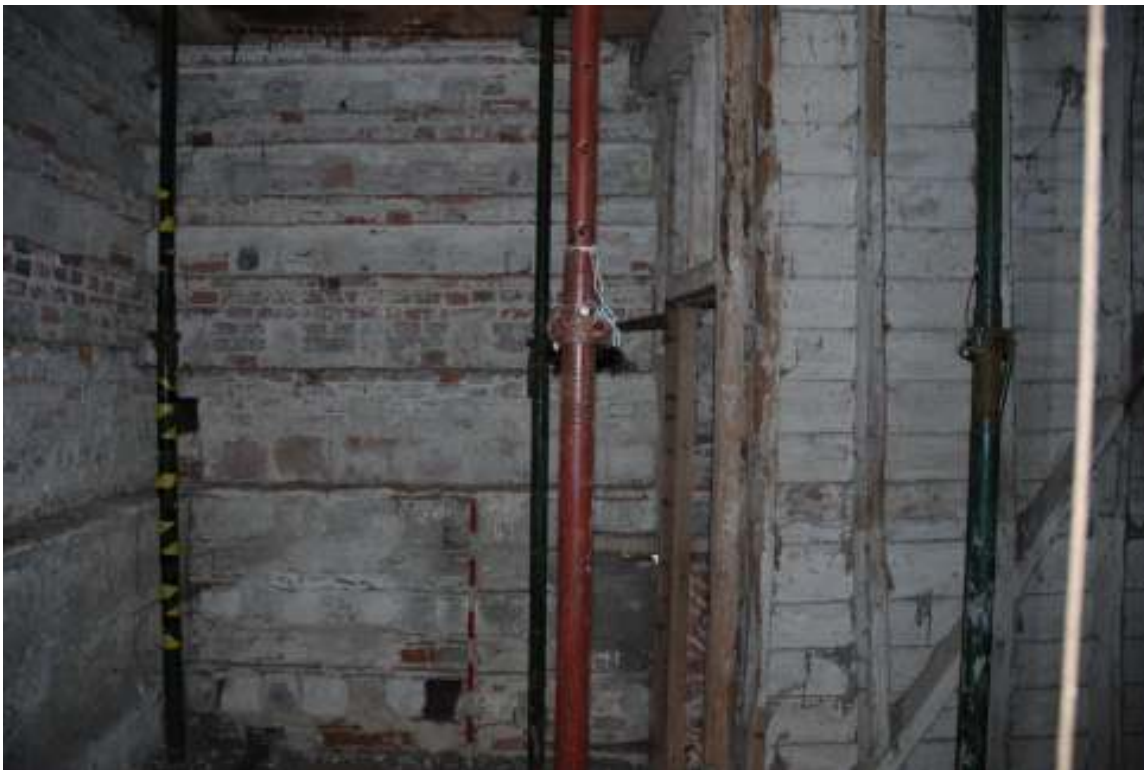


Fig. 23: Photograph of the interior southern wall of the dovecote – first floor. Original build up to c.200mm above the top of the scale, after which the blocked nesting-boxes are distinctly different.



Fig. 24: Photograph of the interior northern wall of the dovecote – ground floor. Original build visible from c.100mm above the scale (battered re-facing below this). Rows of nesting-boxes are visible, although the holes themselves have almost all been blocked.



Fig. 25: Photograph of the interior northern wall of the dovecote – first floor. Original build up to c.200mm above the top of the scale, after which the nesting holes are distinctly different. A few unblocked holes are visible in the damaged area to the upper right of the photo.



Fig. 26: Photograph of the interior eastern wall – ground floor. Original build visible from c.100mm above the scale (battered re-facing below this, with the original eastern doorway (now blocked-in). See fig. 47 for clear explanation of which parts are part of the later battered re-facing.



Fig. 27: Photograph of the interior eastern wall – first floor. Original build up to c.50mm above the top of the scale, after which the blocked nesting holes are distinctly different.

- 7.2.8** The nesting holes in these original walls were distinctly different from those in the rebuilt western wall and rebuilt upper levels of the dovecote structure. Each row of nesting holes was directly above a double line of roof tile – projecting some 100mm and forming a continuous perch – which was in turn supported by a ‘dentil’ course of brickwork (i.e. bricks jutting out at an angle to form a triangular shape). Below this were two more rows of horizontally laid tile, but recessed to the same line as the underlying nesting-holes. The interior of the nesting holes was L-shaped, to allow room for the dove’s tails and to imitate the dove’s natural habitat, and would have had the capacity to hold a dove and two chicks. These nesting holes measured *c.*0.41m deep, by *c.*0.25 - 0.26m width, and 0.17 – 0.24m in height. The hole for the doves to enter (now blocked-up) was *c.*0.16 – 0.17m high and *c.*0.165m wide. Brick samples from the dentil course were dated 1550-1700, and the peg-tile from the tile courses to 1450-1750 (see appendix VI).
- 7.2.9** The capacity of the original structure (assuming it only stretched up to the base of the moulded courses of brickwork) is estimated at approximately 396 nesting-holes. This is based on the assumption of a clear unbroken western wall, with 11 or 12 nesting-holes per row. Taking this figure, and with the assumption that each nesting-hole contained one dove and two chicks, there could have been as many as 1188 doves housed in this original structure.



Fig. 28: Photograph of blocked nesting holes in the original build (eastern wall, ground floor). These are sandwiched between two tile courses and a dentil course of brickwork.



Fig. 29: Photograph of nesting holes in the original build (eastern wall, ground floor) – with some of these opened up to show the interiors.

- 7.3 It is possible, but by no means certain, that there may have been an upper storey on top of this original construction (i.e. from the base of the moulded courses of brickwork). This could, arguably, have been a timber construction as the moulded brickwork (part of the later construction) ‘jetties’ out, so that the upper storeys on the later dovecote are further apart than the lower storeys, possibly reflecting the layout of an earlier dovecote whereby the timber upper storeys ‘jettied’ out from the lower levels. This would, therefore, have meant that the original dovecote was higher than it appears. This is, however, only a suggestion, and there is no definitive evidence to support it.



Fig. 30: Photograph of the exterior western wall of the dovecote. The apparent 'jettied' construction of the structure (with the part above the moulded courses clearly sticking out further than the lower part of the structure) provides a possible indication of an earlier timber jettied structure.

7.4 The window in the southern wall, approximately half-way up the present height of the dovecote, was also original. This window measures 0.5m in total width, by 1.28m in total height. It is topped with an arch, of a maximum height of 0.22m. The centre of this arch is slightly off-centre, *c.*0.27m from the western side, although this might have been caused by movement in the structure. The external surround to the window consists of chamfered bricks, of 45 – 50mm in width.

7.4.1 The window lies within the area of the original dovecote (i.e. below the moulded courses of brickwork). This suggests that it was an original feature. Furthermore, the timber lintel above the window (observed on the interior) runs through into the adjacent nesting holes, with the same mortar and brick and tile, etc, on the inside and outside, such that there is no evidence that it was inserted at a later date. It therefore seems likely that this timber lintel was also original, in a similar way to the timber lintel above the blocked eastern doorway.



Fig. 31: Photograph of the window in the southern wall of the dovecote (from the outside). This clearly lies within the area of the original build (i.e. beneath the moulded courses of brickwork), and there is no indication that it was inserted at a later date.



Fig. 32: Photograph of the window in the southern wall of the dovecote (from the outside). This shows its construction, including the Tudor arch with chamfered bricks.



Fig. 33: Photograph of the window in the southern wall of the dovecote (from the inside). This clearly shows the timber lintel, going into the nesting holes either side of it, with no indication that the window (or lintel) was inserted at a later date.



Fig. 34: Photograph through the window in the southern wall (from the inside, looking out), showing Breakspear House in the background.

7.5 The eastern doorway (now blocked-up) was clearly part of the original construction of the dovecote, and must therefore have been one of the original entrances into the dovecote (discussion of a possible second doorway below).

7.5.1 Excavations at the base of this doorway, on the outside, revealed that it was at least 1.6m in height from the probable line of the original – but now lost – threshold at the base of the door (although only *c.*1.3m is visible above the existing ground-level). It is therefore possible that this door was built down into the ground, or, as seems more likely, that the ground-level has been built up. It was *c.*0.68m in width. There was a Tudor arch on the top of this, with the point of the arch exactly in the centre of the doorway.

7.5.2 The interior dimensions of this doorway are as follows. The total observed height was 2.25m (although *c.*1.9m was observed above the existing ground-floor), with a timber lintel on top of this for *c.*7cm in thickness. The width of the doorway is *c.*1m. The timber lintel on top of the doorway was *c.*1.35m in width, and is probably original. The actual / original base of the doorway is uncertain, although it is likely that a brick or stone threshold has been removed and replaced by later brickwork and the drainage hole. However, it is still clear that the doorway was considerably larger on the inside face than on the external elevation.

7.5.3 Small-scale excavations on the exterior side of the doorway (fig. 36) revealed the brick foundations for this doorway and the adjacent wall. There were up to six courses of brickwork below an offset course in the wall-face (stepping out *c.*100mm). This level also coincided with what may have been the base of a stone threshold across the doorway itself – the presence of this indicated by two courses of brickwork (*c.*0.6m beneath the present ground-surface) that were stepped back (to the north) with finished edges, further back than the brick foundations beneath this.



Fig. 35: Photograph of the exterior eastern doorway (now blocked-up).



Fig. 36: Photograph of the small-scale excavation around the exterior of the eastern doorway. This shows the brick foundations and the two bricks with finished edges that may have formed the edge of some form of threshold into the dovecote.

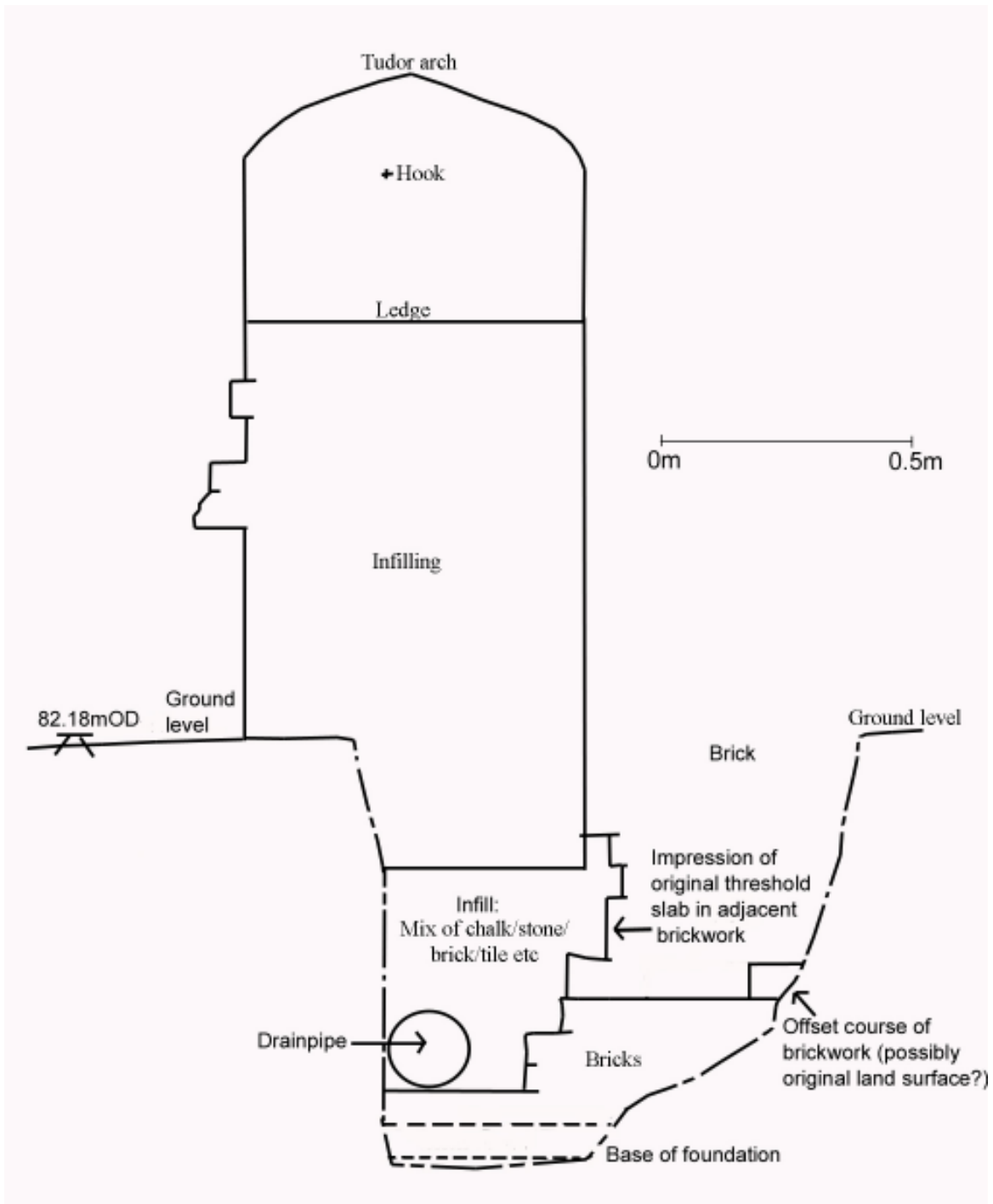


Fig. 37: Section of the exterior of the eastern doorway. This shows the brick foundations and possible threshold of the doorway. This also shows how the ground-surface may have been far lower than it is today.

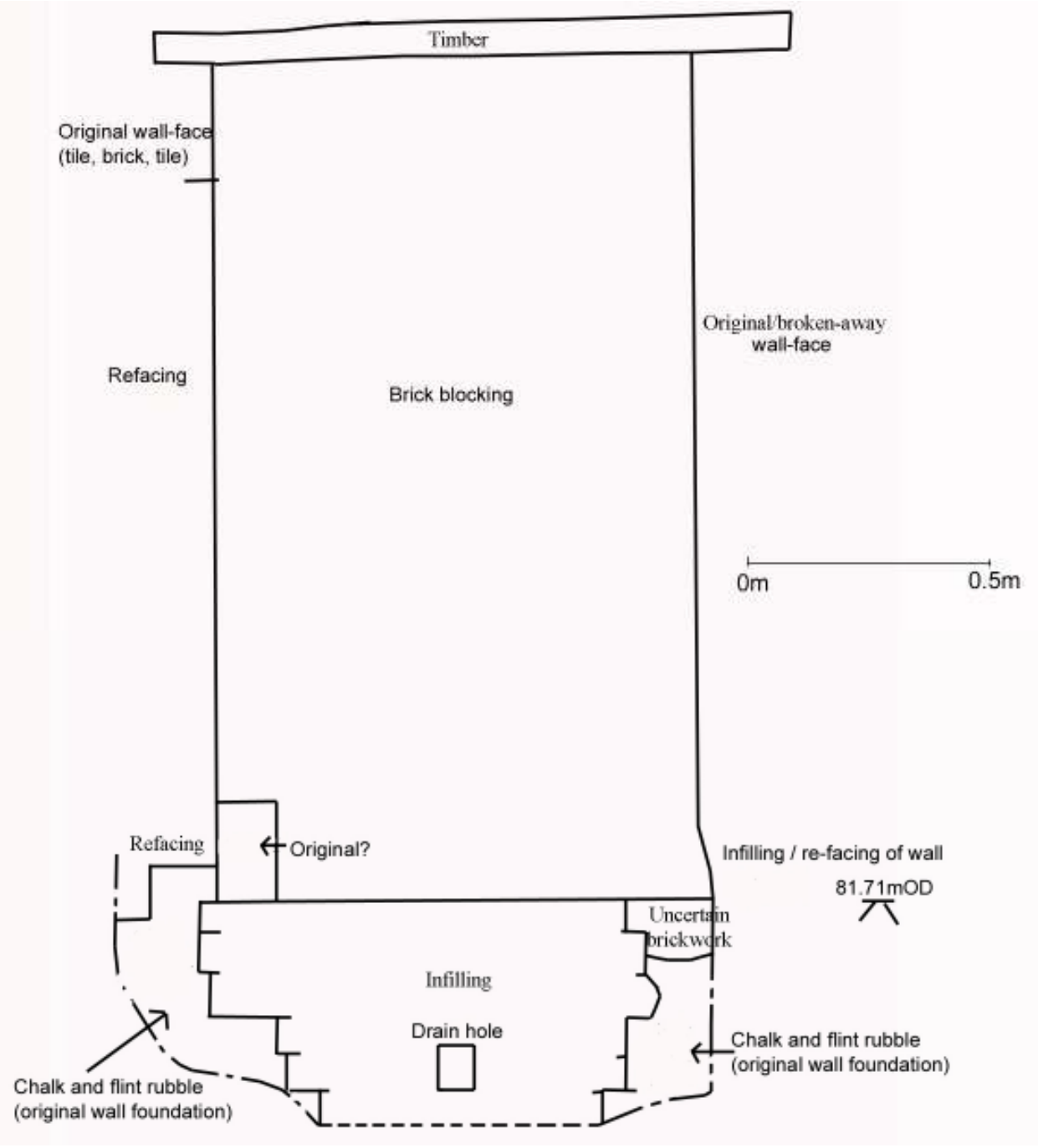


Fig. 38: Section of the interior of the eastern doorway. This shows the infilling of the doorway, and the rubble foundations.

- 7.6** There was also some indication that there may once have been a doorway in the original western wall. The evidence for this comes from the small-scale excavation around the interior of the present western door, which revealed primarily chalk rubble foundations, but with a small stretch of brick foundations, offset slightly to the south of the present doorway.
- 7.6.1** These brick foundations were *c.*0.3m in height (consisting of four courses of brickwork), and *c.*0.55 – 0.6m in width (north-south). It ran north from behind the ground-raising plinth on the southern side of the western doorway. The face of the brickwork was on a line with the western brick wall. It consisted of red bricks within a sandy matrix. Brick samples from this area of brick foundations were dated 1450-1700 (see appendix VI).
- 7.6.2** This is similar to the brick foundations uncovered in the excavation around the blocked-up eastern doorway (see fig. 36), and suggests that there may once have been a doorway in this western wall, earlier than the present doorway. There is no indication of this in the existing western wall, however this wall has been rebuilt from a level immediately above this brickwork and the adjacent chalk foundations to the north and south (see section 9).
- 7.6.3** If so, this would have meant that there were two entrances / doorways into the dovecote. The eastern doorway was slightly offset to the north, with the northern end of the eastern doorway *c.*0.8m south of the northern end of the dovecote; and the southern end of the eastern doorway *c.*1.8m north of the southern end of the dovecote. The possible doorway in the western wall was more central, with northern end of the brick foundations *c.*1.4m south of the northern end of the dovecote; and the southern end *c.*1.5m north of the southern end of the dovecote.



Fig. 39: Photograph of the small area of brick foundations observed in the western wall, continuing to the left of the frame behind the much later ground-raising plinths. This is possibly evidence for an earlier door in this wall.



Fig. 40: Photograph of the small area of brick foundations observed in the western wall, looking south-west. This is possibly evidence for an earlier door in this wall.

7.7 Excavations on the ground-floor of the dovecote revealed evidence for the original foundations of the dovecote. This was a chalk-rubble foundation, essentially consisting of large pieces of chalk. This was found approximately 0.1m beneath the level of the later brick floor, therefore at a level of approximately 81.61mOD.

7.7.1 This foundation was particularly noticeable in the north-west corner of the dovecote, where it was observed running beneath the northern wall of the dovecote. The fact that it was found underneath all of the walls (including the eastern, southern, and northern walls) proves that it must have been the original foundations for these walls (as the lower parts of these walls were never rebuilt). These foundations presumably remained in use throughout the later phases of the dovecote's history, and still exist today.



Fig. 41: Photograph of the chalk foundations observed in the north-west corner of the dovecote.



Fig. 42: Photograph of the chalk foundations observed in the north-west corner of the dovecote.

7.8 There was also some indication of the possible original floor, or at least the approximate height of the original floor, of the dovecote. This was during the excavation around the interior of the eastern blocked-up doorway, where some form of chalk base appeared to be heading westwards underneath the brick floor. It is possible, although by no means certain, that this formed the base of a floor.

7.8.1 This chalk base lay just beneath the brick floor, *c.*50mm beneath the brick floor. It is therefore possible that it was not found elsewhere in the dovecote because it was at such a high level. This also suggests that the floor level in the original dovecote was relatively high (similar to, or just below, the level of the brick floor, *c.*81.71mOD). This seems to fit the level of the presumed stone threshold on the exterior of the eastern doorway (base at 81.74m OD, top of threshold at 81.86mOD).



Fig. 43: Photograph of the chalk foundations that appear to head underneath the brick floor, just under the eastern doorway. This may represent the chalk base of an earlier floor.

7.9 These features of the original dovecote indicate that it was probably built as a brick built square structure, approximately 4.5m in height, with nesting holes on all walls (with the exception of the lower parts of the walls), entrances in both the eastern and western walls, chalk foundations, a window in the southern wall, and a floor level at approximately the same height as the later brick floor.

7.9.1 It is difficult to judge the date at which this original dovecote was constructed. The only dating evidence obtained from this phase are the brick and tile samples. For example, the brick foundations under the western doorway (possibly evidence for a doorway in the western wall) were dated 1450-1700. Brick samples from the dentil course associated with the nesting-holes were dated 1550-1700, and peg-tile from the nesting-holes to 1450-1750. This suggests that this phase of the dovecote's history was dated to the mid-16th or 17th Century. Given the history of repairs and strengthening which took place before the major rebuild of the structure in the late 17th Century, it seems likely that the earliest 17th Century is the latest date that could feasibly be assigned to the original construction of the structure. This therefore pushes the earliest date of construction forward slightly, as the earliest existing cartographic evidence is 18th Century, and the earliest existing documentary evidence from the 1640s.

8. Interior re-facing of parts of the dovecote

- 8.1 After this original construction of the dovecote, but before the second major phase of rebuilding (and the construction of the western wall, etc), parts of the ground-floor interior of the dovecote were re-faced including, most noticeably, the interior re-facing / buttressing of the bottom parts of the walls. The main patches of re-facing on the northern, eastern, and southern walls are on the lower parts of these walls, essentially 'buttressing' them from the inside by thickening the walls and battering them out into the interior of the dovecote.
- 8.2 This re-facing of the walls battered the wall-line out by up to c.0.15m (northern wall), c.0.14m (eastern wall), and c.0.14m (southern wall).

It is important to note that the earlier wall 'battered' out slightly anyway. This was noticeable on the southern wall, where investigations revealed the earlier wall c.0.11m behind the existing wall.

The extent to which this later re-facing / buttressing of the wall battered the wall out from the original wall-line is particularly noticeable just to the north of the blocked-up eastern doorway. Investigation in this area revealed the earlier wall 50mm between the present wall (i.e. the refaced part) at the top, out to 120mm at the base. In this particular area, therefore, the interior re-facing was of a thickness of 50-120mm.



Fig. 44: Photograph of the northern side of the blocked-up eastern doorway. This shows the 'gap' between the existing (re-faced) wall and the earlier wall.



Fig. 45: Photograph of the northern side of the eastern doorway. This shows the 'gap' between the existing (re-faced) wall and the earlier wall, at the base of the wall.

- 8.3** This re-facing covered up some of the lower nesting-holes. This was most apparent in the line of lower nesting-holes observed running along the eastern wall just to the south of the blocked-up eastern doorway, which are approximately 1.35m above the brick floor. They spread for c.1.07m (possibly because this small area of the dovecote was not internally re-faced / thickened) before disappearing behind the re-facing. This therefore suggests that there was once a continuous lower line of nesting-holes, not only on this wall but also the adjacent northern and southern walls, which have since been covered up by the interior re-facing / thickening of the walls.

This refacing would have removed at least 34 nesting-holes. This would have taken the total estimated number of nesting-holes down to 362, with a maximum of 1086 doves.

There was no indication that the nesting holes in these locations were re-constructed / re-introduced. The reasons for this is unknown, however it is possible that there were enough nesting holes so there was no need to create new nesting holes and that, instead, it was felt more important to support the structure. Furthermore, it is possible that any doves nesting in these lower holes may have been affected by predators, such that it was decided not to construct nesting-holes at this low level again. This raised the bottom level at which the nesting-holes were found to c.1.57m above the brick floor. This idea does, not, however, appear to have been used in the Eastcote dovecote – where nesting-holes are found c.0.3m above the ground- surface.



Fig. 46: Photograph of the southern side of the eastern doorway. This shows the small line of blocked nesting holes (just above the scale) that exist at this height in only this small area, before they are covered up by the re-facing (to the right of the photo).

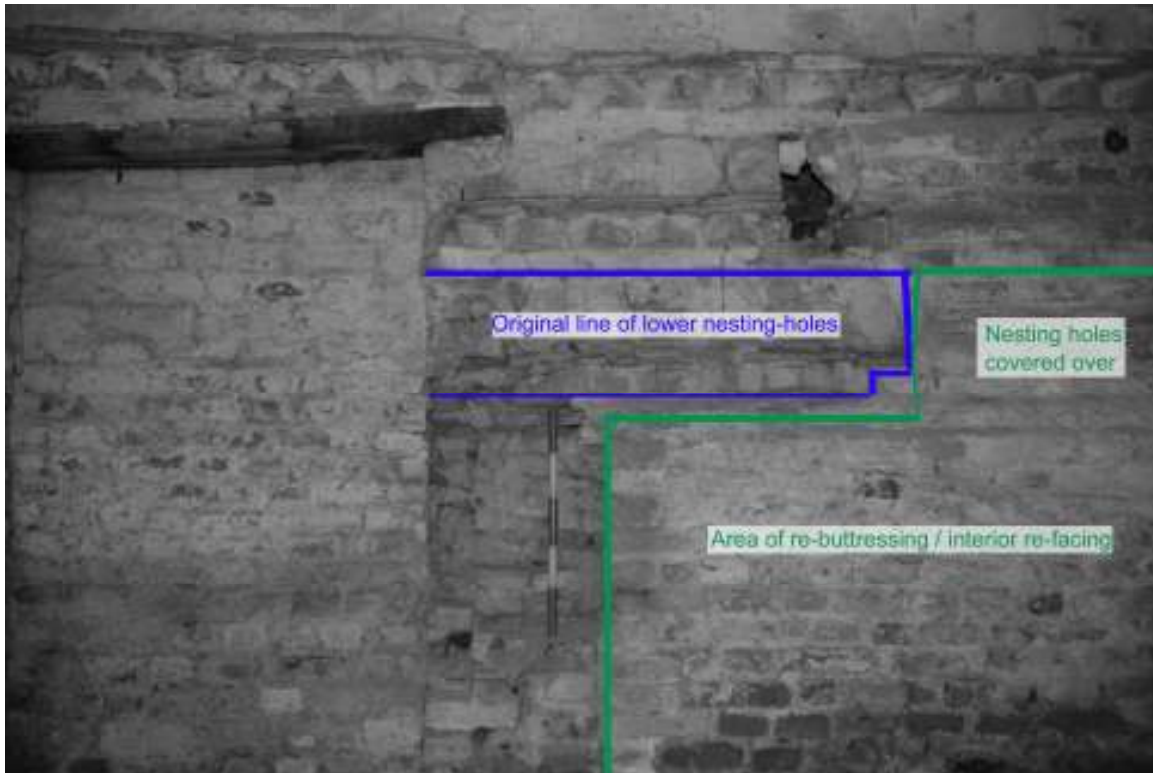


Fig. 47: Annotated photograph showing the original lower line of nesting-holes, and the area of buttressing / re-facing covering this line of nesting-holes.

- 8.4** This phase of re-facing / buttressing of the walls may have been undertaken in order to support or buttress the structure further, possibly because it was unstable. This idea of the structure being slightly unstable is supported by the fact that the entire western wall was later rebuilt, suggesting that this wall was particularly unstable.
- 8.5** In terms of the possible time at which this happened, it is important to note that the re-facing of the northern and southern walls appears to go behind the lower section of the western wall, suggesting that the re-facing of these walls took place before the construction of the lower part of the western wall. Investigations behind the existing lower western wall-face did not reveal any definitive evidence for an earlier build, although this was slightly ambiguous. The most likely explanation, therefore, is that the re-facing of the northern, eastern, and southern walls took place before the construction of the western wall – which was then constructed in one phase with a slightly battered-out base (see section 9). This therefore places this interior re-facing / buttressing as happening before the second major phase of rebuilding.



Fig. 48: Photograph of the corner of the northern and western walls (ground-floor). This shows how the lower re-facing of the northern wall runs behind the lower part of the western wall.

- 8.6** This phase of re-facing / buttressing the interior lower parts of the structure probably took place at the same time. It was designed to strengthen the dovecote, and may have also prevented predators from reaching nesting-holes at low levels. The significant nature of the re-facing, etc, suggests that there may have been an immediate need for such support.

9. The second phase of construction (major rebuild) of the dovecote

9.1 There was clearly a major phase of rebuilding of the dovecote at some point that, most notably, involved the extension upwards of the whole structure (above, and including, the moulded courses of brickwork), a new roof (for which evidence remains), and the total rebuild of the western wall. The date at which this may have taken place is slightly debatable, however it seems to have taken place at some point during the mid-later 17th Century.

9.2 It is clear that the dovecote was extended upwards to its present height. This involved the construction of the upper part of the dovecote above, and including, the moulded courses of brickwork. Although it has been suggested (see section 7) that there may have already existed some form of timber upper levels, this has not been proved. This upwards extension is therefore the first evidence for the dovecote being constructed to its existing height, and is definitely the first evidence for this being brick-built.

9.2.1 The height of this dovecote to the top of the brickwork on the inside face is calculated as approximately 6.60m (western wall), 6.60m (northern wall), 7.45m (southern wall), and 7.60m (eastern wall, down to brick foundations in the small excavation around the eastern doorway). The roof would have added a few metres on top of this. The slight variations in height, with the northern and western walls being shortest and the southern and eastern taller, might be accounted for by the natural slope in the land, down towards the south and east, such that these differences in height would 'neutralise' this and make the dovecote approximately flat at the upper levels.

9.2.2 The thickness of the walls in this upper rebuild appears similar to that in the lower walls, around 0.72m (measured on the upper floor). This thickness would, once again, have enabled the nesting-holes to be built into the walls.

9.2.3 The internal measurements of these upper floors are as follows. The northern wall measured 4.14m east-west (on the present first floor), and 4.11m (on the present second floor). The eastern wall measured 4.2m north-south (on the present first floor), and 4.18m (on the present second floor). The southern wall measured 4.16m (on the present first floor), and 4.19m (on the present second floor). These measurements are distinctly larger than those of the lower part of the dovecote (where the northern wall measured 3.7m, the eastern 3.58m, and the southern 3.76m). This therefore represents a significant 'step-back' and widening of the dovecote, by approximately 0.4-0.6m, at its upper levels and in its second phase of development. This is noticeable on the exterior of the dovecote by the moulded courses of brickwork, which clearly step / jetty outwards. Furthermore, apart from the southern wall (where the measurement on the present first floor was difficult to obtain due to the presence of the chamber), the dovecote appeared to narrow slightly as it went up – which makes sense from a structural perspective.

9.2.4 The exterior of the upper part of the dovecote consists of red brick, with the occasional vitrified brick, set within a cream lime mortar. The brickwork itself appears broadly similar to that at the lower levels. The difference between the upper and lower parts of the dovecote, however, is the fact that the brickwork in the upper parts of the dovecote is more regularly coursed, in an English bond (headers over stretchers). This is with, however, the occasional double row of stretchers and / or headers. Nonetheless, this helped identify this upper part of the dovecote as part of a different phase of construction from the lower parts.

9.2.5 Although this upwards extension was brick-built, one large timber was observed within the northern wall (above the moulded course of brickwork, just above the collapsed area of brickwork). This measured at least 1.52m in length, and was back into the interior of the wall by at least 0.3m. It was located directly above (at least) four nesting-holes. It is possible that such large pieces of timber were built into the wall in some way, and possibly used to form a roof to such nesting-holes.



Fig. 49: Photograph of the exterior of the southern wall of the dovecote. The new build is above, and including, the moulded course of brickwork.



Fig. 50: Photograph of the exterior of the northern wall of the dovecote. The new build is above, and including, the moulded course of brickwork.



Fig. 51: Photograph of the exterior of the eastern wall of the dovecote. The new build is above, and including, the moulded course of brickwork.

9.2.6 It is noticeable that the 18th Century rebuild of the dovecote at Eastcote was also constructed in a far more regular (Flemish) bond. The bricks in this were also red bricks, within a cream mortar, and looked far more regular and newer than those in the lower courses (the earlier phase of construction).



Fig. 52: Photograph of the exterior of the dovecote at Eastcote, clearly showing its regular 'Flemish' bond.

9.2.7 The interior of this part of the Breakspear dovecote was whitewashed, in a similar way to the lower part. This was probably done when the dovecote went out of use, but the location of the blocked nesting holes can still be seen.

9.2.8 The 'rebuild' line could be observed on the interior of the dovecote. This was because of the different types of nesting holes in the original (lower) and later (higher) construction (see below). Furthermore, flat tiles were placed vertically over the upper-most horizontal tile and dentil courses (which made up the 'ledge' of the earlier nesting-holes) directly below the rebuild line, although this took place at a later date.



Fig. 53: Photograph of the interior southern wall – first floor.

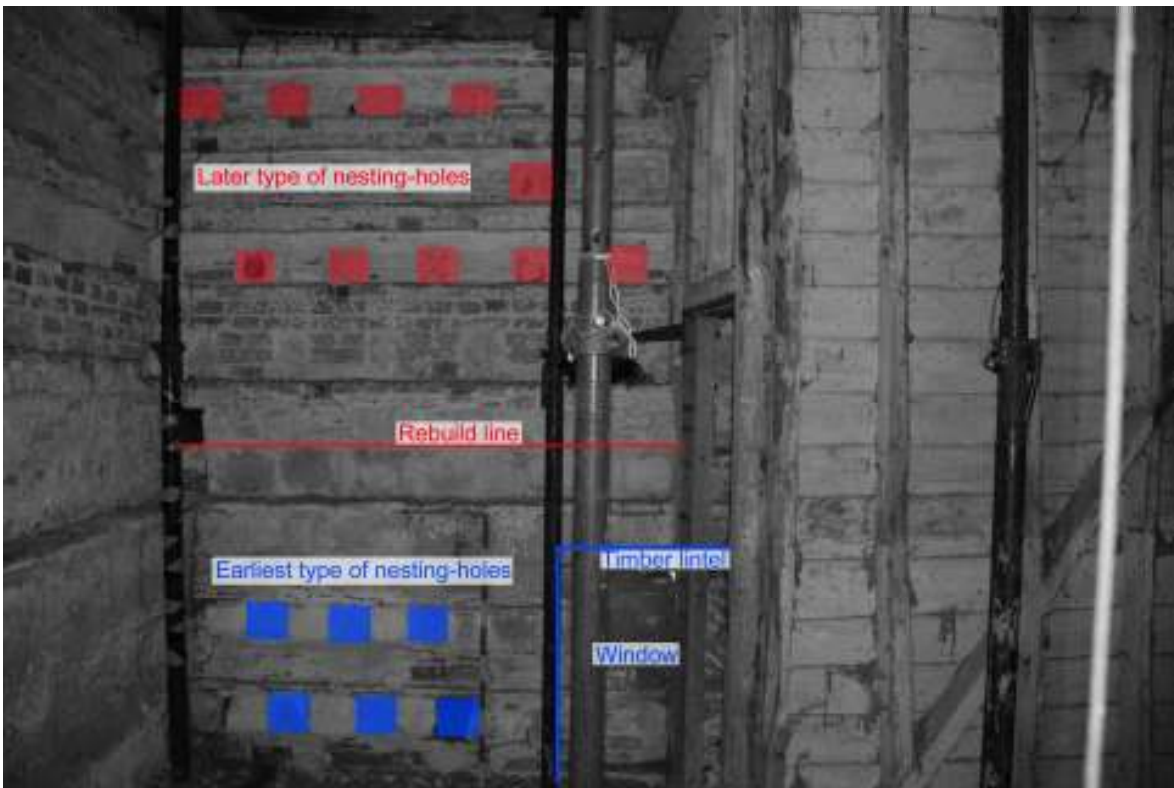


Fig. 54: Annotated photograph of the interior southern wall – first floor. This shows the earlier construction (in blue – windows and nesting-holes); rebuild line and later construction (in red). The location of some of the blocked nesting-holes are highlighted.



Fig. 55: Photograph of the interior southern wall – second floor, with nesting-holes still open. This is all part of the rebuild.



Fig. 56: Photograph of the interior northern wall – first floor. The rebuild is from c.0.2m above the top of the scale, where the nesting holes are different.

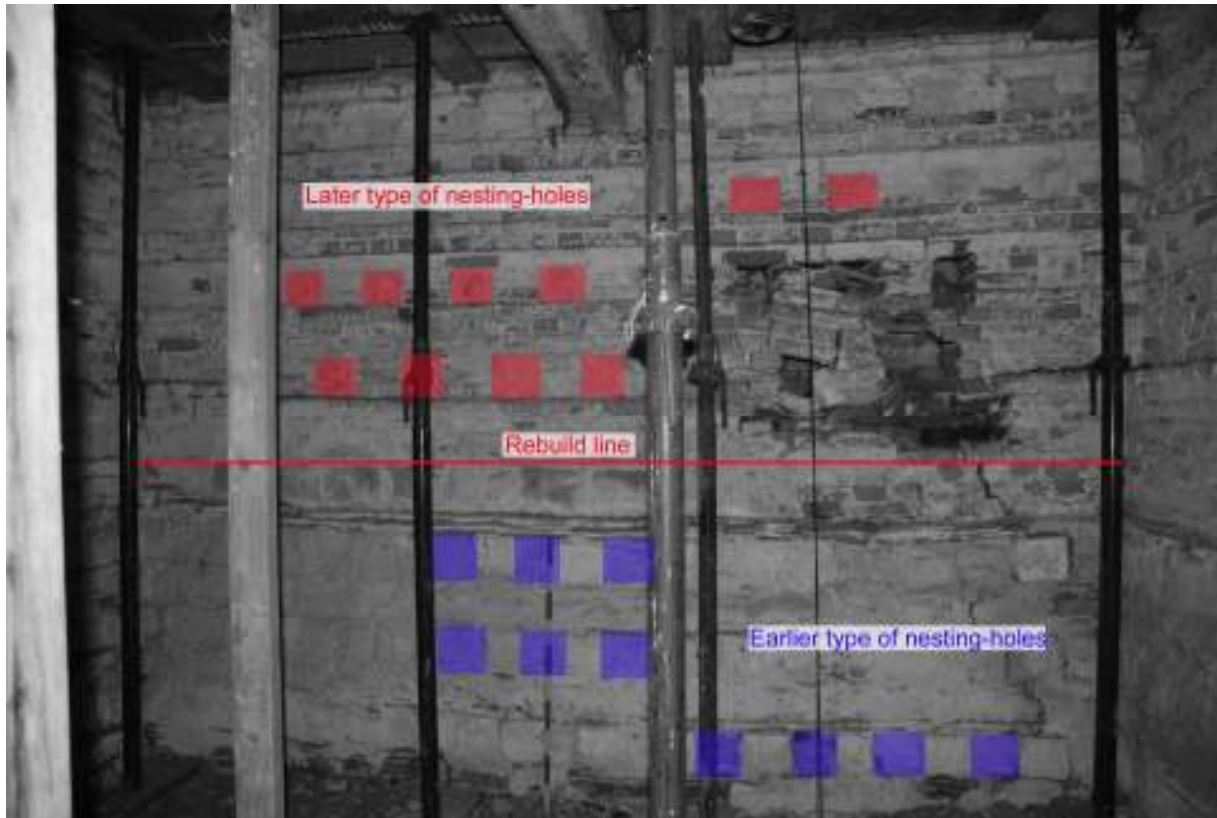


Fig. 57: Annotated photograph of the interior northern wall – first floor. This shows the earlier construction (in blue); rebuild line and later construction (in red). The location of some of the blocked nesting-holes are highlighted.



Fig. 58: Photograph of the interior northern wall – second floor. This is all part of the rebuild.



Fig. 59: Photograph of the interior eastern wall – first floor. The rebuild is from c.0.1m above the top of the scale, where the nesting holes are different.

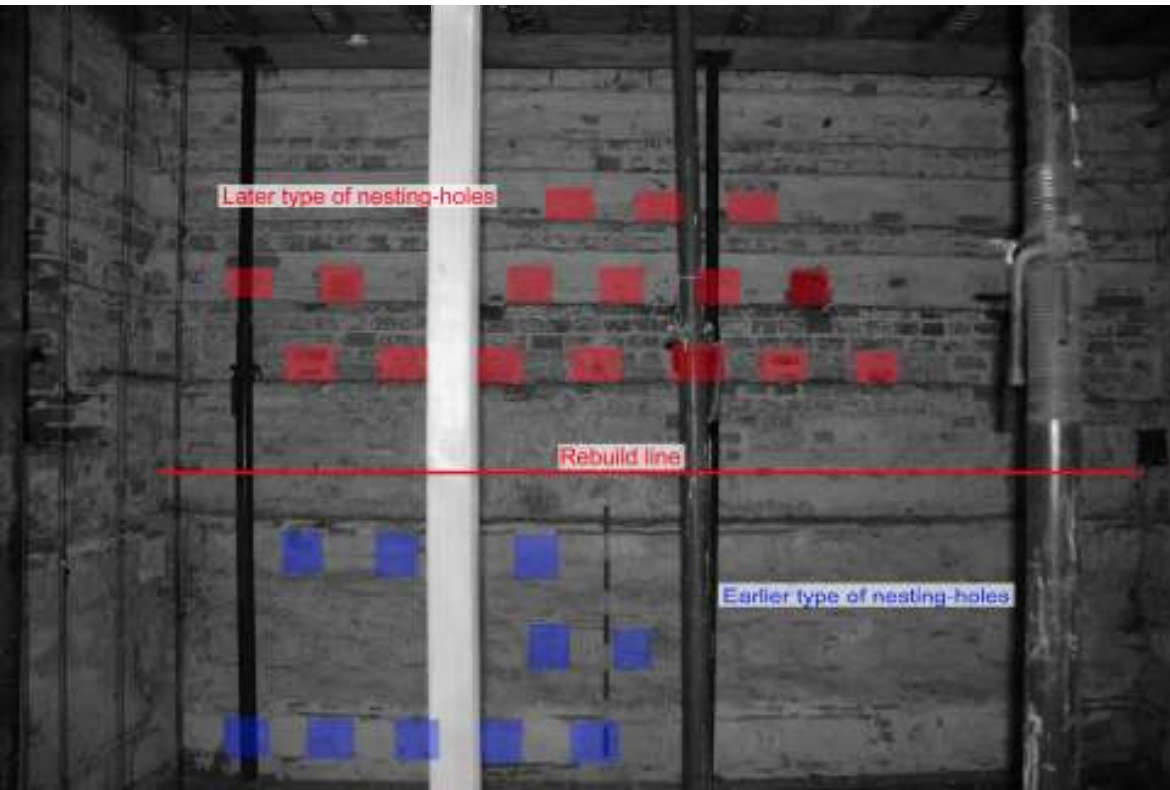


Fig. 60: Annotated photograph of the interior eastern wall – first floor. This shows the earlier construction (in blue); rebuild line and later construction (in red). The location of some of the blocked nesting-holes are highlighted.



Fig. 61: Photograph of the interior eastern wall – second floor. This is all part of the rebuild.

9.2.9 The nesting holes in this upper part of the dovecote (and all of the rebuilt western wall) are distinctly different from those in the lower part of the structure. This was particularly helpful in identifying this part of the dovecote as part of a different phase of construction. They basically consist of two courses of brickwork, projecting out to form a ledge / perch, over which is the square nesting-hole itself. These nesting-holes measured approximately 0.275m wide, 0.2m tall, and were 0.42m deep. The hole for the doves to enter was *c.*0.15m wide by 0.14m tall. The perch / ledge projected out by *c.*0.07m. The holes themselves therefore appear to be slightly larger than those in the lower, earlier, parts of the dovecote, however the entrances appear to be slightly smaller.

The upwards extension of the dovecote would have added approximately 330 nesting-holes to the structure, taking the total up to about 692. This would have made room for a maximum of 2076 doves (assuming one dove and two chicks per hole).



Fig. 62: Photograph of the nesting-holes in the south-west corner. The lower nesting-holes are part of the original build (tile and dentil courses), whereas the upper nesting-holes are part of the rebuild (brick ledges). The scale is standing at the rebuild level and the highest point of the original walls.



Fig. 63: Photograph of the nesting-holes in the south-eastern corner of the second floor. These are clearly the second type of nesting-holes (part of the rebuild) – with brick ledges.

9.2.10 These nesting-holes are distinctly different from those in the Eastcote dovecote (presumably inserted in the 18th Century). Those at Eastcote appear to have consisted of a line of tiles (c.0.3m long, 50mm thick, and projecting out of the wall by c.0.1m) which formed the base / ledge of the nesting-holes. One of these was observed, and lines of recessed brickwork were observed elsewhere in the structure where tiles had been removed. Three courses of brickwork were then observed infilling where the holes would have been (for a height of c.0.235m (higher than those at Breakspear)). Broken-away bricks were also observed in this area of infilling. These were observed at c.0.24-0.245m distances, and presumably separated the individual nesting holes, as well as projecting upwards to support the tile ledges. This makes the nesting-holes approximately the same width as those at Breakspear. The main visual difference seems to be that the Eastcote boxes and ledges would have been wholly compartmentalized – separated by vertical brick divisions – whereas at Breakspear (both original and second phase) the nesting-boxes were behind a continuous and unbroken ledge. The differences between the nesting-holes at Breakspear and Eastcote suggest that there was not a standardised design for nesting-holes in this part of the county, or that they were constructed by the same person, at the same time, etc.



Fig. 64: Photograph of the nesting-holes in the Eastcote dovecote. The recessed line is where the tile 'ledge' would have projected out from; with the three courses of brickwork above this containing the infilled holes and projecting brickwork divisions between the nesting-boxes.

9.2.11 Externally, the most obvious feature which separates the lower, earlier, and upper, later, phases of the dovecote's construction is the course of moulded brickwork, which runs clearly around the whole exterior of the dovecote, and separates the earlier and later phases of development. The base of this moulded course is *c.*3.9 - 4.65m above the base of the dovecote (*c.*2.5 – 3.5m beneath the top of the brickwork of the dovecote) (see above for exact measurements).

9.2.11.1 The moulded brickwork consists of a total of 8 courses, for 0.52m. Starting from the base of the moulded course, it consists of half-round moulded bricks; regular headers; regular bricks (a mix of headers and stretchers); quarter-rounded bricks (a mix of headers and stretchers, with a drop back of 300mm); concave moulded bricks (mainly stretchers, with a top 150mm vertical, then rounded back by 350mm); regular headers; quarter rounded bricks (mainly stretchers, with a rounded base, and a drop back of 300-350mm); and indented bricks (200mm at the top followed by a pinch in and out; mainly stretchers).

9.2.11.2 The moulded courses enabled the brick walls of the dovecote to be 'stepped out' at the upper levels, by *c.*0.4-0.6m (according to internal dimensions). This is over the course of the moulding, by *c.*0.13m (external dimensions). The apparent larger 'step out' on the interior may be accounted for because of differing thickness of the walls, etc.

9.2.11.3 This moulded course was added onto the structure during its second phase of development, when the upper part of the dovecote was added. Presumably, it was constructed to enable the upper (new) brickwork to be added to the lower (older) parts, as well as enabling the dovecote to be widened at the upper levels. The decorative nature of it may also have added to it as a status symbol.



Fig. 65: Photograph of the moulded courses of brickwork, at the southern corner of the western wall.

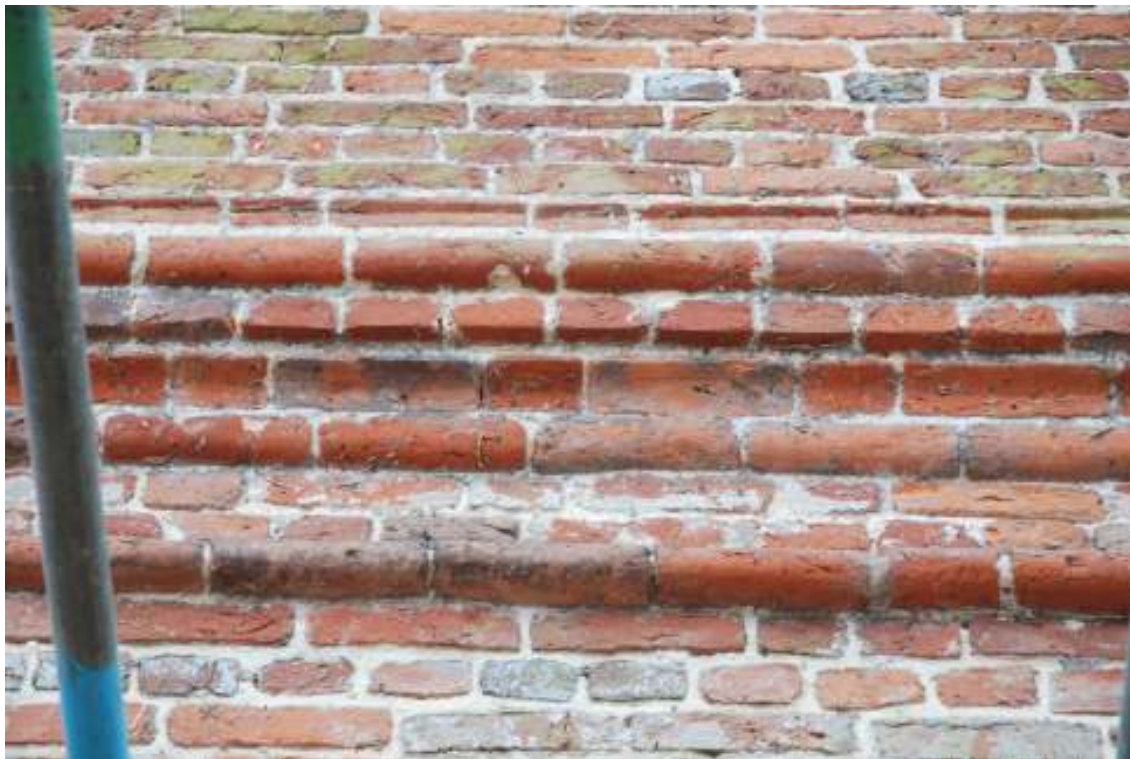


Fig. 66: Photograph of the moulded course of brickwork, along the southern wall.

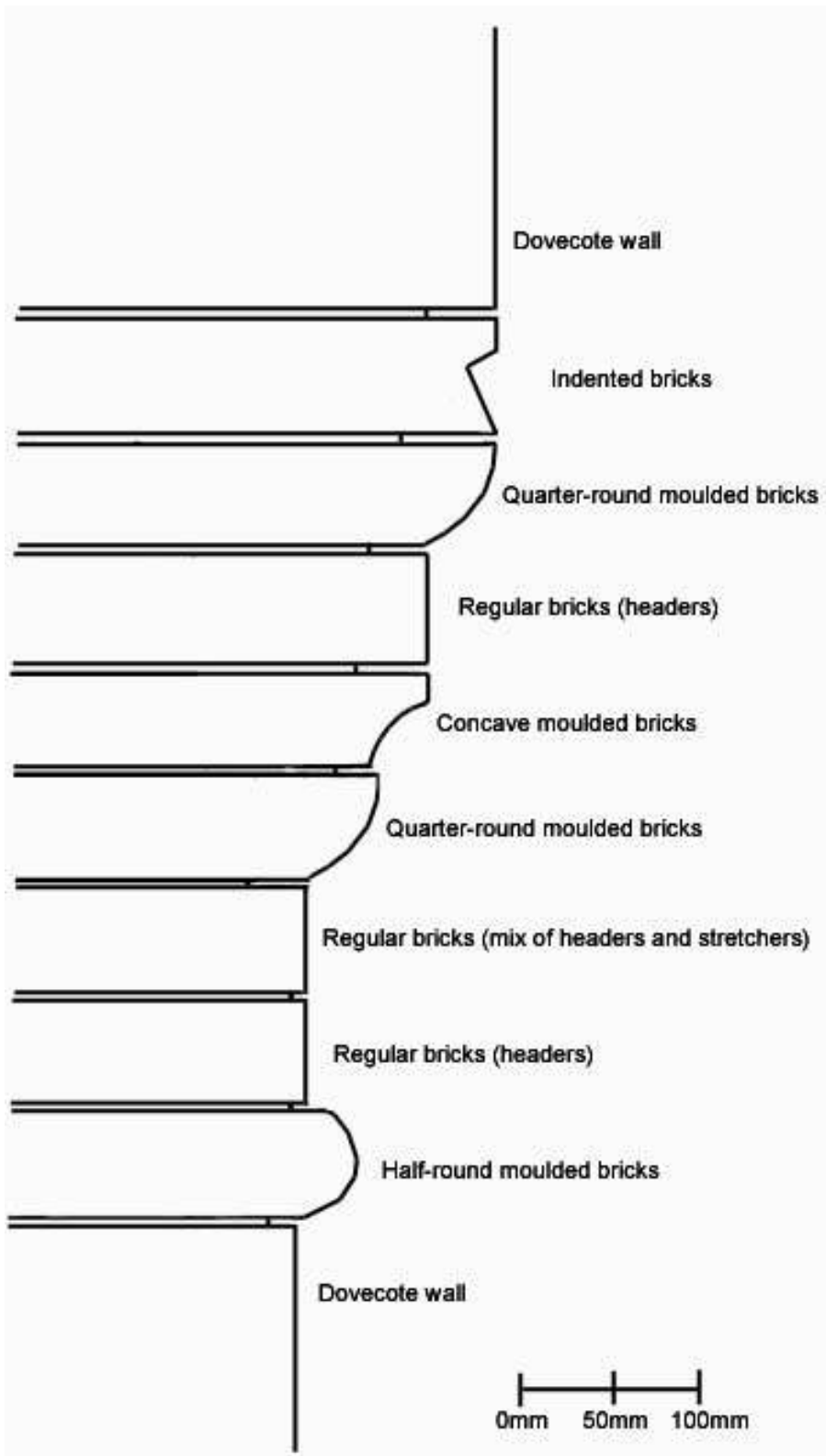


Fig. 67: Section of the moulded courses of brickwork.

9.2.12 This upper extension may have been undertaken because of the need to create more room for more doves, etc. Alternatively, it may have replaced an earlier jettied timber construction at the upper levels, and just represents the time when it was decided to convert this into a brick structure. This could, arguably, be connected to the use of such dovecotes as status symbols, with the possibility that the dovecote was extended upwards, with the addition of the decorative moulded course, as a way of expressing status, etc. It may also have been contemporary with a major redevelopment of the main house – which may have been rebuilt in the late 17th Century.

9.2.13 Brick samples taken from this second phase of development (taken from the first floor, northern wall, samples 3 and 4) were dated to the 17th Century. This extension upwards therefore probably took place during this century.

9.3 Apparently alongside this upwards extension of the dovecote was the total rebuild of the western wall. This has meant that the western wall which currently stands dates from this rebuild, rather than being part of the original construction. This has the knock-on effect that there are no-longer any original features in the present western wall, such as a possible earlier doorway, etc.

9.3.1 The total height of this wall (internal, up to the top of the brickwork) is *c.*6.60m, with the base of the moulded course of brickwork *c.*3.90m above the modern ground-surface. The length (north-south) of this wall (at the present ground-floor level) is *c.*3.87m, out to 4.11m just above the moulded brickwork and where it steps out, and remaining at 4.11m (on the present upper floor). The thickness of this wall was measured through the existing western door, and was *c.*0.84m at the base of this door, and *c.*0.65m at the top of the door. This seems broadly similar to the thickness of the other three, earlier, walls.

9.3.2 The exterior of the whole of this western wall, however, looks different from the lower levels of the other three walls, particularly in terms of its bond, but very similar to their upper levels. It consists of red bricks, etc, within a cream mortar. It is in a predominantly English bond (headers over stretchers), but with the occasional double row of stretchers and / or headers. There is also quite a bit of patching and repair at the ground floor level.



Fig. 68: Photograph of the exterior of the western wall of the dovecote. This is all part of the rebuild, excluding the later doorway.



Fig. 69: Photograph of the interior western wall of the dovecote – ground floor. This is all part of the rebuild.



Fig. 70: Photograph of the interior western wall of the dovecote – first floor. This is all part of the rebuild.



Fig. 71: Photograph of the interior western wall of the dovecote – second floor. This is all part of the rebuild.

9.3.3 The nesting-holes on the western wall of the dovecote are all of the same type as those in the upper part of the other three walls (i.e. two courses of brickwork forming a ledge, with the hole above it). This is distinctly different from the tile / dentil course type of nesting-holes observed in the lower part of the other three walls.



Fig. 72: Photograph of the nesting-holes on the western wall (ground floor) (left side of photo), in comparison with those on the northern wall (right side of photo).



Fig. 73: Photograph of the nesting-holes on the western wall (first floor) (right side of photo), in comparison with those on the southern wall (left side of photo).

9.3.4 The clearest indication that the western wall was later in date than the lower part of the other three walls was seen at the north-west and south-west corners, where the western wall butted up against the other walls. On both the ground floor and lower first floor there was a roughly broken line between the two builds, and in a few areas the northern and southern walls retained evidence for the original corner and return along the western wall.



Fig. 74: Photograph of the north-west corner of the dovecote (ground floor). This shows how the northern wall is butted up against the western wall.

9.3.5 The fact that this western wall is clearly of a different build to the lower parts of the other three walls, combined with the fact that many of its features (nesting-holes, exterior bond, etc) are identical to those in the upper part of the other three walls, suggests that this wall was rebuilt at the same time as the other three walls were extended upwards. There is no, however, independent dating evidence to compare this with.

9.3.6 The possible reasons for this rebuild can only be guessed at. It is possible that the structure was suffering degradation from the elements / unstable ground-conditions / waterlogging etc, and that the western wall was suffering most from this such that, when it was decided to extend the structure upwards (or rebuild the upper part in brick), it was also decided to rebuild this western wall.

- 9.4** Associated with the rebuild of the western wall is the insertion of the window in the wall on the first floor. This is located just above the moulded courses of brickwork, approximately in the centre (north-south) of the wall.
- 9.4.1** The external measurements of the window are as follows. It measures 0.79m in open width (north-south), and a total open height of 0.74m. It is surrounded by flat bricks which have a shallow chamfer on the inside, with a height of c.90mm. There is also a moulded course of bricks along the top of the window, dropping down vertically for four courses either side and forming a type of hood over it. This consists of a series of headers, of 110mm height, which are set back from the window edge by 90mm, and project out by 85mm. The window is currently divided into two by a vertical spine wall (65mm wide), however this was clearly added later and replaced an original mullion which would have been constructed of brick chamfered on both sides. This would have matched the surrounding frame, and is visible in the surviving brickwork at the top and bottom of the window. It is likely that originally there would have been further subdivisions – perhaps timber slats or similar – to prevent larger predators from gaining access.
- 9.4.2** The internal measurements of the window are as follows. Its total width is 1.3m, and its total height 0.83m. The interior of the window is therefore larger than the exterior, splaying light into the room behind.
- 9.4.3** There is no evidence, either on the interior or exterior of the dovecote, that the window was inserted in at a later date. It therefore seems likely that it was constructed at the same time as the construction of the western wall itself. This is unusual, to have two windows in a dovecote, although it may also have enabled doves to enter the structure, with probable timber slats preventing larger predators from getting in.



Fig. 75: Photograph of the window in the western wall (from the outside).



Fig. 76: Photograph of the window in the western wall (from the outside). This clearly shows the hood around the top of the window, the later mullion down the centre of it, and the chamfered bricks surrounding the window.



Fig. 77: Photograph of the window in the western wall (from the inside). Two doves are perched on the scaffolding outside this window.

- 9.5** There is also some evidence for the original roof construction, in the form of four large, though heavily decayed, pieces of timber running around the top of the brickwork on the upper floor of the dovecote.
- 9.5.1** The dimensions of each of the pieces of timber are as follows. The northern timber was 4.08m in length, by a maximum of 0.16m width, and 0.125m depth. The eastern timber was 4.07m in length, by 0.175m width, and 0.1m depth. The southern timber was 4.08m in length, 0.14m width at the western end and 0.16m at the eastern end, by 0.125m depth. The western timber was 4.07m in length, by 0.18m width, by 0.1m depth. The northern and southern timbers project slightly further out than the eastern and western timbers, although it must be noted that the measurements above refer to the length to the eastern and western timbers (i.e. the internal measurement). The eastern and western timbers are also morticed and pegged into the northern and southern timbers. Both the northern and southern timbers have also been cut away at either ends, presumably by the later roof construction.
- 9.5.2** All of these timbers have mortices along their upper faces. There were eight mortices along both the eastern and western timbers, which measured an average of 130 – 135mm X 30 – 35mm X 7 – 8mm (depth), and they were spaced at distances of approximately 350mm. There were also ten mortices along the northern and southern timbers, spaced between 350 and 380mm apart (those at each end being cut away by the later roof construction). Those along the southern timber measured 110 - 125mm X 30mm X 50 – 60mm (depth); whereas those along the northern timber measured 125 – 140mm X 30mm X

50 – 60mm (depth). All of the mortices were located approximately 25mm back behind the internal frontage of the timbers. The small differences in sizes of these mortices may reflect the different people cutting them. It seems likely that these mortices held wooden slats / beams in them, projecting upwards and, possibly, providing a framework under the eaves through which the doves could enter the structure.

- 9.5.3** Two further mortices were observed on the interior faces of the eastern and western timbers. Those on the eastern timber were located 0.87m south of the northern end; and 1.35m north of the southern end. Those on the western timber were located 0.88m south of the northern end; and 1.34m north of the southern end. They all measured *c.*200mm X 35mm X 60mm. They were therefore, the same size and located directly opposite each-other. This suggests that they may have held timbers which ran east-west across the top of the dovecote, presumably to hold the roof in some way or form the top of the dovecote structure. Interestingly, no mortices were observed on the interior face of the northern and southern timbers, suggesting that no timbers ran north-south across the top of the dovecote.
- 9.5.4** Another mortice was observed on the rear (external) face of all four of the timbers. Those on both the eastern and western timbers were located 1.94m south of the northern end (approximately half-way along), and measured *c.*210mm X *c.*35mm X *c.*100mm. Those on the northern and southern timbers were located approximately 2.12m west of the eastern end (approximately half-way along), and measured approximately 210mm X 40mm X 110mm. These mortices presumably held timbers projecting back outwards from the dovecote, presumably to hold other parts of the timber roof construction.
- 9.5.5** Furthermore, the remnants of four more mortices at the far eastern and western ends of the northern and southern timbers (i.e. beyond where the eastern and western timbers join) were observed. These had been partly broken away by the later roof construction, so are no longer complete. Their existence does, however, suggest that this timber roof construction continued further to the east and west, projecting the roof out further to the east and west, supporting the corners of the overlying structure, and thereby providing more room for the doves to enter under the eaves.

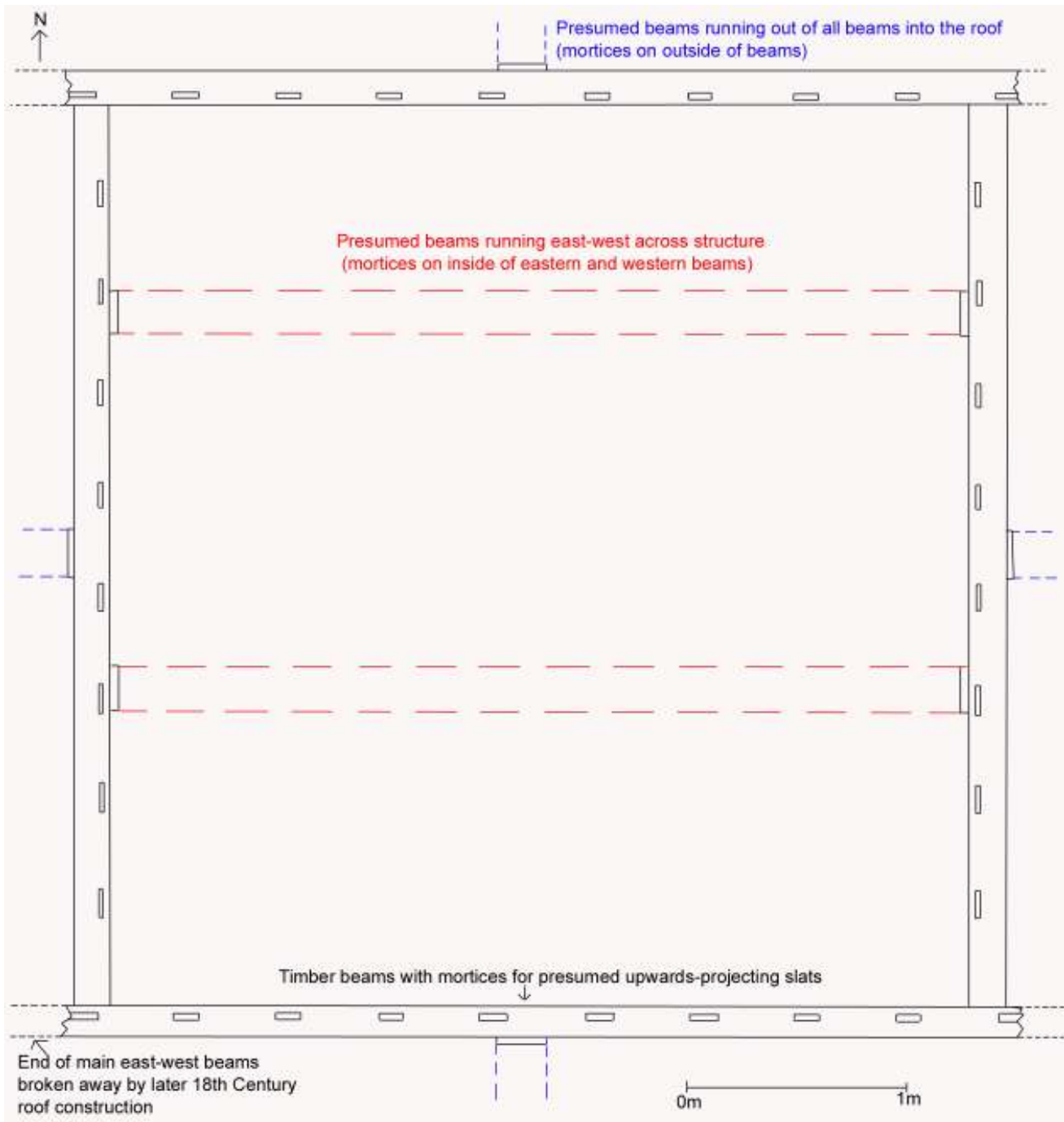


Fig. 78: Plan of the roof timbers and mortices at the top of the dovecote. The red hashed lines depict the probable line of east-west running beams. The blue hashed lines depict the probable line of beams running out from the main beams into the roof. It must be noted that although these mortices are depicted projecting outwards (for ease of understanding), they were actually cut into the timber beams.



Fig. 79: Photograph of the earlier timber in the foreground along the top of the dovecote wall (south-east corner).



Fig. 80: Annotated photograph of the earlier timber along the top of the wall (south-east corner of the dovecote). Three mortices can clearly be seen (highlighted in blue), two on the right hand piece of timber and cut away behind the scale by the later roof construction. One carpenter's mark ('X') is visible on the right-hand timber (highlighted in yellow).

- 9.5.6** A series of carpenters' marks were also observed on these timbers, such as the mark 'II' below the southern mortice on the eastern timber, and the mark 'IV' by the third mortice from the south on the eastern timber. This is clearly evidence for the method of construction of the timber and roof.
- 9.5.7** Unfortunately, this could not be dated by dendrochronology. The piece of timber, and associated roof construction, clearly pre-dates the current roof construction (dated *c.* 1769, by dendrochronology). As it represents an earlier roof construction, it seems likely that it was part of the same phase of construction as the western wall and upwards extension of the other three walls. This is because this new phase of construction raised the dovecote to the height of the brickwork on which the timber sits, and there would have been a need for a roof associated with this. This therefore makes it seem likely that this roof was part of this second phase of construction.
- 9.5.8** This piece of timber presumably acted as the base timber for the timber roof of the dovecote. Slats of timber would have been placed in the mortices of the timbers, so that they were vertically projecting out of the timbers. This would have formed some kind of entrance through which doves could fly under the eaves. This may also have acted as a way of keeping predators (i.e. large birds such as hawks) out of the dovecote, as they would have been too large to get through the slats.
- 9.5.9** Comparison with the present roof-structure at the nearby dovecote at Eastcote House raised some suggestions concerning how the roof at Breakspear may have operated, and how it differed. The Eastcote roof had two large timber beams running east-west across the structure. These are presumably similar to those which the large interior mortices on the Breakspear beams held. The Eastcote roof, however, also had two medium-sized beams running out of both the northern and southern walls to join the main east-west running beams, and support them. There was no indication of anything like this in the Breakspear dovecote (possibly because the Breakspear dovecote was significantly smaller in plan, so did not need these supporting beams).
- 9.5.10** Furthermore, the dovecote at Eastcote also had a small timber beam running north-west between the main east-west running beams, off which the octagonal central column of a potence was held. A potence is a structure found mainly in circular dovecotes – essentially a revolving pole with arms onto which ladders could be attached. This enabled the doves' eggs and squabs to be collected, without having to continuously move the ladder round. The potence in the Eastcote dovecote consisted of a central wooden octagonal column, set into a stone base, off which was one main arm (with a slight kink in it at the end), supported by another wooden beam running diagonally up to support the main arm. Other mortices observed in the central column would have supported a further arm, slightly offset and at a lower level. Together, the two arms would presumably have held a ladder, the 'kink' in the horizontal upper arm providing a stable support at the top (i.e. parallel with the lower arm

which would have projected straight out). It is difficult, however, to understand how the potence would have worked in a square structure, particularly concerning how it would have enabled people to get into the corners to collect the eggs and squabs there. It is possible that it just acted as some form of timber frame on which ladders, etc, could be rested or hung to reach the nesting-holes. Another suggestion is that it would have worked for the majority of the dovecote, with the out-of-reach corners being serviced by beams which straddled the corners and provided footholds, as at the square dovecote at Westington Old Manor. Nonetheless, the existence of such a potence in the Eastcote (square) dovecote, and other examples in square dovecotes such as at Westington Old Manor, raises the possibility that a similar potence could be found in the square Breakspear dovecote. There is, however, no other evidence for this at Breakspear – such as any indication in the centre of the floor of a base for a potence.

9.5.11 It seems more likely that the mortices for the east-west running beams observed in the Breakspear dovecote were there as a way of supporting the roof-structure. This may have been through the construction of timber beams upwards off the main east-west running beams, perhaps to form a type of queen post structure.

9.5.12 The roof of the Eastcote dovecote is also different from that suspected to have existed in the Breakspear dovecote – in that there is no way for doves to enter the dovecote underneath the eaves at Eastcote. The slats which are suspected to have existed in the earlier Breakspear roof do not exist in the Eastcote roof. Instead, there is a row of bricks sticking out, further corbelled bricks, and a row of tiles laid flat. It is thought that the doves would have entered the Eastcote dovecote through some form of dormer window in the eastern roof (seen on a historic photo), rather than under the eaves, as well as through the cupola.



Fig. 81: Photograph of the interior roof construction and potence in the dovecote at Eastcote.



Fig. 82: Photograph of the exterior top of the dovecote at Eastcote. This shows the outwards-projecting bricks and flat tiles, and no way for doves to enter under the eaves.

- 9.6** This massive phase of rebuilding of the dovecote converted it to a brick-built *c.*7m high structure, with different types of nesting holes, a decorative moulded course of brickwork, a new rebuilt western wall, and a new timber roof.
- 9.6.1** The reasons behind this phase of rebuilding are unknown, however it seems possible that it was because there was a desire to increase the capacity of the dovecote. Alternatively, if the structure already had an upper timber level, it is possible that this was rebuilt in brick because of a desire to make it a more sturdy structure. Or, it might have been rebuilt in brick to make it more prominent in the landscape, particularly if it was designed to be a status symbol. The course of moulded brickwork fits with this interpretation.
- 9.6.2** It is difficult to judge the date at which this phase of rebuilding of the dovecote took place. Relative chronological dating indicated that it must certainly have taken place well before 1769 (when the new roof was constructed). Furthermore, the dating of the brick samples from the northern wall, above the moulded course of brickwork, is to the 17th Century. This seems a reasonable date to assign to this major rebuild of the dovecote – perhaps contemporary with the late 17th Century rebuild of the main house.

10. Construction of the brick floor and French drain

- 10.1** Evidence was observed during the historic building survey for modifications to the ground floor of the dovecote, particularly with the addition of the brick floor and French drain running around the interior of the ground-floor (all revealed during small-scale excavations).
- 10.1.1** The reasons for these modifications to the structure are unknown, however it seems likely that the construction of the French drain may have been to prevent problems associated with drainage and waterlogging of the dovecote, etc, thereby making it a drier and warmer environment for the doves, and possibly preventing ground movement that could undermine the structure. The construction of the brick floor may have also raised the ground-floor level slightly, also making it a drier and warmer environment.
- 10.1.2** There is more evidence for the date at which these modifications may have taken place than for many of the other developments, mainly in the form of bottle fragments, pottery, and brick fragments found within the French drain itself.

- 10.2** The brick floor consists of red-bricks, many of which were heavily vitrified and heavily worn (unsurprising considering it was a floor). It appears to have been laid dry, with no obvious mortar or mortar-splodging over the brickwork, etc.
- 10.2.1** Samples were taken from this brick floor. One of these was identified as a 3032 brick, and the other was too vitrified to identify definitely. They were both dated to 1650-1800 (see appendix VI).
- 10.2.2** The dimensions of the floor are as follows. It was *c.*2.78m in length (north-south), by *c.*2.7m width (east-west), and the depth / thickness of one brick (*c.*0.55m).
- 10.2.3** The brick floor was found at *c.*81.71mOD (sloping upwards slightly towards the western end where it was *c.*81.73mOD). The floor itself also appeared to slope down slightly away from the centre of the floor. This may have been related to the French drain which ran around the outside of the ground-floor, as a floor which sloped away from the centre would enable water to drain off the floor into the drain.
- 10.2.4** This left a gap of *c.*0.45m between the edge of the brick floor and the interior edge of the dovecote, on all sides. This was obviously a deliberate gap, as the bricks in the floor stopped clearly on this line with a finished edge. This gap was for the French drain construction (see below), and therefore acts as evidence that the construction of the brick floor and French drain took place at the same time.



Fig. 83: Photograph of the brick floor, overlain by later brick plinths.



Fig. 84: Photograph of the brick floor, looking towards the western door.



Fig. 85: Close-up photograph of the brick floor.

- 10.3** French drains are common drains, designed to prevent ground and surface water from penetrating or damaging building foundations. They are sometimes used behind retaining walls, to relieve ground-water pressure, as appears to happen in the Breakspeare dovecote. They are essentially trenches infilled with loose material – gravel or rock – or, in the case of the dovecote, pieces of brick and large bottle fragments, etc, to encourage drainage.
- 10.3.1** The French drain in the Breakspeare dovecote measured 0.44 – 0.5m wide, and ran around the entire interior of the ground-floor of the dovecote (for a length of *c.*14.4m (exterior distance), and *c.*11m (interior distance)). Parts of the eastern, western, and north-western corner of the drain were excavated to their base, a depth of *c.*0.2 – 0.25m.
- 10.3.2** Pottery was recovered from the upper level of drain infill below the western doorway ([87]) and the drain infill in the north-west corner ([88]). This consisted of a sherd of Chinese Porcelain and Ironstone China from [87] (context dated to the 19th Century), and a substantial part of a Post-Medieval Redware pancheon from [88], dated 1580-1900.
- 10.3.3** Bottle fragments were recovered from [86], the drain infill beneath the eastern doorway, [87], the drain infill beneath the western door, and [88], the drain infill in the north-west corner. These were generally dated to the mid-late 18th Century, with that from [87] possibly reaching into the early 19th Century.

- 10.3.4** A large number of brick fragments were recovered from the French drain. Those from [87] were dated between 1450-1800 (probably 1600-1800). Those from [86], both brick and tile, were probably from 1650-1800. Those from [89] (drain infill in the south-western corner) were dated to 1450-1700; and those from [88] were dated 1550-1700 and 1650-1800.
- 10.3.5** The purpose of the above-described pieces of bottles, pottery, and brick fragments, would have been to facilitate drainage. This is particularly noticeable in the types of bottle fragments used within the drain. Bottle tops and bottoms were used, whereas hardly any sherds of bottle glass from the bodies of bottles were recovered. This is probably because such tops and bottoms would have been more effective at facilitating drainage in the structure. In some places, the bricks also formed a deliberate structure, for example a whole brick resting over two separated half-bricks – presumably to facilitate drainage further.
- 10.3.6** The general dating of the finds gives the French drain an approximate date, sometime in the 18th Century. This is primarily based on the dating of the bottle fragments (most of which were dated to the mid – late 18th Century) and the brick fragments (lots of which could be dated to the 18th Century), as these two finds were probably part of the French drain construction itself, whereas the pottery may have just fallen into the drain, etc. The brick fragments dated to the 17th Century probably reflects the re-use of earlier bits of brick within the French drain construction.
- 10.3.7** The purpose of the French drain within the dovecote itself would have been to facilitate drainage of the interior of the structure. This, in itself, suggests that the structure might have been waterlogged, as it was considered necessary to provide such drainage. This may, furthermore, account for the addition of buttresses to further support the structure, possibly also because of problems of waterlogging etc. This could be related to the fact that in the 18th Century the dovecote stood between two reasonably-sized ponds, and very close to that to the west (see fig. 2).



Fig. 86: Photograph of the French drain, beneath the western doorway. This shows the pieces of bottle and bricks within the drain infill, and the edge of the brick floor.



Fig. 87: Photograph of the excavated French drain, in the north-west corner of the dovecote.



Fig. 88: Photograph of the post-medieval Redware pancheon (post-1580), recovered from [88] (drain infill in the north-west corner of the dovecote).

10.4 Associated with this construction of the French drain is the partial blocking-up of the eastern doorway. The lowest section of this doorway appears to have been blocked up at this point. Internally, this takes the form of a small section of brickwork (approximately 1m in length (N-S, across the doorway threshold); and 0.46m in height (from the base of the foundations of the dovecote). Externally, the blocking comprised a mixture of stone, brick, chalk, and tile, with an overall thickness of *c.*0.57m. This section of blocked-up doorway is on a slightly different alignment from the main general blocking of the doorway, reflected in the apparent narrowing of the brickwork towards the northern end of the doorway on the inside (from 120mm in width at the southern end, down to 60mm at the northern end). This therefore suggests that this blocking of the lower part of the doorway took place at a different time from the main blocking. The brick samples taken from here were identified as 3033V bricks, one of which was dated 1550-1800, and the other 1600-1700 (see appendix VI).

10.4.1 Through this section of blocked-up doorway was a drain hole, observed on both the interior and exterior sides of the dovecote. The base of this was *c.*70mm above the foundations of the structure, at an approximate height of *c.*83.01mOD. This drain hole was square on the interior of the door, and measured *c.*70mm wide, by 90mm high. It was a circular hole (with a drainpipe running through it) on the outside of the doorway, with a diameter of *c.*155mm. The drainpipe observed in this hole was identified as a 2276 type, dated 1650-1850 (see appendix VI).

10.4.2 This drain hole would therefore have acted with the French drain to drain the water out of the dovecote. It is on the correct side for the water to drain out of the dovecote (with the natural slope of the land leading towards this drain hole), and at the same level as the base of the French drain, etc.

10.4.3 Furthermore, the dating of features associated with this drain (i.e. the drainpipe itself and the bricks blocking this lower part of the eastern doorway) approximately fits with the supposed dating of the French drain and construction of the brick floor, etc – i.e. 18th Century. The brick sample dated to the 17th Century could just represent the re-use of earlier bricks in this construction.



Fig. 89: Photograph of the interior of the eastern doorway. This shows the blocking-up of the lower part of the doorway, and the drain hole at the base of this.



Fig. 90: Photograph of the exterior of the eastern doorway. This shows the drainpipe running through from the inside of the dovecote.

- 10.5** This phase therefore not only acts as evidence for the physical modification of the dovecote, but also indicates at a wider problem affecting the dovecote (i.e. the possible problem of waterlogging and ground movement), which may account for some of the other later modifications.
- 10.5.1** This phase is also the first which has a substantial amount of dating evidence associated with it, and is therefore important in enabling a rough chronology and dating for the whole structure to be gained. It is suggested, on balance, that this phase took place at some point during the mid-later 18th Century. The dating of brick samples from the rebuild phase to the 17th Century suggests that the construction of the French drain and brick floor was a later modification to the dovecote, and distinctly different from the major rebuilding phase.

11. Construction of the buttresses

11.1 The four buttresses which are clearly obvious on all four corners of the dovecote are not original features. They were added to the structure later, definitely after the second major phase of rebuilding (with the construction of the western wall and moulded courses of brickwork), although the exact date of their construction is unknown. It also seems likely that the buttresses were constructed at different times – possibly in pairs or even individually. As the date of their construction is, however, unknown, each of the buttresses will be discussed here in turn.

11.2 The north-eastern buttress:

11.2.1 This buttress is notable in being the only buttress which ‘overlaps’ the moulded course of brickwork (by *c.*0.38m). This, therefore, acts as evidence that this buttress (and presumably all of them) were constructed after the second major phase of rebuilding of the dovecote (when the moulded courses of brickwork were added).

11.2.2 This buttress is approximately 4.23m in height. The front face of the buttress is *c.*1.14m in width at its base, tapering to 1.01m at the top. At its base it is set out from the eastern wall by *c.*1.65m, and out from the northern wall by *c.*1.5m. The brickwork is stepped out by *c.*50mm on the outer face, approximately 1.48m above the modern ground surface.

11.2.3 It consists of a regular English bond (headers over stretchers). It is made up of red bricks, with the occasional vitrified brick, set within a coarse cream mortar.

11.2.4 It appears to directly abut the main dovecote structure, i.e. it is slapped directly onto it, with a large amount of grey mortar holding it in place, although this may be later infilling.



Fig. 91: Photograph of the southern side of the north-eastern buttress. This clearly shows the grey mortar that has attached the buttress onto the main dovecote structure.



Fig. 92: Photograph of the northern side of the north-eastern buttress. This clearly shows the buttress overlapping the moulded course of brickwork.



Fig. 93: Photograph of part of the southern side of the north-eastern buttress. This clearly shows the buttress abutting the main dovecote wall, and the grey mortar attaching this.

11.3 The south-eastern buttress:

11.3.1 This buttress is most notable for the way in which the top of the buttress appears to ‘wrap-around’ the main dovecote structure, with part of the main dovecote structure projecting out in-front of the buttress. This appears to have been deliberately constructed as such, particularly because of the way in which the bricks just beneath this area appear to be ‘keyed-in’ to the main dovecote structure.

11.3.2 This buttress is *c.*4.48m high (0.17m beneath the moulded course of brickwork). The width of the front face of the buttress is *c.*1.14m (at its base), tapering to 1.02m at its top. At its base it is out from the southern wall by 1.2m, and out from the eastern wall by 1.83m.

11.3.3 The bricks in this buttress are also arranged in an English bond (headers over stretchers), and consist of red bricks within a coarse grey mortar.

11.3.4 This buttress does not appear to be ‘mortared’ in so nicely to the main dovecote structure. Instead, it appears to roughly ‘abut’ the main wall, with the main

wall clearly running along behind the buttress. This seems to be a far rougher construction, with no neat edge, etc.

11.3.5 There is also a small 'step' out running around the buttress, out by c.60mm on the front face, approximately 1.74m above the modern ground-surface. The area beneath this appears to have been 're-faced' / patched in some way. It is possible that this is related to the construction (or destruction) of the stable block (mid - late 19th Century), which was abutted onto this buttress (see the 1894 Architect's Plan of Breakspear, fig. 5). This area may, therefore, have been patched following the destruction of these stables, which were attached to the dovecote.



Fig. 94: Photograph of the front of the south-eastern buttress. This clearly shows the buttress being splayed around the dovecote wall. The 'step' out, just beneath the scaffolding, and different patching beneath this can also be seen.



Fig. 95: Photograph of the western side of the south-eastern buttress.



Fig. 96: Photograph of the eastern side of the south-eastern buttress. This clearly shows the rough abutting of the buttress to the main dovecote wall.

11.4 The south-western buttress:

- 11.4.1** This buttress is built onto the western wall, and is therefore useful in ascertaining that this buttress (and presumably all of them) were constructed after the western wall was constructed, and therefore after the second major phase of rebuilding.
- 11.4.2** This buttress also appears to have been constructed in two phases. This is apparent on the lower part of the eastern face of the buttress, where there is a clear line (visible to the naked eye) of grey mortar cementing in a patch of new brickwork. It is possible that this is related to the apparent stable wall that is depicted on the 1894 Architect's Plan of Breakspear, which appears to abut this buttress. The patching observed on the buttress may therefore have been undertaken following the destruction of this wall, sometime between the mid-1890s and 1914.
- 11.4.3** The buttress is *c.*3.9m in height (up to the moulded course of brickwork). The front face of the buttress measures approximately 0.87m in width at its base, tapering to 0.58m at its top. It is out from the southern wall by 0.98m, and out from the western wall by 0.98m (at its base).
- 11.4.4** The bricks in this buttress are arranged in a mix of bonds – partly English bond (headers over stretchers), and sometimes in rows of a mix of headers and stretchers, etc. It consists of red bricks, set within a coarse grey mortar.
- 11.4.5** In a similar way to the south-eastern buttress, this buttress is built abutting the main dovecote structure in a very rough way. The main wall clearly runs along behind the buttress, with the buttress having been built roughly abutting it (not neatly mortared in like the north-eastern buttress), although this may in part reflect subsequent movement.



Fig. 97: Photograph of the eastern side of the south-western buttress. This clearly shows the later patching of the edge of the buttress.



Fig. 98: Close-up photograph of the eastern side of the south-western buttress. This clearly shows the line of the later patching.



Fig. 99: Photograph of the front of the south-western buttress.



Fig. 100: Photograph of the western side of the south-western buttress. This clearly shows how the buttress roughly abuts the main dovecote wall.

11.5 The north-western buttress:

11.5.1 This buttress is also constructed abutting the western wall, and is therefore further evidence that the buttresses were constructed following the major rebuilding phase which included the construction of the western wall.

11.5.2 The buttress measures approximately 3.85m in height (up to the base of the moulded course of brickwork). Its front face is *c.*1.25m wide at its base, and 0.72m at its top. It runs out from the western wall by 1.32m, and out from the northern wall by 1.27m.

11.5.3 This buttress is regularly coursed, predominantly in English bond, but with some variation on this (i.e. 'double-rows' of headers, etc). It is made up of red bricks, set within a coarse cream-grey mortar.

11.5.4 This buttress is notable for the way in which it appears to be 'keyed-in' to the main dovecote structure. This is particularly apparent on the join between the buttress and the northern wall of the dovecote, where some of the bricks in the buttress appear to be built physically into, and mortared into, the main wall. It is not like the other buttresses, which clearly abut the main wall, but, instead, appears to have been 'keyed-in'. This different method of construction of the buttress is further evidence for the suggestion that they were constructed at different times.



Fig. 101: Photograph of the north-western buttress.



Fig. 102: Photograph of the eastern side of the north-western buttress. This clearly shows how the buttress is 'keyed-in' to the main dovecote wall.

11.6 These four buttresses are therefore clearly different in construction and form, constructed separately or in pairs, but not as one single phase of buttress construction.

11.6.1 The precise date when these buttresses were constructed is unknown. They were clearly, however, constructed after the major rebuilding phase (i.e. after the western wall was rebuilt, and after the moulded courses of brickwork were constructed), because they are built abutting these walls and brickwork. Furthermore, the fact that they appear to be built from approximately the present ground-surface, rather than the lower ground-surface indicated by excavations around the eastern doorway (where evidence was found for a far lower door threshold), suggests that they cannot have been built at an early date.

11.6.2 It is suggested here that the buttresses were constructed before the revision of the dovecote's use (late 18th Century). This is, however, only a suggestion, and it is possible that the buttresses were constructed later than is suggested here, although they definitely existed by the early 19th Century as they are depicted on the 1813 Enclosure Map (fig. 3).

11.6.3 The later patching observed on the two southern buttresses is probably related to the construction of the stables, and how they were connected to these

buttresses. Following the destruction of the stables, this later patching would have been undertaken.

11.6.4 It is difficult to ascertain whether any of these buttresses were, in-fact, built together at the same time. None of them are entirely identical in form or method of construction, etc. It could be suggested that the two on the western side were built at the same time (as they had similar coursing / bond), or, equally, the two on the eastern side, particularly in view of the slight step in the brickwork. These are all, however, just suggestions, with no definitive answers concerning whether any were actually built together.

11.6.5 The buttresses were constructed as a way of supporting the dovecote structure. The structure itself must, therefore, have been considered unstable. It seems likely that the buttresses were constructed when the need to support different parts of the dovecote structure became apparent. This could, arguably, have been linked to the construction of the French drain, as this may have been dug due to problems with waterlogging making the structure unstable.

12. The revision of use of the dovecote

12.1 The next major phase of development in the dovecote's history is the end of its life as a full-scale dovecote. This appears to encompass a number of different developments, including the blocking-up of nesting holes at the lower levels (leaving the upper floor as a type of 'dove loft'), the construction of the present roof, and the addition of floors (with lath-and-plaster ceilings) which turned the lower two floors into rooms (rather than the whole structure being used for doves). English Heritage's dendrochronological investigation of the present roof has given the timbers a date of 1769 (the date of felling), suggesting that the present roof was constructed at, or soon after, this (see appendix VII). It is thought that the other developments discussed below took place at the same time as the roof was constructed, and that these developments changed the use of the structure from a full-scale dovecote into a structure with only one upper 'dove loft' and two floors of rooms.

12.2 The most obvious evidence for the change in use of the dovecote is the blocking-up of the nesting-holes on the ground and first floors. This generally took place through the placing of a brick or tile over the entrance into the nesting hole. The interior walls and nesting-holes were also lime-washed over at this point.

12.2.1 One tile sample (of a tile which was blocking-up a nesting hole) was taken from the first floor. This was identified as a 2586 peg-tile, and dated 1450-1750. Assuming that these nesting-holes were blocked up at the same time as

the present roof was constructed (just after 1769, see below), it suggests that it may have been a re-used tile, or just a slightly older tile used to block the holes. It is possible that there was a store of such items on the estate which could be used.

12.2.2 Most of the nesting-holes were blocked up by bricks. In some areas, particularly on the first floor just below the rebuild line, the lines of horizontal tiles and dentil courses of bricks were also covered over, presumably at the same time as the nesting-holes themselves were blocked over. This was undertaken by placing tiles vertically over these courses.

12.2.3 Interestingly, the nesting holes at the upper-most levels were not blocked-up. This shows that the structure did not entirely fall out of use as a dovecote. Instead, 88 holes were left open to allow doves to live there (as, infact, they still do!), providing room for a maximum of 264 doves in a type of ‘dove loft’ at the top of the structure. Nonetheless, this is nowhere near the numbers of nesting holes which originally existed (around 692), and therefore suggests that there was no longer the need or demand to keep doves for their meat, etc, such that the nesting-holes on the lower floors were no longer needed, so the lower floors could be converted into rooms.

12.2.4 The existence of such ‘dove lofts’ became popular from the end of the 18th Century. This was both in terms of physical lofts used to house birds on top of normal structures / buildings; and in terms of just using the upper floors of existing dovecotes. In some places just the cupola at the top of the dovecote was used as a ‘dove loft’, with the nesting-holes in the rest of the structure being blocked off. Here, however, the whole of the upper floor of the dovecote was used as a ‘dove loft’.



*Fig. 103:
Photograph
showing a
series of
blocked-up
nesting-holes
on the ground
floor. The
nesting-holes
have been
blocked over
by bricks or
tiles placed
horizontally.*

12.3 Another part of this phase in the dovecote's history was the creation of the floors (although the present floors have since been re-boarded). These were in the same positions as the existing floors, thereby dividing the structure up into three storeys.

12.3.1 The construction of these floors would have meant that the lower parts of the structure could no longer be used by doves. This is because the existence of the floors would have prevented the doves from reaching the nesting-holes at the lower levels (particularly those on the ground-floor, as there is no entrance for the doves into the ground-floor). It also seems unreasonable to suggest that the floors were inserted to ease collection of doves' eggs and squabs, as they are not evenly spaced such that it would have been difficult to get to the uppermost nesting-holes on the ground and first floors, yet very easy to reach those on the second floor. Furthermore, the ends of the joists are stuck directly into some of the nesting-holes, suggesting that the desire for nesting-holes to be open and usable was no-longer central. It therefore seems reasonable to suggest that the floors were inserted at the same time as the nesting-holes on the lower levels were blocked up, when the dovecote 'downsized'.



Fig. 104: Photograph of the underside of the first floor taken from the ground floor. This clearly shows how the joists are stuck into the nesting-holes.

12.3.2 The common joists did not span the full width (east-west) of the ground and first floor ceilings, but were supported mid-way by more substantiated north-south ceiling beams.



Fig. 105: Photograph of common joists on the ground floor, supported by more substantial north-south ceiling beams.

- 12.3.3** The earlier planks of the first floor are *c.*25mm thick, and 0.19m wide. Those of the second floor are 20mm thick, and 0.215m wide.
- 12.3.4** The boards on the second floor were originally ‘clinker’ in construction, with individual boards overlapping other floorboards. This did not create a proper surface, presumably because this area remained a type of ‘dove loft’.
- 12.3.5** These second floors were clearly constructed before the addition of the clock (1890s), as they have been cut through to enable the clock weights to go through.
- 12.4** Alongside the insertion of the floors was the insertion of the small wooden chamber still present on the first floor, at the top of the ladder. This is a wooden chamber, with a surviving lath-and-plaster ceiling. There would also have been a door opening out from this chamber onto the first floor, of which the hinges and rebate for the catch survives.



Fig. 106: Photograph showing the inside of the wooden 'chamber' surrounding the ladders on the first floor, with the lathe and plaster ceiling clearly visible.



Fig. 107: Photograph showing the outside of the wooden 'chamber' surrounding the ladders on the first floor and the doorway into the first floor, clearly showing the hinges.

12.4.1 There are two main pieces of evidence for this being inserted at the same time as the floors and blocking of nesting-holes, etc. Firstly, the nesting-holes within the chamber are not as nicely blocked-up, with the line of horizontal tiles blocking the tile and dentil courses (just below the rebuild line) stopping on the exact line as the chamber. This therefore suggests that the holes were blocked-up at the same time as the chamber inserted, and that it was not felt necessary to block up those inside the chamber as well as those in the main room.



Fig. 108: Photograph from inside the wooden chamber, showing how the tile/dentil courses and nesting-holes are not covered over / blocked-up within the chamber; but are in the main first floor room.

12.4.2 Secondly, there is a ‘cut away’, at an approximately 45° angle, in the adjacent east-west beam running along the base of the northern side of the chamber. This presumably held a ladder or steps, up from the ground floor to the first floor. This would have run up against the western wall. The beam which is ‘cut away’ is within the chamber itself, and therefore suggests that the ladder (which must have been inserted alongside the floors) and the chamber were contemporary in build.



Fig. 109: Photograph showing the 'cut away' beam at the northern base of the chamber, where the earlier ladder up from the ground floor would presumably have stood.

12.4.3 The southern window was also blocked up in two separate phases along the line of this wooden 'chamber'. The fact that the dividing line between the blocking falls exactly along the edge of the chamber suggests that one side of the blocking, possibly that in the main room, was blocked up when the chamber was constructed, with the other side (within the chamber) left open - possibly to allow more light into the chamber and staircase. The blocking of the other side of the window (within the chamber area) might have been undertaken at a later date.



Fig. 110: Photograph of the southern window, clearly showing the two separate phases of blocking (along the line of the internal wooden chamber).

12.4.4 The creation of such a chamber on the first floor further suggests that this floor was no longer being used as a dovecote and that, instead, it was used as a room for some other purpose, possibly storage, etc. Furthermore, the fact that the upper floor lacks such an entrance – instead having a trapdoor opening (0.62m^2) – furthers the evidence that the second floor continued to be used as a ‘dove loft’, with the ground and first floors as rooms for some other purpose.

12.5 Related to the creation of the floors was the lath-and-plastering of the ceilings. This was apparent as small nails were visible in the ceilings, with, in some cases, the odd bit of actual lath-and-plaster remaining. Both the roof and the ceiling of the first floor appears to have been lath and plastered, with this completely surviving within the wooden ‘chamber’ on the first floor (see fig. 106). The whole of the joists were covered with this lath-and-plaster on the first floor, whereas the hip rafters, purlins, and wall-plates were left partly exposed on the roof. 1965 photographs of the first and second floor of the dovecote from the NMR (150859 and 150860) show the lath-and-plastering of the ceilings.



Fig. 111: Photograph showing beams with nails sticking out of them on the first floor (for the lath-and-plastering of the ceiling). The white lines visible horizontally across the beams are further evidence for the act of lath-and-plastering.



Fig. 112: Photograph showing some remaining patches of lath-and-plaster, on the first floor.

- 12.5.1** The ceiling of the ground floor is slightly more confusing, as although parts of lath-and-plaster were visible, larger nails were also observed projecting out of the western side of this ceiling. These large nails (which stick out 30-60mm) are positioned in a line, and may have had some form of cladding over them. This therefore suggests that part of the ceiling of the ground floor may have been lath-and-plastered, and subsequently had some form of cladding placed over it – possibly the later (20th Century) wooden panelling seen in the photographs supplied by Clancy Docwra (see fig.160)
- 12.5.2** The act of lath-and-plastering the ceilings suggests that effort was put into the desire of making the dovecote look attractive. This suggests that the structure may have been used as rooms, etc, with the idea that people would physically enter the structure (particularly on the lower two floors). It does, however, seem surprising, and somewhat excessive, for the roof to be lath-and-plastered, as the upper floor was still being used to house doves. No easy answer can be given as to why this was undertaken.
- 12.6** Although it is technically possible that the present roof was constructed before the other changes discussed above, it seems more probable that it was constructed at the same time and was part of the same change in use of the structure. This is partly because the timber in the roof and the floors looks broadly similar (similar date and style, etc), suggesting that they were both constructed at the same time. Furthermore, the fact that the ceilings and the roof were both lath-and-plastered suggests that this took place at the same time.
- 12.6.1** The present roof is double-pitched. It is made up of four sides, all of which run from the base (wider than the top of the dovecote's brickwork), up to the small square timber cupola or lantern at the top of the roof.



Fig. 113: Photograph showing the square roof and cupola, from the south-west.



Fig. 114: Photograph of the roof and cupola, from the outside.

12.6.2 The exterior of this roof is made up of overlapping clay tiles. Further support is provided by the four hip rafters running up the four interior edges of the roof, reflected on the exterior by four ‘hips’ covered with tiles.



Fig. 115: Photograph of the overlapping tiles on the exterior of the roof.

12.6.3 The wooden cupola which still stands on top of the roof was probably constructed at the same time as the roof itself. This measures 1.25m N-S X 1.26m E-W (approximately square), and 0.91m in height. This cupola did not, however, hold a clock until the 1890s (see section 15). The wooden cupola was constructed before the insertion of the clock, and this is clearly visible by the fact that the clock-face is attached to a later wooden backing, clearly constructed and designed purely to hold the clock-face. Instead, the original cupola had diagonal timbers on all four sides. The earlier cupola may have been used partly as a decorative feature, but presumably mainly for dove access. This is particularly because the present roof does not have any openings under the eaves for the doves to get in through, such that the only way for them to enter the structure and reach the upper nesting-holes (which remained open) was through the cupola. Many other dovecotes have a cupola to enable doves to enter the structure, such as at Eastcote.



Fig. 116: Photograph of the wooden cupola at the top of the roof.

12.6.4 The interior of the present roof is a timber construction. Hip rafters run up the interior corners of the roof; purlins run horizontally across the interior of the roof (approximately half-way up) and are secured onto the hip rafters; and other large rafters run vertically up the interior of the roof at regular intervals. Small laths also run horizontally between the rafters, onto which the clay tiles are attached (on the outside) and lath and plaster (on the inside).

12.6.5 A series of four timber wall plates were observed running around the base of the roof (on the inside). They are located outside of the earlier beam (discussed above), and are braced together at each corner. The northern wall-plate measured 0.22m (wide) X 0.155m (deep); the eastern 0.23m X 0.165m; the southern 0.22m X 0.165m; and the western 0.225m X 0.16m. Interestingly these wall-plates (and the new roof structure) prevented doves from entering the structure through slats underneath the eaves (unlike the earlier roof which apparently had such a facility). Instead, the only entrance for the doves became through the cupola. This could, arguably, have reduced the number of doves being able to enter the structure and therefore be related to the idea that the changes that occurred at this time reduced the number of nesting-holes for the doves (and therefore the number of doves in the structure itself), although it must be noted that in many dovecotes the cupola was the only means of access into the structure.



Fig. 117: Photograph of the interior roof of the dovecote. This clearly shows the wall-plates; hip-rafters; purlins; and rafters.



Fig. 118: Photograph of a corner of the interior roof of the dovecote. This clearly shows a hip-rafter; purlins; rafters; and lathes.



Fig. 119: Photograph of the interior roof of the dovecote. This clearly shows the variation in size of the common rafters, and extremely regular horizontal laths (to hold the tiles).

12.6.6 English Heritage's dendrochronological investigations of the present roof gave the felling date of the timbers as *c.*1769 (see appendix VII). This therefore means that the present roof must have been constructed on or soon after this date. Considering the likelihood that all of the other changes discussed above took place at the same time, they all presumably also took place in the late 18th Century.

12.7 These developments are part of a major change in the dovecote's history – when the dovecote effectively 'downsized' such that only (approximately) 88 nesting-holes remained open on the upper floor (forming a type of 'dove loft'), with the other floors presumably being used for different purposes. Associated with this change in purpose is the construction of the new roof; insertion of floors (and the wooden chamber on the first floor and lath-and-plastering of ceilings); and the blocking of nesting-holes on the lower two floors. Assuming that these changes took place at the same time, the dating of the present roof gives a late 18th Century date to this change in use. The exact new function of the lower floors is difficult to judge – possibly storage or rooms for general use, etc.

13. Blocking of the eastern door and construction of the western door

- 13.1 Another modification to the ground-floor of the dovecote involved the blocking of the eastern doorway, construction of the present western doorway, and construction of the existing ground floor raising plinths to raise the ground floor surface. This is dated, using brick-samples of the ground floor plinths, to the 19th Century, and clearly took place after the dovecote had been ‘downsized’.
- 13.2 The doorway in the eastern wall was blocked-up using red bricks. This is obvious to the eye externally, with a mortar-line dividing the doorway from the surrounding wall. The lower *c.*0.84m (from the present ground-level) is blocked up on a line with the wall, and the upper *c.*0.49m (maximum, to the point of the arch) is recessed slightly (for *c.*0.2m), but still blocked up, and with a hook in it. A ledge is formed between the upper recessed and lower part of the doorway. This, effectively, creates some form of niche, however it is unclear what this could have been used for or why such a feature was created. The total dimensions of the blocked-up doorway, on the exterior, are 0.67m width (total), by at least 2.13m height. It should also be noted that part of this blocking (on the southern side) appears to have been ‘keyed-in’ to the main dovecote wall.



Fig. 120: Photograph of the exterior of the blocked-up eastern doorway. This clearly shows how it has been infilled.

13.2.1 It is also clear from the inside of the dovecote that the door was blocked-up. This was also done with bricks and is recessed slightly (by *c.*0.2m, out towards the exterior of the dovecote). The dimensions of the doorway on the inside are *c.*1m width (total), by at least 1.8m in height (including the timber lintel). This is therefore wider than the exterior doorway, suggesting that the doorway opened up somewhat on entering the dovecote. This blocking has been whitewashed, in a similar way to the rest of the structure. The lower blocking of the doorway has been discussed elsewhere (see section 10).



Fig. 121: Photograph of the interior of the blocked-up eastern doorway. This clearly shows how it has been infilled.

13.3 At the same time as the blocking-up of the eastern doorway was the construction of the door in the western wall. This must have taken place at the same time, as otherwise there would not have been a door through which to enter the dovecote.

13.3.1 This doorway is *c.*0.765m in width, by *c.*2.2m height (from the exterior step up to the top of the arch). The arch itself is *c.*0.765m wide, and 0.28m high. The external brick decoration surrounding it consists of two rows of brickwork – the inner of which is a chamfered ring of brickwork; with the exterior ring forming a hood by projecting out from the wall by 400mm. The total width of this decoration is *c.*0.175m – the chamfered face is 50mm, the adjacent flat brickwork is 70mm, and the hood is 55mm. The hood also projects north and

south away from the door, by approximately 0.17m. Three slabs of stones are also observed surrounding the exterior of this door, presumably to act as some kind of support or to hold fixtures and fittings, although there was no sign of any hinge or latch fixings.



Fig. 122: Photograph of the exterior of the western doorway.



Fig. 123: Photograph of the exterior door-hood of the western doorway.

13.3.2 The interior of this door has a timber lintel topping it (c.50mm thick, and running across the exact width of the door). There is also a stone threshold crossing from the outside to the inside of the structure, with a lower brick 'step' on the inside. The present door may be a later addition – possibly later 19th Century.



Fig. 124: Photograph of the interior of the western doorway.

13.3.3 It is clearly visible from the inside that this door was inserted at a later date than the construction of the western wall. A clear line can be observed where the door has been later inserted, the wall surrounding it cut away, and the nesting-holes blocked-up. This area also appears to have been whitewashed more recently, and traces of possible Victorian cement were also observed within this area.



Fig. 125: Photograph of the interior of the western doorway. This clearly shows how it was inserted at a later date, with the nesting-holes surrounding the doorway having partially been cut away and bricked over.



Fig. 126: Photograph of the northern side of the interior of the western doorway. This clearly shows how it was inserted at a later date.

13.4 The construction of the western doorway must have taken place at the same time as the ground floor was raised in height. This is because the threshold in the western doorway into the structure was at a far higher level than the original brick floor (*c.*0.49m higher). The new western door could not, therefore, have gone with this brick floor, as it would have been too large a step down (unless, of course, there was some form of brick step down to it). Nonetheless, the height of the western doorway threshold fit the height of the floor surface after the use of ground-raising floor plinths, such that it seems likely that the construction of the ‘ground-floor raising plinths’ (and higher ground-floor) went with the insertion of the new door.

13.4.1 These ground-raising floor plinths are constructed of brick. There were two of these running east-west across the centre of the dovecote, with two more running east-west along either side (north and south) of the dovecote adjacent to the main walls. Each plinth measured *c.*0.11m in width (except the one to the south of the doorway, which was 0.45m thick), and stretched across the whole width (east-west) of the dovecote (*c.*3.6m). They were approximately 0.43 – 0.49m in height, above the brick floor. This, therefore, brought the new floor level to approximately the same level as the threshold through the western doorway. This is far more practical than the 0.49m gap between the threshold and the old brick floor.

13.4.2 Floorboards were placed on top of these ground-raising floor plinths. These are no longer there, however existed until relatively recently.



Fig. 127: Photograph showing the ‘ground-floor raising plinths’, taken from the western doorway into the dovecote.

13.4.3 Brick samples taken from these were dated to *c.*1800-1900. This is the evidence used to date this phase of construction to the 19th Century. Furthermore, this phase must post-date when the dovecote was ‘downsized’ as the lime-washing of the wall faces goes right down to the brick floor level. The lime-washing must, therefore, have taken place before the new higher floor surface was constructed.

13.5 This phase, concerning the modification of the ground-floor, clearly took place all at the same time, and essentially provided a new door and raised ground-floor. Brick-dating of the ground floor raising plinths dated this phase to the 19th Century, and it must have happened after the lime-washing of the walls and the downsizing of the dovecote. It is difficult to judge why it was felt necessary, or desirable, to construct a new door and floor at this time, although it is possible that it was related to the conversion of the lower two floors into rooms, which were therefore being used by people. It may, therefore, have been felt desirable to construct a higher ground-floor surface and newer door.

14. Later patching of the dovecote

14.1 The following discussion covers the examples of ‘patching’ of the exterior of the dovecote. This has taken place in different places over the exterior, and probably at different times. It was, presumably, a way of repairing the dovecote structure from any degradation or problems that had occurred.

14.2 One obvious bit of ‘patching’ is that on the southern wall, around the south-eastern corner. There is a clear section of brickwork here (measuring *c.* 1.6m in height, by *c.* 2m in length (up to the south-eastern buttress). This section projects out of the main wall-line by *c.* 60mm (at a maximum) and appears to ‘patch’ the dovecote in this area. The area of patching itself is clearly different from the brickwork in the main dovecote wall. There are more vitrified, and less red, bricks in the ‘patched’ area; the mortar in the ‘patched’ area appears coarser and grayer; and the whole ‘patched’ area looks less weathered. This bit of ‘patching’ was clearly undertaken at a far later date than the construction of the main wall itself. Furthermore, the fact that it runs up to the south-eastern buttress suggests that this bit of ‘patching’ was undertaken after the construction of the buttresses.

14.2.1 There is also some indication of this area of ‘patching’ on the south-eastern buttress (see section 10). This is apparent beneath the ‘step-out’, and may indicate that this area of patching covered the buttress as well as the main dovecote wall.

14.2.2 Cartographic evidence provides two possibilities concerning what this particular area of ‘patching’ may represent or be related to. The 1813 Enclosure Map (fig. 3), and 1812 sketch plan of the parish, depict a small square structure adjoining the southern side of the dovecote; and the 1894 Architect’s Plan (fig. 5) depicts a structure associated with the stables abutting the dovecote’s southern wall (possibly a partly-covered yard, etc). It is possible that the area of ‘patching’ on the dovecote’s southern wall may physically be part of one of these buildings, or may have been patching undertaken following the demolition of these buildings (between 1899 and 1914).

14.2.3 The possible date of this area of patching is therefore debatable. The structure depicted on the 1812 and 1813 maps is not depicted on the 1771 Plan or the 1866 OS Map – so must have been constructed in the late 18th or early 19th Century, and destroyed in the mid-19th Century. The stables were constructed in the 1860s, and destroyed at some point between 1899 and 1914.

14.2.4 From the 18th Century onwards dovecotes were often incorporated into building complexes, particularly stables. For example, the dovecote at Hothfield Place in Kent abuts the stables; and buildings were built around the dovecote at Chillington Hall in Staffordshire such that it became located in the centre of the yard. The idea that the stable complex abutted the dovecote at Breakspeare is not, therefore, unusual.



Fig. 128: Photograph of the southern wall of the dovecote, clearly showing the area of ‘patching’ running up to the south-eastern buttress.



Fig. 129: Close-up photograph of the patching on the southern wall. This clearly shows the difference between the original wall (left side of photo) and the patching (right side of photo).



Fig. 130: Photograph of the patching on the southern wall of the dovecote.

- 14.3** Other smaller areas of ‘patching’ were observed around the exterior of the dovecote. For example, small ‘patches’ were observed on the northern wall, and some patching on the lower section of the western wall. Evidence of this patching (on the western wall) could also be seen on the northern side of the western door (interior) in the form of the roughly constructed later brickwork which formed the rear wall of the nesting-boxes in this area. These patches are, however, relatively insignificant in comparison with the far larger patch on the southern wall. They just reflect the later need to repair small parts of the structure.
- 14.4** This addition of patching to the exterior of the dovecote structure, although taking place at different times and in relation to different events / changes, reflects the later need to repair and maintain the structure, as it became steadily more affected by weathering, ivy growth, and time, etc. This is part of an ongoing practice, with scaffolding currently standing around the structure to enable further repair / renovation.

15. The dovecote becomes a clock and bell tower

- 15.1** The next clearly datable phase in the dovecote's history is the insertion of the clock, and associated equipment, in the upper storey of the dovecote. This took place in AD1894 – as is witnessed in both documentary sources and by an inscription on the bell. This changed the use of the dovecote into, essentially, a clock and bell tower, and also effectively ended the use of the dovecote as a dovecote (with the exception of the few nesting-holes inserted in the western window). Included in this change of use was the insertion of the clock, bells, clock-face, weathervane, bell-handle, and modification of the western window to insert a few nesting-holes.
- 15.2** This clock is, essentially a turret clock – i.e. a clock which made the time public using bells. They were often found in churches, monasteries, royal palaces, army and navy barracks, and factories.
- 15.2.1** The clock was set on two large timber beams which were placed north-south across the room with their ends in now-redundant nesting-holes, and sufficiently above the floor-level to give room for the pendulum.
- 15.2.2** The approximate dimensions of the clock are as follows. The base of the clock was *c.*0.76m above the current second floor level, with the top of the main clock structure another *c.*0.465m in height. The length and width of the clock, in plan, is *c.*0.655m X 0.33m, excluding the slightly projecting feet.
- 15.2.3** A record of the sale of the clock exists in the Gillet and Johnston Archives (thanks to Jenny Coombes from Gillett and Johnston for her help with this). This company was known as Gillett and Johnston up until the 1870s, when it became known as Gillett and Co. This records that this specific clock was ordered on the 3rd September 1894 by Alfred Tarleton Esq., for the sum of £120.00 less 5% cash on completion. It was a No.0 Ting Tang clock with three bells. This therefore proves that the clock, and other features associated with it (i.e. the clock-face, bells, and weights) were inserted into the dovecote structure after this date (probably late 1894 – early 1895). This is useful as a definitive date for this phase, which can also be used to help date other phases / modifications, etc.
- 15.2.4** Both side-plates on the clock (fixed to the iron frame of the clock) record it as having been constructed by “Gillett and Co” (a clockmakers based in Croydon). It also has the date “AD189” on it, with a space where the final digit would go. This is presumably because such panels were mass-produced, but sadly the final digit was not added before it was sold.



Fig. 131: Photograph of the backplate of the clock (pendulum removed). This says "Gillett & Co, Croydon", flanked by "AD" and "189"

15.2.5 It is a flat-bed three-train clock (it has three trains of gears), and therefore chimed for every quarter hour (with three bells to do this). The name of the clock – Ting Tang – refers to the chiming arrangement, with one of the quarter-hour bells having a higher pitch than the other. One of these three trains is called the “going train” (mounted in the centre of the clock frame), which drives the hands to tell the time; one is the “striking train” (positioned on the left-hand side of the clock, as viewed from the front, or winding, side of the clock) which strikes the hour; and the last one is the “chiming train” (located on the right-hand side of the clock) which sounds the quarter-hours. All of these trains are driven by separate weights on the end of steel lines, which were wound up around three barrels set in the body of the clock. Each barrel has a projection (winding square) to which the winding handle can be attached.

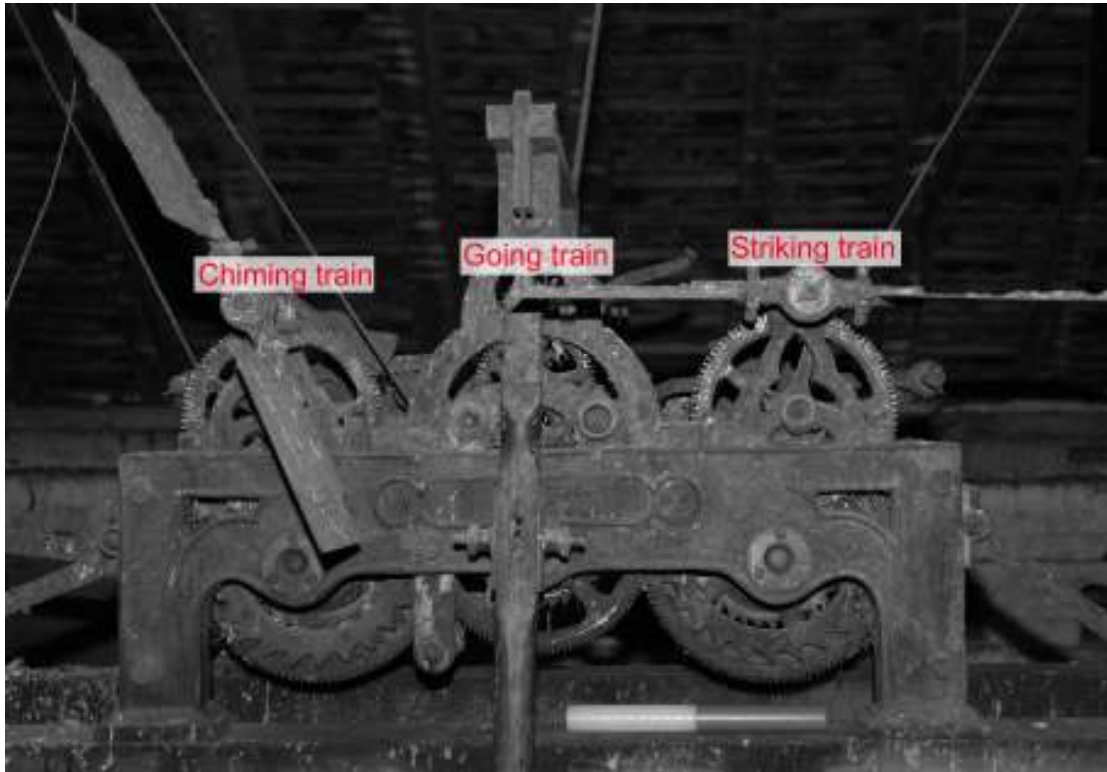


Fig. 132: Annotated diagram showing the three trains of the clock. Two wires can be seen running out of the chiming train (for the chiming of the quarter hours); one wire running out of the striking train (for the chiming of the hours); and the pendulum out of the going train.

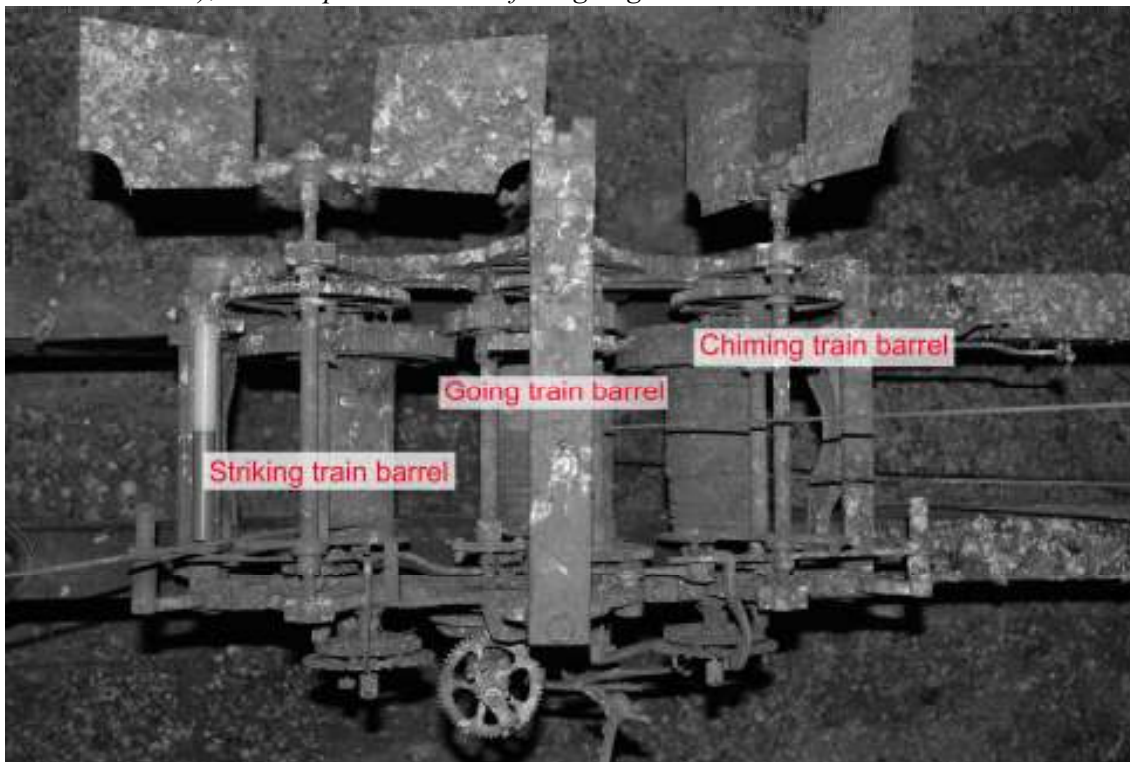


Fig. 133: Annotated diagram showing the three barrels for the three trains of the clock.

15.2.6 This clock would have needed to be wound up once a week. This would have been a relatively hard task – due to the weight of the clock and winding mechanism, etc. Attached to the “going train” is a maintaining power lever. This would be turned slightly anti-clockwise and pushed inwards to engage with the mechanism and to uncover the winding square, so allowing the clock to continue ticking whilst winding was in progress.



Fig. 134: Photograph of the clock, showing the winding handle attached to the striking train.

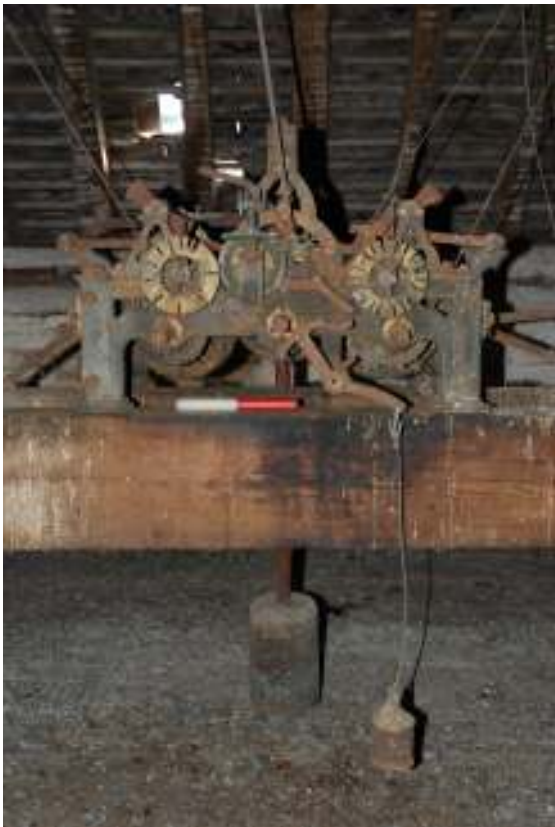


Fig. 135: Photograph of the clock, clearly showing the maintaining power lever with attached weight in the foreground.

15.2.7 The correct time was set by means of a locking nut and setting dial. When undone the nut (located to the rear just above the central drum) would disconnect the hands from the mechanism. The dial consists of a silvered circular plate at the front of the clock, which is divided into 60 units. Although not easily visible it is also inscribed Gillett & Co, Croydon.



Fig. 136: Photograph of the silvered setting dial, in the centre of the shot.

15.2.8 The overall length of the pendulum, from the top to the rating nut below the bob, was just over 1.25m, and the bob *c.*225mm X 150mm in diameter. The main arm of the pendulum (0.843m) was made of wood – apparently mahogany. Unlike metal, this material did not significantly expand or contract with temperature change, so avoiding light changes in the pendulum length which would affect the running of the clock and maintain a regular number of beats per minute.

The pendulum regulated the speed of the escape-wheel, as every swing of the pendulum allowed one tooth of the escape-wheel to escape, thereby controlling the speed at which the wheel rotated. This gave time to the clock, as it was part of the “going train”, so allowed the centre wheel to turn once in an hour.

This escapement also gave the pendulum a little impulse every beat to keep it swinging. This is through the “pallets” – two little pads of steel which span the escape wheel and are connected to the pendulum by an arm called the “crutch”. The escape wheel pushes one pad until it escapes, the other pad then arrests the motion of an escape wheel tooth. Then, the pendulum swings back, the second

pallet releases a tooth, and the first pallet again arrests the motion of the escape wheel.



Fig. 137: Photograph of the pendulum.

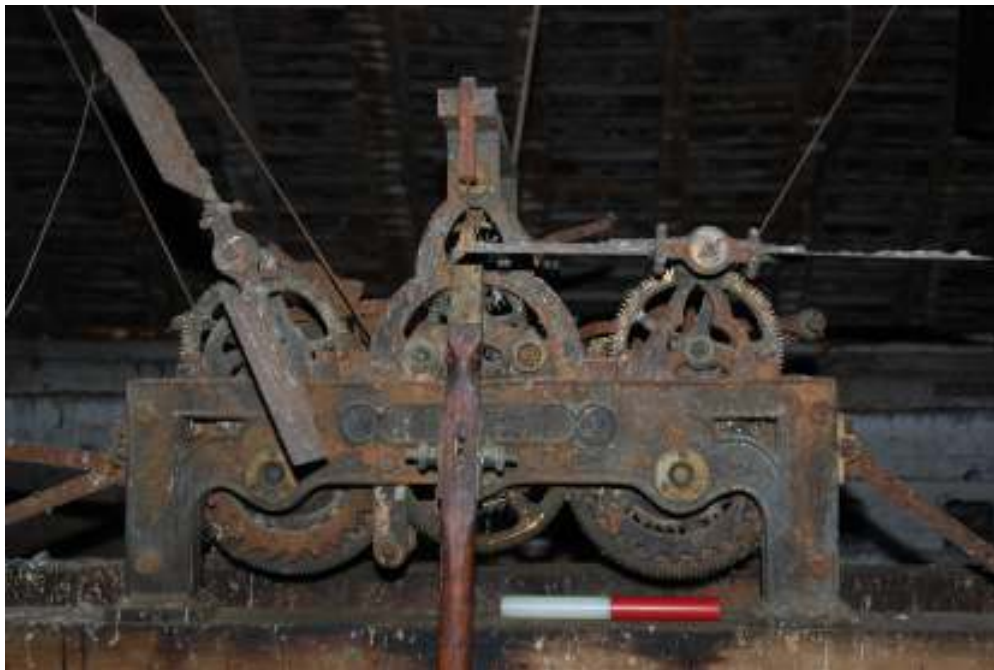


Fig. 138: Photograph of the top of the pendulum, clearly showing the escape wheel.

15.2.9 The “striking train” operated the first bell hammer. A lever in this striking train, projecting from the rear left-hand corner of the clock mechanism, was pulled down and released once for each stroke of the bell. This lever pulled a wire, now broken-away, which ran straight up to the belfry, where it lifted a heavy hammer which fell onto the bell. A check spring kept the hammer just off the bell so that it can sound fully.

15.2.10 The “chiming train” operated two levers at the rear right-hand corner of the clock mechanism. One of the connecting wires is now broken, but both would have run up to a pair of bell cranks which are fixed on a projecting timber just below and to the south of the cupola. From there the wires ran more or less horizontally to a second pair of cranks directly below the cupola, and would then have continued upwards to join the hammers, and thereby strike the bells.



Fig. 139: Photograph showing the series of wires, pulleys, etc, connecting the clock mechanism (striking and chiming train) to the cupola.



Fig. 140: Photograph of a pair of the bell-cranks.



Fig. 141: Photograph up into the cupola. The striking hammer can be seen in the top right of the frame.

15.2.11 To the rear of the clock were a pair of two-bladed flies (one for each train) which revolved rapidly – the blades beating the air to control the speed of striking. Each fly was connected to a count-wheel at the front of the clock which was used to control the correct number of blows (1, 2, etc) according to the time. Once striking was complete a lever would drop into a slot in the count-wheel and lock the fly.

On the left-hand count-wheel (hours) the spaces between slots increase progressively according to the number of strikes, and would rotate fully once every 12 hours. On the right-hand count-wheel (quarter / chiming) the slots area arranged in a total of six groups of three, so presumably the wheel rotated once every 6 hours. On both count-wheels the first and second slots are placed together (as is often the case), hence the striking count-wheel has 11 slots (not 12) and the chiming count-wheel groups of three slots (not 4).



Fig. 142: Photograph showing the pair of two-bladed flies.



Fig. 143: Photograph showing the count-wheels – one at either end of the clock.

15.2.12 The centre wheel (on the “going train”) rotated once per hour (driven by the pendulum and escape wheel). This drove the hands on the clock-face through a vertical iron rod ascending into the cupola, into bevel gears either end (known as “leading off work”). When the rod has to turn a corner, bevel gears are used to change direction of motion. Behind the clock-face (contained in a small wooden casing in the cupola) is a cluster of gears known as the “motion-work”. These drive the hour hand round once in twelve hours, and the minute hand round once every hour.



Fig. 144: Photograph of the bell and upper clock mechanism or motion-work, contained in a small wooden casing behind the clock-face.

15.2.13 Furthermore, the insertion of the clock depended on the dropping of the clock weights down from the clock to the ground floor. This necessitated the cutting of a slot through the floorboards on the first and second floors, such that the weights could drop down to the ground-floor (into a small brick-lined chamber just below the raised floor level). This is therefore further evidence that the clock was inserted at a later date than the construction of the floors.



*Fig. 145:
Photograph
showing the
cutting-through of
the original first-
floor floorboards
to make way for
the clock weights.
Saw cuts can be
seen not only
across the boards,
but also on the
side of the
underlying joist.*

The clock weights, on steel lines, descended from the upper floor all the way down to the base of the dovecote structure, and included quite a complex arrangement of pulleys and line attachments. The weights themselves were adjustable – that is to say, a series of separate circular weights that could be added or removed to a central support. The weights present were as follows:

- “Going train” – seven weights, forming a cylinder c.0.42m high X 0.158m diameter (and an additional small weight c.50 X 70mm at top). This is the higher weight presently located on the ground-floor.
- “Striking train” – five weights, forming a cylinder c.0.59m X 0.204m. This is the lower weight presently located on the ground-floor.
- “Chiming train” – five weights, forming a cylinder c.0.59m X 0.2m (with a further weight on the adjacent wall). This weight is presently located on the first floor.



*Fig. 146:
Photograph of the
chiming train
weight, hanging
down through the
first-floor.*



*Fig. 147: Photograph of the going and
striking train weights (going train weight
above striking train weight).*

15.3 One bell is currently found in the cupola and was inserted into the dovecote at the same date as the clock itself.

15.3.1 The inscription in relief on the bell reads “Cast by Gillett & Johnston, Croydon, 1894”. This therefore gives a date for when the bells, and associated clock mechanism, etc, were inserted – which fits with the date in the archives.

15.3.2 The bell itself is bronze, with a diameter of 0.45m, and is fixed in the north-west corner of the cupola.

15.3.3 There would originally have been three bells. Two of these (the existing one and one smaller higher bell) are depicted on the 1966 elevation (GLC, 1966, NMR LCC/GLC MD96/04983). The large bell which still exists would have chimed the hour. The two smaller bells (no-longer existing) would have chimed the quarters, and appear to have been located on the eastern side of the cupola. The hammers for striking the other bells were still visible within the clock-tower.



Fig. 148: Photograph of the bell, within its cupola.



Fig. 149: Close-up photograph of the bell.



Fig. 150: Photograph of the clock-face and bell.

15.4 A separate bell pull was also inserted at this time, which enabled the bell to be rung separately from the clock mechanism, and thereby enabled the bell to be rung whenever it was desired (in emergencies, etc).

15.4.1 This bell pull was observed on the external left-hand side of the western doorway. This was then connected to an external upwards-running metal bar, running up to eaves-level, which then turned through a 90° angle into the dovecote. This was connected to a contraption in the upper storey of the dovecote (still visible, although disconnected, today), which was then connected to the clapper within the bell itself. Pulling the bell pull at ground-floor level therefore enabled the bell to be rung.



Fig. 151: Photograph showing the bell pull, to the left-hand side of the doorway in the western wall.



Fig. 152: Photograph showing the wooden contraption in the upper floor of the roof, which connected the bell pull to the bell.



Fig. 153: Photograph of the bell, from below, clearly showing the clapper which was connected to the bell pull.

15.5 It also seems likely that the clock-face was inserted at the same time as the bells and clock mechanism. It is a circular copper alloy face, with Roman numerals for numbers, and two hands (a small slightly-broken one for the hours, and large one for the minutes). The Roman numerals have been painted on, and are not in relief. It is positioned on the southern face of the dovecote thereby facing the stable-yard, so it could be seen from the stable-yard. The diameter of the clock-face was *c.*0.92m.

15.5.1 This clock face was clearly inserted on the clock after the construction of the wooden 'bell-tower' itself. The newer wooden facing, on which the clock face was attached, is clearly visible over the older wooden cupola.



Fig. 154: Photograph of the clock-face, straight-on.

15.6 The weathervane was also probably constructed at this time. It is iron, with a gilt ball on top, a scroll, and the letters (N, E, S, W – although only two of these survive today). It is currently in a poor state, and would have had a far larger arm on it to catch the wind. This is a decorative feature, and was therefore probably constructed alongside the clock after the dovecote fell out of use.



Fig. 155: Photograph of the weather-vane, as it stands today.

15.7 It is thought that the dovecote stopped functioning as a dovecote when the clock was inserted. This is partly because of the detrimental effect the doves would have had on the clock mechanism, had they been flying around the upper level of the dovecote, and partly because of the apparent alterations to the base of the cupola which appear to have prevented the doves from gaining access to the structure.

15.7.1 These alterations to the base of the cupola included the insertion of a couple of glazed panels. These are no longer complete, but the wooden frames (which look like window frames) into which the glass would have been set are still visible at the base of the cupola. This would have prevented doves from entering the structure, and thereby ended the life of the upper levels of the dovecote as a 'dove-loft'.



Fig. 156: Photograph of the remaining wooden frames at the base of the cupola, which would have held glass and prevented doves from entering the structure.

15.8 It is possible that at this time, when the doves were prevented from entering the structure through the cupola, some provision for doves was created in the western first floor window. Six nest-boxes were constructed here (three either side) within a boxed-in area, with mesh on the inner face to prevent the birds from entering the room. This would have offered a very limited provision of dove meat / eggs (room for a maximum of 18 doves). There would have been no reason for this provision whilst the upper floor was still in use as a dovecote, such that it seems likely that this was created once the insertion of the clock and alterations to the cupola had prevented doves from entering the upper storey.



*Fig. 157:
Photograph of
the western
window,
clearly
showing the
iron mesh
between the
nesting-holes
and room.*



*Fig. 158:
Photograph of
three of the
nesting-holes
in the western
window.*

15.9 This phase, whereby the clock and bells, etc, were inserted into the dovecote ended the period when the upper storey of the structure was still used for doves, and essentially converted the structure into a clock / bell tower. This took place in the 1890s (1894), during the period when Alfred Tarleton owned the Breakspeare estate.

16: Later modifications to the dovecote

16.1 This final section covers the latest developments to the dovecote (after 1894 and during the 20th Century), which left the structure in the position / situation it was found on inspection in 2011. None of these appear to have been major changes or modifications to the structure, but will be discussed nonetheless.

16.2 At some point during the 20th Century the clock stopped working. One of the bells, the clock-face, and the clock itself, are still found within the dovecote, however none are currently working.

16.3 The current floorboards appear to be replacements of the previous floorboards. These are placed directly over the previous floorboards, with the latest planking on the upper floor overlying intermediate plyboard (also of modern – 20th Century – construction). The exact date when this happened is unknown, however it must have taken place during the 20th Century. The construction of the upper floor prevented the movement of the clock pendulum, which presumably had already gone out of use.



*Fig. 159:
Photograph
of the
modern
floorboards
on the first
floor,
overlying the
earlier
floorboards.*

- 16.4** The interior walls and ceilings of the dovecote were panelled over in wood. This had clearly taken place by 1965, as a 1965 photograph of the ground-floor of the dovecote from the NMR (150858) shows the walls covered by wooden panelling. This had been removed by the time of Compass Archaeology's investigations in 2011, although the below photograph (provided by Clancy Docwra) provides an indication of it.



*Fig. 160:
Photograph
supplied by
Clancy
Docwra
Developments
Ltd which
shows the
wooden
panelling of
the interior of
the dovecote,
ground floor.*

- 16.5** These later, 20th Century developments and modifications to the dovecote are arguably minor in nature, and do not reflect any huge change in function or massive rebuilding phase, etc.
- 16.5.1** Throughout the 20th Century the dovecote remained in a similar situation as it had previously, and as it remains today. It does not, however, appear to have had a definitive function, as could not have been used as a clock tower after the clock ceased to work, and was clearly not a dovecote either. Instead, it appears to have remained as some form of architectural feature, possibly also used for storage on the ground floor, for example.
- 16.5.2** It is also, of course, a feature of historic interest. This culminated in it being listed as a Grade II* building in 1969. This has meant that it had to be kept as it is from that date.

17. Assessment of the results of the historic building survey

17.1 Summary

The building survey provided an opportunity to record the standing structure, and also to investigate its origins and development. The on-site work included photographic coverage of the present building as well as notes and drawings, and small-scale excavations of selected areas, particularly the foundations of the structure. This was supported by documentary and cartographic sources, and was undertaken with reference to the objectives and scope of the project as defined within the *CA Method Statement* (Compass Archaeology, January 2011).

17.2 The standing building record

Various different phases of construction / modification of the dovecote could be recognised from the investigation of the standing building. Dating evidence was also gained from some of these phases, which enabled a rough relative chronology to be obtained.

This historic building assessment proved particularly useful considering the lack of documentary evidence concerning the life of the dovecote, and because little detailed information is gained about the dovecote from cartographic evidence.

The existing lower parts of the northern, eastern, and southern walls appear to have been original in construction, up to a height of *c.*4.5m. This also included the existing southern window and the blocked-up eastern doorway. Evidence for another possible door or opening in the western wall; the chalk foundations of the structure; and the possible chalk base of a floor were also observed. Although it was not possible to gain a definitive idea as to when this was constructed, it seems likely that this was at some point in the mid-later 16th or early 17th Century, possibly in association with the construction of the earliest House at Breakspear (mid-16th Century). It is possible that this was at a similar time to the construction of the original dovecote at Eastcote, although this cannot be definitely proved.

Aside from the interior re-facing of the ground-floor of the dovecote (which appeared to take place between the original construction and the rebuild of the structure), the next major development in the dovecote's life appears to have taken place at some point during the mid – later 17th Century – perhaps during a subsequent rebuild or extension of the house, provisionally dated to the late 17th Century. This involved, most noticeably, the rebuilding of the western wall, and the extension upwards of all of the walls (including the addition of the moulded course of brickwork) to their present height. A more regular bond, and different types of nesting-holes, are associated with this rebuild.

Furthermore, there is some evidence of the roof associated with this phase of development – in terms of the large pieces of timber remaining on top of the inner part of the walls. The reasons for this major rebuild are unknown – although the addition of the moulded courses of brickwork etc, suggests that the desire to use the dovecote as some form of status-symbol may have partly accounted for it.

Two other main developments appear to have taken place in the late 17th – 18th Century (before the dovecote went out of use as a dovecote). These were the construction of the brick floor and associated French drain; and the construction of the four buttresses (although these may have all been constructed at slightly differing times). These two developments would have strengthened the dovecote structure, and so may have been associated with structural problems (possibly waterlogging) affecting the structure.

The next major change in the dovecote's history involved the conversion of the lower two floors into rooms (not for doves), with the retention of the upper storey as a type of 'dove loft'. This included the construction of the present roof (dated by dendrochronology to 1769); the blocking-up of nesting-holes at the lower levels; and the construction of the floors. It is not entirely clear what the lower floors were subsequently used for, although they were probably rooms of some sort, possibly used for storage, etc.

Other changes and modifications took place following this, including the construction of the new western doorway (with the blocking-up of the eastern doorway) and the construction of a new higher ground floor; and the patching of parts of the outside of the structure (particularly on the southern wall of the structure – possibly associated with the stables or an earlier structure depicted on the 1813 Enclosure Map).

The final major change in the dovecote was the insertion of the clock (and associated bells and clock-face, etc), which took place in 1894. At this point, doves were prevented from entering the structure through the cupola, thereby stopping the upper storey from functioning as a 'dove loft', and converting the structure into a clock / bell-tower. The only area that was accessible to the doves would have been a few nesting-boxes built into the western first floor window, probably at the same time as the clock installation.

17.3 Conclusion

A comprehensive record was made of the structure and interior of the dovecote, principally photographic but also including notes and interpretative material. Following this the structure was investigated in more detail, mainly by small-scale excavations of parts of the ground floor and foundations.

Although elements of the original structure have been lost through the (many) later developments, and despite the lack of firm dating evidence concerning when the structure was first constructed, this historic building survey has provided far more evidence concerning the possible phasing and development of the structure over time. This does not, however, answer all questions concerning the structure. Questions still remain about exactly when the first structure was built; the height of the original structure (whether it included a timber superstructure, for example); why it was decided to rebuild the western wall and extend the whole structure upwards; why it was decided to downsize the dovecote to just an upper 'dove loft'; and what the other two floors were used for at this time.

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Appendix I: OASIS DATA COLLECTION FORM: England

OASIS ID: compassa1-108287

Project details

Project name	A Level 3 - 4 Historic Building Survey of the dovecote at Breakspear House, Hillingdon
Short description of the project	A level 3 - 4 historic building survey was undertaken of the dovecote at Breakspear House, Hillingdon. This included a photographic survey, written notes, drawings / sketches where appropriate, and a survey of the existing documentary and cartographic evidence. An idea of the different phases of construction of the dovecote was gained from this exercise. This showed that the original structure was constructed at some point in the mid-16 th to early 17 th Century, was brick-built up to the base of the present moulded courses of brickwork. A major phase of rebuilding was then undertaken during the 17 th Century, including the rebuilding of the western wall and extension upwards of all the walls to the dovecote's present height. Various other modifications - including the construction of a brick floor and French drain, and addition of buttresses - were undertaken. The dovecote was then downsized in the later 18 th Century (retaining a 'dove loft' in the upper storey); and became a clock-tower in the 1890s.
Project dates	Start: 21-01-2011 End: 13-04-2011
Previous/future work	Yes / No
Type of project	Building Recording
Site status	Listed Building
Current Land use	Other 15 - Other
Monument type	DOVECOTE Post Medieval
Significant Finds	BOTTLE Post Medieval
Significant Finds	POTTERY Post Medieval
Significant Finds	TILE Post Medieval
Significant Finds	BRICK Post Medieval
Significant Finds	TIMBER Post Medieval
Methods & techniques	'Annotated Sketch', 'Measured Survey', 'Photographic Survey'
Prompt	Planning condition

Project location

Country	England
Site location	GREATER LONDON HILLINGDON HAREFIELD Dovecote at Breakspear House
Postcode	HA6 1BN
Study area	25.00 Square metres
Site coordinates	TQ 06016 89692 51.5956063551 -0.469278956316 51 35 44 N 000 28 09 W Point

Project creators

Name of Organisation	Compass Archaeology
Project brief originator	English Heritage/Department of Environment
Project design originator	Compass Archaeology
Project director/manager	Geoff Potter
Project supervisor	Emma Jeffery
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Clancy Developments Ltd

Project archives

Physical Archive recipient	Museum of London archaeological archive
Physical Contents	'Ceramics','Glass'
Digital Archive recipient	Museum of London archive
Digital Contents	'Ceramics','Glass','Survey'
Digital Media available	'Images raster / digital photography','Survey','Text'
Paper Archive recipient	Museum of London Archive
Paper Contents	'Ceramics','Glass','Survey'
Paper Media available	'Correspondence','Diary','Drawing','Map','Miscellaneous Material','Notebook - Excavation',' Research',' General Notes','Photograph','Plan','Report','Survey ','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	The Dovecote, Breakspear House - a Level 3 - 4 Historic Building Survey
Author(s)/Editor(s)	Jeffery, E
Date	2011
Issuer or publisher	Compass Archaeology
Place of issue or publication	5-7 Southwark Street, London, SE1 1RQ
Description	Report of the historic building survey. Includes discussion of the historic / cartographic / documentary background. Also includes photographs; drawings; analysis of finds; and a thorough written record of the survey.

Appendix II: London Archaeologist Summary

Site address:	The Dovecote, Breakspear House, Breakspear Road North, Harefield, Hillingdon, London, HA6 1BN
Project type:	Historic Building Survey
Dates of fieldwork:	21 st January – 13 th April 2011
Site code:	BZH09
Supervisor/Project Manager:	Emma Jeffery / Geoff Potter
NGR:	TQ 06018 89690
Funding body:	London Borough of Hillingdon

A level 3 – 4 historic building survey was undertaken on the dovecote at Hillingdon. This was part of the Breakspear House Project, which consisted of other work undertaken as a planning and listed building condition attached to consent for the refurbishment of Breakspear House itself, and the construction of eight residential units with underground car parking. The survey of the dovecote was recommended by Kim Stabler at English Heritage.

The building survey had two main elements. Firstly, a mainly photographic record which included both the general setting and appearance of the dovecote as well as specific external and internal features. This was followed by investigation of the standing structure and its development. In particular this involved small-scale excavations of the foundations of the structure, further photography and where appropriate a drawn and annotated record. This was then cross-referenced with documentary and cartographic sources

The earliest dovecote structure appears to have been a brick-built structure, up to the moulded courses of brickwork, with chalk foundations, at least one door in the eastern side, and possibly another in the western side. It remains unclear as to when this structure was first built, however it seems likely that it was constructed between the mid 16th and earlier 17th Century.

A major phase of rebuilding of the dovecote structure occurred, possibly in the late 17th Century, with the construction (upwards) of the brick-structure to its present height (above, and including, the moulded courses of brickwork), the total rebuild of the western wall, and the construction of a timber roof.

Further modifications to the structure occurred during its life as a dovecote, including the construction of a brick floor and French drain, and four exterior buttresses.

In, or soon after, 1769, a new roof was constructed, and probably at the same time floors were added, and the lower nesting-holes blocked up. This left the upper storey as a 'dove loft', and the lower two storeys as rooms. The new (western) doorway and raised ground-floor surface were also added soon after this date.

It is not known exactly what the lower two floors of the structure were used for, but in 1894 a turret clock was inserted and doves prevented from entering the structure through the cupola, such that it essentially became a clock / bell tower.

Appendix III: Pot Report

Pottery from Breakspear Dovecote, Hillingdon (Site BZH09)

Paul Blinkhorn

The pottery assemblage comprised 19 sherds with a total weight of 2406g. It was recorded using the fabric codes of the Museum of London post-Roman type-series (Vince 1985), as follows:

CHINA: 'Ironstone' china, 1800 - 1900. 4 sherds, 36g.
CHPO: Chinese porcelain, 1580 - 1900. 1 sherd, 13g.
PMR: Post-medieval redware, 1580 - 1900. 14 sherds, 2357g.

The pottery occurrence by number and weight of sherds per context by fabric type is shown in Table 1. Each date should be regarded as a *terminus post quem*. The ware types are all common in the region.

The bulk of the assemblage comprised a broken but partly-complete PMR pancheon from context 88, which was the only pottery from that deposit. Such vessels are a typical product of the tradition, and could date to anytime within the lifespan of the industry. The other fabric types comprised fragments of tablewares, which is again very typical of the traditions in question.

Table 1: Pottery occurrence by number and weight (in g) of sherds per context by fabric type

Cntxt	PMR		CHPO		CHINA		Date
	No	Wt	No	Wt	No	Wt	
81	1	56					L16thC
82					1	18	19thC
84					2	10	19thC
87			1	13	1	8	19thC
88	13	2301					L16thC
Total	14	2357	1	13	4	36	

Bibliography

Vince, AG, 1985, The Saxon and Medieval Pottery of London: A review, *Medieval Archaeology* **29**, 25-93

Appendix IV: Glass report

The Glass from Breakspear Dovecote, BZH09

Dr Hugh Willmott, Sheffield University

A reasonably large assemblage glass was recovered from the excavations at Breakspear House, and this is summarised below. The vast majority of the glass consists of wine bottle fragments, and given the type of contexts they were found in, it appears that the glass was deliberately used either 'hard core' in wall blockings or to aid drainage within a gully. Both were common uses for broken wine bottles after they had gone out of primary use. Indeed this explains why so few thinner body fragments are present in the assemblage, as presumably only the more substantial bases and necks were retained. Consequently the glass only provides a *terminus post quem*, and the features they are associated may have been constructed many years after the typological date of the actual vessels.

Context [81]

2 undiagnostic wine bottle

Context [82]

Multiple window glass

Late 18th-19th century

Context [83]

1 wine bottle neck

Mid-late 18th century

2 window glass

19th century

Context [84]

8 undiagnostic wine bottle

2 wine bottle rims

Mid-late 18th century

1 wine bottle base

Mid-late 18th century

1 neck from a mineral water or imported wine bottle

Mid-late 18th century

4 window glass

Late 17th-18th century

Context [85]

2 wine bottle bases

19th century

Context [86]

9 wine bottle neck

Mid-late 18th century

11 wine bottle bases

Mid-late 18th century

1 square case bottle base

18th century

Context [87]

1 undiagnostic wine bottle.

1 wine bottle rim

Late 18th-early 19th

century

2 wine bottle bases

Late 18th-early 19th

century

Context [88]

9 wine bottle necks

Mid-late 18th century

8 wine bottle bases

Mid-late 18th century

Appendix V: CBM Report – Finds (Susan Pringle)

Context	ID	Period	Fabric	Form	Count	Weight	L	B	T	Condition	Comments	Date
87	Infill below West door (?drain)	PM	3033V	Brick	1	2143	233	110	56	M, A	Length = 230-235mm. Rounded arrises; mortar on bedfaces.	1450-1700
87	Infill below West door (?drain)	PM	3033V	Brick	1	1578	225+	116	47	A, M	Indented margin, rounded arrises; creasing on sanded surfaces.	1450-1700
87	Infill below West door (?drain)	PM	3033V	Brick	1	2205	225	105	54	V, A	Vitrified ?mortar on both headers. Top very abraded an pitted; base has wear abrasion. Fanric highly fired but probably 3033V. Arrises fairly sharp; sanded faces uncreased.	1600-1800
87	Infill below West door (?drain)	PM	3033	Brick	1	1655	150+	115	60	M	Only light creasing on sanded surfaces. May be fabric 3033V Fairly regular shape.	1550-1800
87	Infill below West door (?drain)	PM	3032?	Brick	1	1804	175+	180+	36	M, A	Large flat brick or pavioir. Sharp arrises, fine moulding sand. Blob of mortar only. Top could be worn. Rather nondescript fine sandy fabric, overfired.	1600-1800

86	In front of drain hole in blocked E door	PM	3033	Brick	1	2529	214	105	62	Rd, H	1650-1800	1 stretcher face overfired and cracked. Sharp arrises, smooth faces. Prob 18th c. brick. Red fabric with well-sorted fine to medium quartz.
81	Outside blocked E doorway	PM	2276	Drainpipe	2	166	0	0	8		1650-1850	Fabric near MoL 2276. Wall thickness 7-8mm. 'Female' type flange - fragments fit 'male' flange in same context.
81	Outside blocked E doorway	PM	2586	Peg-tile	1	452	132+	163	15	M	1450-1700	Top part peg, asymmetrical nail holes c. 12-13mm diameter. Back of tile (sanded face) fairly creased. Unusual 'negative' impressions above nail-holes. Keep. Trace mortar on back`
81	Outside blocked E doorway	PM	2276	Drainpipe	1	100	0	0	6	S	1650-1850	Flanged collared pipe, 'male' type flange. Thin-walled. Sooting - may be water stain. Wheel-thrown. Fabric near MoL 2276.
86	Infill inside blocked E doorway	PM	2271?	Peg-tile	1	280	117+	160	12		1180-1800	2 round nail holes c.13-14mm diameter. Smoothed band down each side of tile. Could be med or post-med. Silty version of fabric, ID not secure.

86	Infill inside blocked E doorway	PM	2586	Roof tile	1	177	0	0	16	M	Fragment with mortared base.	1550-1800
89	Drain, SW corner fill	PM	3033V	Brick	1	843	101+	105	52+	A	Upper surface has flaked off - base worn. Orange red fabric, nr 3033V but less quartz	1450-1700
88	'Drain' fill, NW corner	PM	3033	Brick	1	1424	155+	110	54	M, A	Fairly sharp arrises. Mortar on bedfaces and broken edge. Wear abrasion on base. Later version of fabric - 17th c? Header and stretchers relatively uncreased.	1550-1700
88	'Drain' fill, NW corner	PM	3033	Brick	1	1343	145+	112	50	Rd, M, A	Rounded arrises, but brick is abraded and reduced on 1 bedface. Later version of 3033?	1550-1700
88	'Drain' fill, NW corner	PM	3033	Brick	1	769	105+	112	50	A	Uncreased headers; bedfaces worn	1550-1700

88	'Drain' fill, NW corner	PM	3033	Brick	1	1057	127+	109	55	M, A	Top abraded, but possible area of indented border.	1550-1700
88	'Drain' fill, NW corner	PM	3032	Brick	1	1173	120+	104	58	V, M	Sharp arrises, header vitrified - possibly deliberately. Striations on top surface. Fabric is very similar to later 3033, but harder fired.	1650-1800

Appendix VI: CBM Report – Samples (Susan Pringle)

Sample Number	ID	Period	Fabric	Form	Count	Weight	L	B	T	Condition	Comments	Date
1	Brick samples from SW corner of brick floor	PM	3032?	Brick	1	2317	215	105	55	V, M, A, Ru	Sharp arrises. Upper surface striated; light creasing on sanded faces. Vitrified mortar on one stretcher and part upper face. Wear abrasion on base. Re-used in floor.	1650-1800
2	Brick samples from SW corner of brick floor	PM	Vitrified	Brick	2	2318	222	100	54	V, M, A, Ru	Conjoin. Sharp arrises. Striated upper surface, wear abraded. Vitrified mortar on headers. Re-used in floor. Fabric vitrified, with common black (reduced) pellets of silt/clay.	1650-1800
3	1st floor, N side, 2nd phase	PM	3033	Brick	1	2268	231	104	56	M	sharp arrises, creased sanded faces. Indented margins. Mortar on upper face.	1600-1700
4	1st floor, N side, 2nd phase	PM	3033	Brick	1	2317	225	106	54	M	sharp arrises, striated top with very small indented margin. Sanded faces moderately creased. Lime mortar on base.	1600-1700
5	Brick sample, dentil course	PM	3033	Brick	2	846	95+	110	54		conjoin. Fairly sharp arrises; light creasing on sanded surfaces	1550-1700

6	Brick samples, ground floor, 'floor-raising' plinths	PM	?	Brick	1	2382	228	110	65	M, A	60-65mm thick. Stamped frog, 'JJ*' in base. Mortar on 1 stretcher and top. Tar/pitch layer on header. Top wear-abraded - pavioir?	1800-1900
7	Brick samples, ground floor, 'floor-raising' plinths	PM	?	Brick	1	2351	231	105	65	Rd, M	60-65mm thick. Stamped frog, 'JJ*' in base. Mortar on 1 stretcher and top. Tar/pitch layer on header. Top reduced and wear-abraded . Overfired.	1800-1900
8	Brick sample from below W doorway	PM	3033V	Brick	1	2059	225	113	54		Indented margin; sanded faces lightly creased. Top has striations and two finger marks	1450-1700
9	Drain at base of blocked E door	PM	2276	Drainpipe	5	1529	0	0	16	M	Some conjoin. External iam = c. 150+mm, probably 6 inches. No ends. Wheel-made; lengthwise smoothing marks on exterior.	1650-1850?
10	Tile from S wall, ground floor (part of tile course)	PM	2586	Peg tile	7	1391	260	180	16	M	Conjoin. 1 round nail hole and part second, set asymmetrically. Fine sandy mortar on base.	1450-1750

I1	Bricks below blocked door, E wall	PM	3033V	Brick	1	2293	228	110	55	A, M	Fairly sharp arrises; lightly creased stretchers. Upper surface pitted and abraded, though finger-tip impressions can still be seen. Lower face has wear-abrasion - used as flooring/paving	1550-1800
I2	Bricks below blocked door, E wall	PM	3033V	Brick	1	2266	228	109	54	M, A, Rd	Fairly sharp arrises; light creasing on stretchers. Striated top surfaces - also slight inented border. Fine sandy mortar on top surface. Wear abrasion on base - used as paviour	1600-1700
I3	1st floor, horizontal over blocked holes	PM	2586	Peg tile	1	1435	265	180	16	M	Nail-holes are round to polygonal, c.13mm diameter, positioned asymmetrically. No indication of re-use.	1450-1750

Appendix VII: Dendrochronology Summary

Extracts from ‘The Dovecote, Breakspear House, Breakspear Road North, Harefield, Hillingdon, London – Tree-Ring Analysis of Timbers, Scientific Dating Report’, by Alison Arnold and Robert Howard, 2011:

It was only in the roof that a sufficient number of oak timbers could be found, the majority of these being common rafters which, although of slightly small scantling, appeared to have sufficient rings. In addition to the common rafters there were four slightly larger rafters, though hardly principals, at the corners of each pitch of the roof, along with plates to the top of each of the four walls. These last two sets of timbers, however, again appeared to be derived from fast grown timbers and to be generally unsuitable for tree-ring analysis, thus sampling focussed predominantly on the common rafters.

Thus, from the timbers available a total of 11 oak samples were obtained by coring. Each sample was given the code HDF-C (for Harefield, site C) and numbered 01-11.

Table 1: Details of tree-ring samples from The Dovecote, Breakspear House, Harefield, Hillingdon, London

Sample number	Sample location	Total rings	Sapwood rings*	First measured ring date AD	Last heartwood ring date AD	Last measured ring date AD
HFD-C01	North pitch, rafter 7 (from east)	75	21C	1695	1748	1769
HFD-C02	South pitch, rafter 4 (from east)	63	20C	1707	1749	1769
HFD-C03	South pitch, rafter 7	63	12c	1702	1752	1764
HFD-C04	South pitch, rafter 8	65	20C	1705	1749	1769
HFD-C05	South east principal rafter	87	2	-----	-----	-----
HFD-C06	East pitch, rafter 9 (from north)	66	15C	1704	1754	1769
HFD-C07	East pitch, rafter 8	66	19C	1704	1750	1769
HFD-C08	West pitch, rafter 5 (from north)	63	8c	1702	1756	1764
HFD-C09	West pitch, rafter 7	68	17C	1702	1752	1769
HFD-C10	West pitch, rafter 8	66	12C	1704	1757	1769
HFD-C11	South wall plate	nm	---	-----	-----	-----

nm = sample not measured

c = complete sapwood is found on the timber, but all or part has been lost from the sample in coring

C = complete sapwood is retained on the sample; the last measured ring date is the felling date of the tree represented

Analysis by dendrochronology of 10 measured samples from this building has produced a single site chronology comprising nine samples, its 75 rings dated as spanning the years AD 1695 – 1769. As may be seen from Table 1, all but two of these nine samples, HFD-C03 and C08, retain complete sapwood (the last ring produced by the tree from which the beam has been derived before it was cut down), this being indicated by upper case 'C' in Table 1. In every case, judging by the development of large amounts of summer cell growth for this last year and the lack of any spring cell growth for the following year, the condition of this last, complete, sapwood ring indicates that the trees represented were felled between the late summer of AD 1769 and the spring of AD 1770.

The two other dated samples in this site chronology, HFD-C03 and C08, come from timbers which do have complete sapwood on them. Small amounts of the sapwood, however, have been lost from these samples in coring, this due to the soft and fragile nature of this part of the wood (this is indicated by lower case 'c' in Table 1). The average date of the boundary on these two samples is AD 1754. Using a 95% confidence limit of 15-40 rings for the amount of sapwood these trees might have had would give the timbers represented an estimated felling date in the range AD 1769-94. It may be seen that this estimated range brackets the known felling date of seven other timbers suggesting the two timbers in question could have been felled at a very similar, if not identical, time.

It will of course be seen from Table 1 that all the dated timbers are solely common rafters, and it is thus possible that other beams, principal rafters, wall plates, etc, are of a different date. It would perhaps be necessary to undertake a survey of the roof to address whether it is entirely of a single phase of construction, or if older timbers have been reused, or more recent timbers inserted. The undated principal rafter, for example (HFD-C05), provides the sample with the longest ring sequence from the site and is also the fastest grown. This could be taken as some indication that the timber was sourced from a different woodland, and thus could possibly be of a different date. Tree-ring dating of timbers from the main house to the early-17th Century, the late-17th Century, and possibly to the early-18th Century, show that timbers of different dates can be found in the same building.

Apart from dating the timbers, it may be of interest to note that the intra-site cross-matching of the samples of site chronology HFDCSQ01, is such as to suggest that the timbers represented have been derived from a single woodland source, a number of samples cross-matching with each other with values in excess of $t=9.0$. Indeed, the level of cross-matching between some samples, HFD-C01, C07, and C09, or between HFD-C02, C08, and C10 for example, where values in excess of $t=10$, $t=11.0$, and $t=12.0$ are seen, is sufficiently high as to suggest the possibility that the two or more timbers are derived from the same tree. Such an interpretation is supported by the probability that many of the common rafters appear to be quarter-trees.

Where this source woodland was cannot be identified precisely by dendrochronology. However, the majority of better cross-matches tend to be with reference chronologies from north of London and this could be taken as evidence of a possible general source area. In respect of this, the London composite reference chronology is relatively poorly replicated in its latter years, i.e the time relevant to the dovecote. The data obtained from the dovecote and Breakspear House samples are thus welcome additions to the relatively scarce late-17th and 18th Century London dataset.

Potential for further dendrochronology:

This historic building survey has uncovered other pieces of timber which it might be useful to date using dendrochronology in order to gain a greater understanding of the phasing and dating of the structure.

These include:

- The piece of timber found within the northern wall, first floor, just above the rebuild line.
- The timber lintel above the southern window.
- The timber lintel above the blocked-in eastern doorway.
- The timbers running around the top of the dovecote (thought to have been part of the earlier roof structure).
- The original floorboards and / or joists (both first and second floor).
- Timber from the wooden 'chamber' surrounding the ladder on the first floor (uprights and planking).