St Bartholomew's Priory Barn
Sudbury
Suffolk

Historic Building Recording, Burnt Remains Analysis and Archaeological Evaluation Report

Client: Mr and Mrs F May
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St Bartholomew's Priory Barn, Sudbury, Suffolk

*Historic Building Recording, Burnt Remains Analysis*

*and Archaeological Evaluation*

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Summary

In November and December 2011, Oxford Archaeology East conducted an historic building survey and archaeological evaluation at the site of a Grade II listed former barn associated with St Bartholomew's Priory in Sudbury, Suffolk. The barn had been almost entirely destroyed by fire in January of the same year and a record of the remaining structure together with an evaluation of any below-ground remains was necessary in order for de-listing of the building and to allow for decisions regarding the future uses and treatment of the site to be made by the relevant local authorities and English Heritage. As part of the work, an investigation of the cause and analysis of the spread of the fire was required. This work was carried out by Dr Karl Harrison of Cranfield University.

St Bartholomew's Priory consists of the barn, a chapel and a farmhouse. The former thatched barn, with oak beams, is believed to have dated to the 14th century with later 17th century alterations.

All work was carried out in response to a Brief issued by Suffolk County Council's Archaeological Service Conservation Team. The Brief required that a survey (equivalent to an English Heritage Level 3 Survey) was carried out on the surviving building prior to demolition and an evaluation comprising the excavation of three trenches though the floor and immediately outside of the building was undertaken.

The building survey revealed the survival of several phases of repair and alteration to the brick plinth and a full photographic record of the site including a post-fire rectified aerial image was created.

The evaluation revealed a cluster of inter-cutting prehistoric quarry pits and undated ditches surviving beneath the floor of the barn. These ditches are quite substantial and may represent the re-stating of a significant boundary over time. The lack of material culture may suggest they date to a period when occupation was not close by, but this could still relate to an earlier definition and division of space associated with the medieval priory, prior to the barn's construction. The trenches outside on the northern side of the barn revealed a brick-lined well, chalk-packed post-holes in addition to a flint wall and demolition layers thought to be associated with the cowsheds previously in this location which were removed within the last 10 years.
1 INTRODUCTION

1.1 Scope and aims of work
1.1.1 An historic building survey and archaeological evaluation was conducted on a barn which was almost entirely destroyed by fire in January 2011. The barn was Grade II Listed and sat within the grounds of a chapel and farmhouse which together comprised St Bartholomew's Priory (Plate 1).

1.1.2 The work was undertaken in accordance with a Brief issued by Suffolk County Council's Archaeology Service (Tipper 2011) and supplemented by Specifications prepared by OA East (Fletcher 2011).

1.1.3 The work was designed to adequately record the structure in its current state to assist in the consideration of future treatment and management of the site and to assess the survival of any earlier or associated remains within the footprint of the barn.

1.1.4 The Brief also required analysis of the remains relating to observed fire dynamics. This was undertaken by Dr Karl Harrison of Cranfield University, the results of which are included in Appendix D.

1.1.5 The site archive is currently held by OA East and will be deposited with Suffolk County Council Archaeology Service in due course.

1.2 Location
1.2.1 Sudbury is a small market town located on the River Stour on the Suffolk/Essex border, 15 miles (24km) from Colchester and 60 miles (97km) from London (Figure 1).

1.2.2 The site of St Bartholomew's Priory lies on the north side of Sudbury in the Babergh district of South Suffolk, within a modern housing estate. It is bound on the north side by the A134 and is currently accessed from Clermont Avenue (Figure 1).

1.2.3 The barn which is the focus of this report is positioned on the east side of the group of associated buildings, directly opposite the farmhouse and orientated north-east to south-west (Figure 2).

1.3 Acknowledgements
1.3.1 The author would like to thank Mr and Mrs May and John Popham for commissioning the work and James Blackie of Tricker Blackie Associates for supplying the architects plans and elevations. Thanks also to staff at Suffolk Records Office in Bury St Edmunds for assistance with locating the original documents and to Anthony Breen for his kind permission to reproduce the historical background. The author carried out the building survey assisted by Lindsey Kemp and James Fairbairn. The archaeological evaluation was directed by the author assisted by David Brown, Lindsey Kemp and Michael Webster. The trenches were expertly excavated by Nick Richardson of LOC Plant Hire. The fire analysis work was carried out by Dr Karl Harrison of Cranfield University, the project was managed by Dr Paul Sperry and the site work was monitored by Jess Tipper of Suffolk County Council's Archaeology Service.
2 HISTORICAL BACKGROUND

2.1 General Background

2.1.1 St Bartholomew’s Priory is believed to have been the only complete priory in the whole of the county, consisting of the barn (Plate 2), the chapel (Plate 3) and the house (Plate 4). The thatched barn, with oak beams, dated back to the 14th century with later 17th century alterations.

2.1.2 The history of the priory is patchy and is largely gleaned from the surviving charters in Westminster Abbey. The priory was founded in c.1116 as a cell of Westminster Abbey. The priory was an extra parochial house (i.e. it was outside of any ecclesiastical parish). St Bartholomew's was founded by Wulfric (a moneyer of Sudbury) in return for fraternity and admission as a monk (Mortimer 1996).

2.1.3 The priory was damaged by fire in the early 13th century as the abbot of Westminster offered fraternity to those who contributed to its repair (Mortimer 1996). Charter 130 dated to the late 14th century, provides a comprehensive inventory of the chattels and goods belonging to the priory. The priory buildings consisted of the chapel, a hall, chamber, kitchen larder, bakehouse and barn. The chapel and barn were the only 14th century buildings still standing in January of this year.

2.1.4 Charter 44, dated to 1323, refers to “two pieces of land called Feirelond, 14 acres, before the west gate of the cell to the left and right” (Mortimer 1996). The Feirelond referred to in this charter may relate to Great and Little Fair fields located on either side of St Bartholomew’s Lane. Access to the priory was via this lane and possibly through a gate. This may have been a simple structure and it is possible that the boundary of the precinct was not defined by a wall (Breen 2001) or vallum.

2.1.5 In 1349, 80 acres were conveyed upon the priory by Nigel Thebauld, a gift known as the Thebauld Chantry (Mortimer 1996). It is likely that this led to an expansion of the priory and may explain the 14th century dates for the chapel (Plate 2) and barn (Plate 3). By 1536 the monastic life of the priory appears to have ended as the whole site was leased to William Butt, physician to Henry VIII (Mortimer 1996); the first in a series of leases that continued down to the 19th century.

2.1.6 It is likely that the current farmhouse (Plate 4) was built in the 16th century, at the time of the first leases on the priory, although it has seen numerous alterations and additions since then. There is little evidence for the priory chapel continuing in use for worship. Indeed surveys carried out in 1765 and 1802 indicate that the chapel was being used as a barn (Breen 2001). The only evidence for the religious use of the chapel after the 16th century is the record of a service and baptism carried out in 1815. The requirement, from 1538, for all parishes in England and Wales to maintain (and preserve) a record of baptisms, burials and marriages indicates that the chapel was not used for such services, the recorded baptism being a unique event in the post-medieval history of the priory.

2.2 Documentary Evidence and Research

Parts of this section have been taken from a desk-based assessment carried out on behalf of the client in 2001 (Breen 2001). With the kind permission of the author, relevant sections of the report have been reproduced below with specific detail relating to the barn added by the author:
**Introduction**

2.2.1 Documentary research was carried out at the Suffolk Records Offices in Ipswich and in Bury St Edmunds. Additional research was carried out by Anthony Breen at Westminster Abbey's muniment room and at Lambeth Palace Library. Medieval records of the priory have been published by Dr Richard Mortimer (Mortimer 1996) and no pre-Reformation records were examined.

2.2.2 From the 16th century through to the middle of the last century, the site was let out on a series of 21 year leases. Some of the clauses in the leases suggest that it would be unlikely that any tenant would be able to demolish buildings on the site without prior permission of the dean and chapter. The surveys, together with the chapter records, strongly suggest that no significant building work occurred in the post-medieval period. The suggestion in some published sources that the priory was pulled down in 1779 appears to be unlikely.

2.2.3 The Westminster Abbeys records also include a 16th century survey and three 18th century surveys of the farm, unfortunately only one map dated 1802 has survived. This map gives the field names for the lands surrounding the site but provides little detail of the associated priory buildings. There is reference in published sources to an earlier map dated 1656, which has not been located. Apart from the main buildings of the priory, there are references to only two other structures; a west gate and a dove house.

**Historic Maps**

2.2.4 St Bartholomew's Priory was extra parochial, that is outside of any ecclesiastical parish. It was also outside of the borough of Sudbury. The outline of the extra parochial area is shown on the 1:10560 Ordnance Survey Map published in 1905 (not illustrated) and the boundaries are unchanged in later editions of the map.

2.2.5 A map of Long Melford dated 1580 (not illustrated) shows the location of the building in relation to lands in Long Melford but none of the fields are named and the buildings are not mapped in detail.

2.2.6 The earliest map of Sudbury dated 1715 (not illustrated) shows the site of Woodhall (a manor to the immediate east), but omits St Bartholomew's.

2.2.7 The earliest map to show the area in detail is that held at Westminster (Figure 3) and dated 1802. All of the surrounding fields belonging to the priory are numbered and listed with a schedule and total acreage of 180s 2r 14p. Although not accurately to scale, the map does show a group of buildings which, from their layout and orientation the presence of the chapel, priory and barn can be identified. The barn (the L-shaped range) appears to have had another wing or longer building attached on the north-west corner. This map also shows other buildings which are no longer present including a range flanking the southern side of the complex and another small building to the south of that.

2.2.8 The Tithe Map for Sudbury dated 1843 (Saint Gregory and St Peters) (Figure 4) depicts the location of the priory precinct, but is not detailed enough to show any specific buildings or comment on their presence or absence. It does show a number of fields belonging to St Bartholomew's and a north-south orientated road (presumably St Bartholomew's Lane) leading to the precinct. The fields directly surrounding the precinct are unmapped, this is presumably because they were untithed lands unlike those outside which were rented (source 1841 sale catalogue).
2.2.9 On the larger scale maps (1:2500 Editions), the precinct covers two maps; 72.II and 72.15. Unfortunately, the lower part of the 1st Edition Map of 1886 (72.15) was missing from the collection at Bury St Edmunds, and only the upper part was available for inspection (Figure 5). This map shows little detail of the barn, other than what must have been a protruding wing on the north-eastern end of the building. The chapel is labelled as is the area which includes the barn as “Bartholomew's Farm”. Dotted lines denote paths, perhaps formal gardens between the chapel and the priory building/farmhouse.

2.2.10 The first accurate and detailed map located which represents the buildings is the 2nd Edition Ordnance Survey Map dated 1904 (Figure 6). This map shows the outline of the current barn, however there are additions and an extension on the north-west side. The north-west “wing” appears continuous as opposed to an additional or separate building. Spanning the entire north-west side of the barn there appears to be a shelter (denoted by the broken/dashed line), perhaps open-fronted and in the corner a “P” denotes the location of a pump. On the north-eastern side of the barn are a series of smaller buildings or shelters and on the south-western side is another range parallel and connected to the barn, perhaps for storage with two sub-divided walled (?) areas. The site is clearly labelled Bartholomew's Farm and the chapel is also labelled with a driveway/track leading between it and the priory for carriages to turn around.

2.2.11 The next available map is the 1926 Edition Ordnance Survey Map (Figure 7). This map shows little change to the site in the 22 years since the previous map. The two previously subdivided areas on the south-east side have been divided into four smaller areas and two additional buildings have been added. On the north-west side of the pump a small square building has been erected and another building has been added onto the south-east corner of the barn.

2.2.12 By the time of the 1938 Ordnance Survey Map (Figure 8) there appears to be little in the way of major change to the barn or associated structures. Although this map is less detailed due to its scale the basic layout and arrangement appears to be the same.

2.2.13 The site appears unaltered by the time of the 1964 Ordnance Survey Map (viewed at www.old-maps.co.uk, not illustrated) with all elements noted on the previous map still present.

2.2.14 The only significant change to the surrounding area occurs sometime between 1982 and 1993 when the A134 was constructed to the immediate north of the site. By 1993 there have been some minor alterations to the barn including an extension added on the south-west corner extending towards the priory farmhouse. Some of the smaller buildings have been removed including the detached range to the south-west and the pump is no longer shown. The current modern housing estate has started to encroach on the south side of the precinct, although Clermont Avenue and the surrounding houses were not built until the early 2000s.

Other Evidence

2.2.15 A Sale Catalogue for St Bartholomew's Priory Farm held in the Bury St Edmunds Records Office (Figure 9a-9b) described the site as a “remarkably fine farm” and “chiefly tithe free”. It lists all of the names of the fields and their acreage: “comprising 207 acres, 1 rood, 2 poles, of very first rate. Arable and luxuriant meadow land, with suitable farmhouse and excellent agricultural buildings”. Unfortunately it does not provide a description of the buildings or their contents.
2.2.16 Other documents held at Bury St Edmunds relating to the site are a bundle of papers relating to a mortgage raised on the property by Willing Weybrew dated 1857-1867 (SRO ref HD1701/2). These include various schedules of land which are the same as on the sale particulars of 1841. There is no specific mention of the barn or other buildings to assist in this survey.

2.2.17 There are four illustrations of the priory. An external view of the farmhouse can be found pasted into a copy of Augustine Page’s “History of Suffolk” held in the Ipswich Records Office (ref HD401/4), and a pen and ink external view of the chapel is included in William Fitch's “Suffolk Illustrations” (also in Ipswich Records Office, ref. HD480/26). Neither of these were sought for this phase of work as they are unlikely to represent the barn. An interior view of the chapel is published in the Proceeding of the Suffolk Institute in 1891 and a view of the chapel and farmhouse from the north by J. Hawksworth appears on the Sale Particulars of the site dated 1841 (Figure 10); (Bury St Edmunds Record Office ref. EE501/6/183).

2.2.18 A photograph, thought to date to c.1900 is available to view on a local history website (www.sudburysuffolk.co.uk/photoarchive) (Figure 11). This image shows the chapel and farmhouse before they fell into their current state of disrepair. It also shows the path/trackway which leads from the site entrance from Bartholomew's Lane to the south as represented on the earlier Ordnance Survey Maps.

2.2.19 The earliest photographic representation of the barn comes from an undated black and white photograph published in B. Wall's “Sudbury: History and Guide” (Wall 2004) (Figure 12). Taken from the south-east this image shows the two sets of barn doors known to have been in existence and use prior to the fire in January 2011. The absence of any additions or walls on this side of the building as represented in earlier maps would date this photograph sometime after 1964.

2.2.20 The first published history of the priory is in W.W. Hodsons article in the 'Proceedings of the Suffolk Institute', 1891. He states that the priory was surrendered to the crown in 1539/40, but returned to the abbey in 1543. He mentions that the priory was pulled down in 1779. He also describes an old map entitled “A Description of St Bartholomew's Priory with the lands belonging thereunto lyeing heare Sudbury in the County of Suffolk” dated 1656 by John Coffyn. Unfortunately there is no mention of the location of this map. The fields included “Dove House Field” and appear to be the same as in the map of 1802. He also mentions that “several cottages and gardens (now pulled down) are shown” and the “scit of the house with yards and gardens are stated to contain 14 acres 1 rood”. Hodson takes time to describe the structure of the chapel and the sizeable farm, but makes no mention or description of other buildings on this site including the barn.

2.2.21 In William White's 'Directory of Suffolk' published in 1844, he states that the priory was pulled down in 1779, however this detail is omitted from Page's “The Supplement to the Suffolk Traveller” also published in 1844. Alan Berry in his works “Eighteenth Century Sudbury” published in 1992, names Bartholomew Norden as the farmer who succeeded his father Thomas at St Bartholomew's in 1788, but makes no mention of the demolition of any of the buildings at the farm in 1779.

2.2.22 In B. Wall's 'Sudbury : History and Guide' (Wall 2004), he states that previous accounts have assumed the priory was pulled down in 1779, however recent investigations indicate that substantial parts have survived beneath the present farmhouse. He also describes the barn (and includes the photograph used in Figure 12) as a “magnificent
timber-framed and weather-boarded barn dated to the 14th century" with "six bays with two wagon entrances on the south side and the roof is thatched with Norfolk reed".

Discussion

2.2.23 There were various phases of development within this site. The original buildings would have been erected when the cell was established in the early 12th century. These were either destroyed by fire or demolished sometime in the earlier 13th century. There are no surviving structures from this earliest period. According to the listed building records the two medieval structures are the chapel dating from the 15th century and the barn dating to the 14th (as confirmed by Philip Aitkens' internal examination of the barn's roof structure (Aitkens 1989). Dr Mortimer (1996) suggests an earlier date for both structures. It is possible that the present farmhouse may date from the medieval pre-Reformation period.

2.2.24 The extra parochial status of the site together with the distance from Westminster also suggests that monks and possibly their living-in servants were buried at St Bartholomew's. The west gate mentioned in 1323 may have been a simple structure and the boundaries of the precinct may have not been defined by any wall.

2.2.25 In general, the site appears to have been much the same as any other major agricultural holding of the period with the addition of a chapel and small burial ground.
3 **ARCHAEOLOGICAL BACKGROUND**

3.1 **Prehistoric**
3.1.1 A prehistoric presence in the vicinity of the site is suggested by the recovery of a number of stray finds. A Neolithic polished stone axe was recovered to the south-west of the development area (SMR 05724). An Iron Age gold stater of Catuvelauni (40-20 BC) was found to the west of the site (SMR 05726). A further gold stater of similar date was found to the north-west of the site (SMR 05896).
3.1.2 A finds scatter of worked flint (LMD 152) comprising five flint implements including a leaf-shaped arrowhead, were found whilst metal detecting in the vicinity of the site and recorded on the Portable Antiquities Database.
3.1.3 Another flint scatter was also recovered within a 500m radius of the site (SUY056).

3.2 **Roman**
3.2.1 Several finds indicating a Roman presence are recorded in the vicinity of the priory. Long Melford, to the north-west of the site, was an important road junction and a considerable Romano-British settlement is believed to lie beneath the village (Wall 1984). At Rodbridge, 1.5km to the north-west of the site, and at the possible location of a Roman ford across the River Stour, a substantial scatter of Roman finds was recorded (SMR 05882). Cropmarks approximately 1km north of the site record the presence of a winged building, probably a villa (SMR 05895).

3.3 **Saxon**
3.3.1 Sudbury was founded as a Saxon settlement occupying a natural defensive position on the River Stour (Wall 1984). St Gregory's Church in Sudbury was founded, probably as a Minster, c.780. The surviving church dates to the 14th century (SMR 12601). The only Saxon remains in the vicinity of the site were recorded at Rodbridge (SMR 05883) where the possible remains of an Anglo-Saxon hut and associated artefacts were recorded in the 1950s.

3.4 **Medieval**
3.4.1 In addition to St Bartholomew's Priory, a number of other medieval sites are known in the immediate vicinity. The site of St Leonards Hospital (SMR 05718) stood on the corner of St Bartholomew's Lane and the Sudbury to Long Melford Road (A131). This was founded as a leper hospital in 1272. The site of a further hospital is located at Wood Hall moated site to the immediate east of the priory. Field walking prior to the construction of the long Melford Bypass (A134) recovered quantities of medieval pottery (SMR 20170).

3.5 **Post-medieval**
3.5.1 In 2004 an evaluation consisting of 25 trenches totalling 1572m was carried out in four fields to the immediate west of the priory site (Wills 2004). Only ten trenches contained features that could be excavated, none of which were earlier than post-medieval in date.
3.5.2 Two post-medieval features of significance are located close to the site. The remains of Highfield Mill, a smock mill, are located to the immediate west (SMR 01549), the base
of which was converted into a house in 1927 and lime kilns were located to the south in a former chalk pit.

3.6 Undated
3.6.1 In 1993 nine lines of trial trenches were excavated as part of an assessment survey prior to construction of the Tesco supermarket approximately 350m to the north-east of the site (LMD 079). The only feature located and half sectioned was a small, shallow pit filled with charcoal. The clay subsoil at the edges of the pit was partially burnt. No finds were recovered.
4 Historic Building Survey

4.1 Methodology

4.1.1 The measured survey was carried to comply with standards and guidance set out by the IfA (2001) and was undertaken by an experienced buildings archaeologist. Scaled architect's drawings, supplied by the client's architects in drawn format, were used for field notes and were annotated and amended on site as necessary. These have been reproduced with the architect's permission for Figures 12, 13 and 14.

4.1.2 Photographic survey (equivalent to English Heritage Level 2) was carried out using a 35mm camera (monochrome and colour) with additional digital photographs using a high resolution Canon EOS 450D digital SLR camera. The location of the plates used in this report is shown on Figure 13.

4.1.3 A rectified photographic survey was also carried out. This involved placing targets on a 2m by 2m grid and taking high resolution vertical images which were "stitched" together using QGIS software. This creates a plan of the barn post-fire, prior to the intrusive evaluation work. The resolution of the image allows detail such as the location of thatch pins and other charred remains to be plotted and analysed at a future date if required. The results appear in Figure 16 supplemented by a DVD included with the report, which allows for a more detailed interrogation of the image.

4.1.4 Fire investigation and forensic analysis was carried out alongside the building survey. The full methodology, results and conclusions of which can be found in this report in Appendix D.

4.2 Conditions

4.2.1 At the time of the survey, only the brick plinth of the original barn remained in situ. The interior concrete floor also remained, however was substantially concealed by charred timbers and burnt thatch which had fallen directly from the roof above. The interior bays were marked by brick plinths which also survived and in places the charred sill beams remained.

4.2.2 Following the fire, it appears an attempt had been made, possibly by the fire brigade, to remove some of the upstanding remains which may have posed a risk to health and safety. Images taken soon after, which appeared in the local newspaper, clearly show significant upstanding concrete walls at the south-western end of the building. It has also become apparent that between the on site meetings soon after the fire and the start of the survey, some of the substantial charred timber frames may have been dragged away from the positions into which they had fallen during the fire. These interventions impacted on the spatial analysis of fallen materials which had hoped to be included in the rectified image.

4.2.3 Weather conditions were dry and cold with occasional bright sunshine.

4.3 Pre-fire Building Descriptions

4.3.1 Despite the devastating fire, the barn retains its Grade II* listed status (Listed Building Number 275914). The chapel is also Grade II* listed (Listed Building Number 275913) and the farmhouse is Grade II listed (Listed Building 361662), descriptions of which can be found in Appendix A. The listed building description for the barn is as follows:
“Barn. 14th century with 17th century alterations. Weatherboard over timber frame; hipped reed thatch roof. Aisled 6-bay plan with two threshing floors. Roof swept over two sets of 19th/20th century plank double doors breaking eaves line; hipped roof continued over additional cart bay to left. Interior: studded wall framing; reversed assembly to sill beams, curved bracing from sole plate to aisle post, passing braces from outer aisle posts to tie beam halved through jowled aisle tie beams and jowled aisle posts which are braced to tie beams; 17th century clasped-purlin roof. Noted as one of the finest medieval barns in Suffolk. Built for Westminster Abbey, who owned the grange from 1115 to 1538. (Aitkens' "Aisled Barns in Suffolk", Journal of the Historic Farm Buildings Group, Vol 3 (1989) pp 62-370).

4.3.2 A number of images which were taken prior to the fire were supplied by the clients agent, John Popham. These images along with hand-drawn plans and elevations created by the clients architect James Blackie (Figures 13 and 14) have been used to allow a basic description of the building prior to 2011 to be made in this section.

**Exterior**

4.3.3 The barn was constructed on a brick plinth with a timber-frame covered with horizontally laid weatherboard and a hipped roof, covered with Norfolk reed thatch (Plate 2).

4.3.4 On the south-east facing elevation there were two sets of double doors (Figure 13 and Figure 14, Plates 2 and 5). Both sets of doors had two-parts, allowing the top to be opened independently from the bottom (Plates 6 and 7) – a common feature in threshing barns where the top part would be opening during the threshing process to allow for light and ventilation whilst the bottom part remained closed to keep out rodents and wandering farm animals. Unfortunately the photographs supplied were not of a high enough resolution to allow for a more detailed inspection of the hinges and door fittings which are often easily datable.

4.3.5 There appears to have been a modern addition to the south-west facing elevation using breeze block (Figure 14; Plate 8) this seems to have been incorporated under a contemporary single-phase roof cover. The rear end of the earlier part of the barn was visible as part of the addition was open-fronted, perhaps for the storage of agricultural machinery or vehicles. Weatherboarding and lathe and plaster were exposed at the rear of the opening. On the left of the opening there was a door into this part of the barn – unfortunately the only record of this comes from the architect's drawings.

4.3.6 The ground level on the north-west side of the building is significantly lower at 58.25mOD, than the floor level recorded on the inside of the barn at 59.60mOD and the ground level continues to rise on the south-east side where, beyond the barn the ground level reaches 60.50mOD (Figure 23). The north-west facing elevation had two doors/openings (Figure 14; Plate 9). These doors were located above the brick plinth, within the weatherboard covering. The doors were both the same, two-part wooden stable style doors comprising vertically laid boards (Plate 10). Both doors were accessed from the outside by a set of wooden steps built into the external brick plinth (Plate 11).

4.3.7 The north-east facing side of the barn comprised just the weatherboarding and brick plinth (Figure 14; Plate 12). There was no access into/from the building on this elevation and, like the north-west side of the building, the ground level was lower. A change of brick in the plinth indicates more than one phase of construction/repair – which most likely relate to the additional elements/buildings as noted on the Ordnance Survey Maps (Figures 4 to 7).
**Interior**

4.3.8 This interior of the barn was entirely a timber-framed construction with six distinct, separate bays (Figure 13; Figure 15; Plate 13).

4.3.9 Obviously inspection was not made prior to the fire, nor is its description a required part of this survey, however, the following description of the interior was made by Philip Aitkens as part of the study of aised barns in Suffolk which he made for publication in 1989 (Aitkens 1989). The internal elevations and cross sections kindly supplied by the clients architect (Figure 15) supplement the description:

“This barn retains its integrity, and its beauty, to a greater degree than any other medieval barn in Suffolk, although its clapsed purlin roof is a replacement of about 1600. The bracing is remarkably complete; even many of the passing braces survive. The cross section illustrates what must have been a wide-spread design at that time; there are other similarly built barns all over the county.” “Reversed assembly remained in use for the aisle walls (aisled tie-beam beneath wallplate). A passing-brace rose from the aisle wall, past the arcade post and was tenoned into the main tie-beam. The other braces were of large cross section as is typical of this early period in Suffolk, but in all cases morticed and tenoned. The original roof appears to have been of the coupled-rafter type without the refinement of a crownpost system. Crownposts did not dominate late-medieval Suffolk to the same extent as they did in Essex, and crownpost-roofed barns are rare away from the Essex border. The jowled aisle tie-beam seen here was a fourteenth century introduction, but can occur much later”.

4.3.10 The floor was covered with concrete with a central depression running the length of the building (Plate 13).

4.4 **Post-Fire Exterior Descriptions**

Following the fire in early 2011, all that remained of the barn was the brick plinth and charred remains including a small number of *in-situ* timbers (Plate 14 and Figure 16). The following description was carried out during December 2011 and records the remains present at that time.

**South-east-facing elevation**

4.4.1 The south-east facing elevation comprised the surviving brick plinth which consisted of several phases of rebuild, infill and repair. The height of the surviving plinth on this side of the building was no greater than 0.70m and there were no surviving sill beams or timbers recorded on this side.

4.4.2 On the immediate southern side of the building were the remnants of a partially demolished concrete extension which corresponds with the open-fronted breeze block element of the building as seen in the pre-fire photographs (Plate 8). From the corner of the earlier brick-built barn, the building measured 30m in length. Along the length of this elevation a significant amount of repair, rebuild and infill has taken place during the building's history, with the creation of the two openings for the doors as noted in Plate 5.

4.4.3 The table below provides description and dimensions of the bricks used in each element on this elevation, from the southern corner to the northern end and the distance along the wall at which each section was recorded.
<table>
<thead>
<tr>
<th>Distance along elevation (m)</th>
<th>Description (bond, colour etc)</th>
<th>Average dimension (cm)</th>
<th>See Plate number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 1.90m</td>
<td>Mid orange coloured hand-made bricks with uneven surface and without pressure marks. English bond.</td>
<td>23 x 11 x 6.5</td>
<td>15</td>
</tr>
<tr>
<td>1.90-3.30</td>
<td>Mid orange coloured hand-made bricks with uneven surface and diagonal pressure marks. Some vitrified headers used. The top course comprised bull-nose bricks. Random bond throughout.</td>
<td>23 x 11 x 6.5</td>
<td>15</td>
</tr>
<tr>
<td>3.30-5.00</td>
<td>Red and orange coloured bricks used for infilling. Some thin bricks noted 22cm x 5cm. Capping bricks on top of plinth removed to reveal a white, gritty mortar.</td>
<td>23 x 11 x 6</td>
<td>15</td>
</tr>
<tr>
<td>5.00-9.00</td>
<td>Mid orange coloured hand made bricks, no obvious bond. Patches of repair using smaller bricks with average dimensions 23cm x 10.5cm x 5cm.</td>
<td>23 x 11 x 6.5</td>
<td>15</td>
</tr>
<tr>
<td>9.00-10.70</td>
<td>Dark pink and orange coloured bricks and several vitrified headers. Laid in a Flemish bond. Bricks were frogged - 19th/20th century in date.</td>
<td>23 x 10.5 x 7</td>
<td>15</td>
</tr>
<tr>
<td>10.70 – 14.30</td>
<td>Opening for barn door</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14.30-15.10</td>
<td>Dark pink and orange coloured bricks and several vitrified headers. Laid in a random bond. 0.45m of plinth left upstanding at this point.</td>
<td>23 x 11 x 6.5</td>
<td></td>
</tr>
<tr>
<td>15.10-18.00</td>
<td>Reused bricks of various dimensions, all mid-orange in colour. No pressure marks and laid in a random bond. Charred wall-plate on top. Height of plinth 0.60m.</td>
<td>Various</td>
<td></td>
</tr>
<tr>
<td>18.00-19.75</td>
<td>Mid orange coloured hand-made bricks with uneven surface and without pressure marks. English bond. Top capped with headers of different bricks with average dimensions of 22cm x 10cm x 5cm.</td>
<td>23 x 11 x 6</td>
<td>16</td>
</tr>
<tr>
<td>19.75-20.80</td>
<td>Pale or buff coloured bricks with diagonal pressure marks laid in a header bond.</td>
<td>22.5 x 12 x 5</td>
<td>16</td>
</tr>
<tr>
<td>20.80-24.20</td>
<td>Opening for barn door</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>24.20-25.40</td>
<td>Bricks of various dimensions used to in-fill/rebuild. Two courses of peg-roof tiles on top (each with two holes).</td>
<td>Various</td>
<td></td>
</tr>
<tr>
<td>25.40-27.00</td>
<td>Thin, orange coloured hand-made bricks with two courses of tiles on top with a bright, gritty mortar.</td>
<td>22.5 x 10 x 5</td>
<td></td>
</tr>
<tr>
<td>27.00-30.00</td>
<td>Mid orange coloured hand-made bricks with uneven surface laid in a Flemish bond.</td>
<td>23 x 10 x 6</td>
<td>17</td>
</tr>
</tbody>
</table>

**South-west-facing elevation**

4.4.4 This part of the structure had been the most damaged following the fire as it appeared that much of the concrete used was pulled down by the fire services on safety grounds (Plate 18). On doing so, parts of upstanding brick plinth were revealed which formed
the original end, prior to the addition of the concrete “shelters” as noted on the pre-fire photos (Plate 8).

4.4.5 A small upstanding part of the wall on the left side comprised bright orange coloured bricks with a smooth, even surface and an average dimension of 23cm x 11cm x 6.5cm (Plate 19). They were all frogged and stamped “ALLEN BALLINGDON”. Ballingdon bricks were based near Friars Meadow in Sudbury and were active from 1812 (Lynch 2007).

4.4.6 On the right side of this elevation a small amount of upstanding wall was noted measuring 1m in length. It comprised a pale pinkish orange frogged brick with a “SUFFOLK” stamp. The bricks measured an average 23cm x 11cm x 7cm.

4.4.7 All the bricks exposed at this end of the building are considered to be no earlier than 19th/20th century in date.

**North-west facing elevation**

4.4.8 The north-west facing elevation comprised the surviving brick plinth which consists of several phases of rebuild, infill and repair. The height of the surviving plinth on this side of the building was no greater than 1.30m and there were no surviving sill beams or timbers recorded on this side.

4.4.9 Along the length of this elevation a significant amount of repair, rebuild and infill has taken place during the building’s history with the addition of two sets of “ladders” as noted in Plate 9.

4.4.10 The table below provides description and dimensions of the bricks used in each element on this elevation, from the northern corner to the southern end and the distance along the wall at which each section was recorded.

<table>
<thead>
<tr>
<th>Distance along elevation (m)</th>
<th>Description (bond, colour etc)</th>
<th>Average brick dimension (cm)</th>
<th>See Plate number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 5.35</td>
<td>0.90m upstanding in this location which had been coated by a melted black substance as a result of the fire – this obscured the bricks.</td>
<td>23 x 11 x 7</td>
<td>20</td>
</tr>
<tr>
<td>5.35 – 5.80</td>
<td>No full sized or complete bricks, only fragments used to in-fill a vertical void – possibly location of a post.</td>
<td>Various broken/cut.</td>
<td>– 20</td>
</tr>
<tr>
<td>5.80 – 7.70</td>
<td>Cream/buff coloured bricks. Hand-made with a rough, uneven surface. Seven courses of a possibly re-used reddish orange brick surmounted this section.</td>
<td>23 x 11 x 6.5</td>
<td>20</td>
</tr>
<tr>
<td>7.70 – 8.18</td>
<td>Brickwork as above. Location of timber “steps”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.18 – 11.45</td>
<td>Cream/buff coloured bricks with horizontal pressure marks. More even, smooth surface than those on immediate left. Bricks had deep frogs indicating C19th/C20th century date.</td>
<td>23 x 11 x 6.5</td>
<td>20</td>
</tr>
<tr>
<td>11.45 – 11.80</td>
<td>Location of in-filled vertical post (?). Broken bricks used</td>
<td>Various broken/cut.</td>
<td>– 21</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Dimensions</td>
<td>Pages</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>------------</td>
<td>-------</td>
</tr>
<tr>
<td>11.80 – 14.10</td>
<td>1.26m upstanding in this location with one course of flint stones. Bricks either side of the flint are the same – a mid orange colour with no obvious pressure marks. Two courses of tiles on top of the plinth. Laid in an English bond.</td>
<td>23 x 11 x 5.5</td>
<td>21</td>
</tr>
<tr>
<td>14.10 – 14.60</td>
<td>This section was made up almost entirely of flint stones no larger than 16cm across. Four courses of brick had been used on top.</td>
<td>n/a</td>
<td>21</td>
</tr>
<tr>
<td>14.60 – 18.60</td>
<td>Dark red coloured and vitrified bricks used in this section. Laid in a Flemish bond. Bricks were smooth, machine made (?) with deep frogs and a gritty mortar between courses. 1.16m upstanding in this location. One surviving timber rung and the location of three further burnt out ones indicate the location of another ladder.</td>
<td>23 x 11 x 7</td>
<td>22</td>
</tr>
<tr>
<td>18.60 – 20.45</td>
<td>Dark orange coloured bricks with a rough, uneven surface and no obvious pressure marks. 1.10m upstanding in this location. Bricks laid in an English bond.</td>
<td>22 x 11 x 6</td>
<td>23</td>
</tr>
<tr>
<td>20.45 – 20.65</td>
<td>Location of in-filled post?. Reddish orange, broken bricks used.</td>
<td>Various broken/cut.</td>
<td>23</td>
</tr>
<tr>
<td>20.65 – 25.20</td>
<td>Mid orange coloured hand-made bricks with uneven, rough surface, laid in a Flemish bond using a creamy coloured, gritty mortar. One large course of flint near to base. Another in-filled post at 22.50-23.00m</td>
<td>22.5 x 10.5 x 6</td>
<td>23</td>
</tr>
<tr>
<td>25.20 – 30.00</td>
<td>This area of the plinth was covered with render. Some small areas were exposed which revealed a dark orange coloured brick with remnants of white wash and a creamy coloured mortar laid in an English bond.</td>
<td>Mostly concealed by render. 22 x 11 x 6</td>
<td>24</td>
</tr>
</tbody>
</table>

**North-east facing elevation**

4.4.11 It was not possible to gain full, close access to the north-east facing end of the building due to the over-grown, dense shrubbery and uncertainty of the stability of the upstanding wall (Plate 25).

4.4.12 Access was possible to record 2.80m of the western end of the elevation. This part comprised Allen bricks with shallow frogs, each brick measuring an average 23cm x 11.5cm x 7cm.

4.4.13 Approximately 2m of the charred timber sill beam remains in-situ at the eastern end of the plinth. This was inspected as part of the interior survey.

**4.5 Post-Fire Interior Descriptions**

4.5.1 The concrete floor inside of the building was almost entirely covered with fallen material including burnt thatch and thatch pegs/nails (Plate 26). The location of the fallen debris can be seen on Figure 16 and can be interrogated for more detail on the attached DVD.

4.5.2 The remnants of the brick plinths which formed the separate bays were still in-situ, some had survived better than others. The internal bay plinths are recorded in the table below. They are numbered 1-5, 1 being the southernmost, 5 being the northernmost
and L or R denoting the location (left or right side of the building).

<table>
<thead>
<tr>
<th>Plinth Number and location</th>
<th>Description (bond, colour etc)</th>
<th>Average brick dimension (cm)</th>
<th>See Plate number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L</td>
<td>Pinkish coloured hand made brick with no pressure marks and a creamy coloured mortar with chalk inclusions. Only three coursers of one skin of brick remain.</td>
<td>24 x 9.5 x 7</td>
<td>27</td>
</tr>
<tr>
<td>1R</td>
<td>Dark pink and grey vitrified bricks with a pink cement mortar. All visible bricks were frogged and stamped “ALLEN BALLINGTON”. Four courses of two skins remain.</td>
<td>23 x 11 x 7</td>
<td>27</td>
</tr>
<tr>
<td>2L</td>
<td>Burnt orange coloured thin bricks with very narrow frogs. No full length, complete bricks used. Three courses of two skins remain.</td>
<td>?? x 11 x 7</td>
<td>27</td>
</tr>
<tr>
<td>2R</td>
<td>Dark pink bricks with a pink cement mortar. All visible bricks were frogged and stamped “ALLEN BALLINGTON”. Four courses of two skins remain.</td>
<td>23 x 11 x 7</td>
<td>27</td>
</tr>
<tr>
<td>3L</td>
<td>No brick plinth. Only mortar base remaining.</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>3R</td>
<td>No brick plinth. Only mortar base remaining.</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>4L</td>
<td>No brick plinth. Only mortar base remaining.</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>4R</td>
<td>Mortar base with burnt sill beam in-situ. One course of brick visible below but not enough to record or measure.</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>5L</td>
<td>One course of brick covered with render with burn sill beam on top.</td>
<td>23 x 6.5 x ??</td>
<td>28 and 29</td>
</tr>
<tr>
<td>5R</td>
<td>Pale orange coloured bricks, two courses. No complete bricks used.</td>
<td>?? x 11 x 6</td>
<td>27</td>
</tr>
</tbody>
</table>

4.5.3 Following the fire, most of the timber frame of the building had either fallen outwards or had been removed by the fire service for safety reasons. Internally, some charred timber remained in-situ or in the location into which they had fallen during the fire. These were located at the north-eastern end of the building and can be seen on Figure 16. A sill beam was noted on the north-eastern wall (Plates 31 and 32) with empty mortices which would have taken the frame posts.

4.6 Discussion

4.6.1 This survey has allowed for a detailed examination of what remains of this medieval structure which was of both local and national importance. However, it has only allowed for the detailed recording of the surviving brick plinth of the structure which has added little to the previous understanding of the building or its date of origin prior to the devastating fire.

4.6.2 The principal surviving fabric available for study is brick as the roof and frame were entirely lost and the floor is a modern concrete replacement. The dimensions of the
bricks as given in the tables above show very little variation in their size and were most likely locally produced, the 'Allen of Ballingdon' bricks were certainly manufactured in Sudbury in the 19th and 20th century. Dating and phasing the remaining structure based on the bricks alone is almost impossible given the lack of variation in dimensions or appearance. Almost all were hand-made, orange in colour and with uneven, rough surfaces. The most reliable dating evidence would have come from the structural techniques used in the timber framing and in particular the roofing structure. Philip Aitkens' study of Suffolk's ailed barns (Aitkens 1989) provides the only known description of the barn which was also used for the listed building description. The only evidence of 14th century elements of the building come from the jowled aisle tie-beam which was a 14th century introduction, however the rest of the roof was considered to be a replacement of around 1600.

4.6.3 Several phases of repair, infill and replacement are evident through the different sections of brick noted along the lengths of the walls. Many of these sections can be attributed to the addition, removal and subsequent infill/repair of the cow sheds and other additions on the north-west, north-east and south-east facing elevations which are mostly considered to be 19th century in date, when the site became known as St Bartholomew's Farm.

4.6.4 The two entrances to the barn indicate the access points for carts to enter the barn allowing for the unloading on either side where threshing of the corn would take place. Normally, the number of bays within the barn governs the number of threshing floors and with the two loading doors, a barn of five bays would indicate two floors with bays either side for storing the un-threshed corn in one and the threshed corn in the other. However, this building comprises six bays. It is possible that the last bay (the southern-most one) is a later addition possibly for storage. The external evidence for this suggestion comes from the change in brickwork on both of the long elevations which coincide with the locations of the southern-most bay.

4.6.5 The normal layout of a threshing barn would be to have sets of opposing doors to allow entry on one side, unloading once inside and easy exit though the opposite side and allowing for a through wind for ventilation and light for the threshing process. However, this building only had doors on one side and the significant fall in ground level on the north-western side, where there are no opposing doors, would indicate this building has not been in use as a threshing barn for a long period. If any doors had been present on the north-western side they had stopped being used by the time of the Second Edition Ordnance Survey Map of 1904 (Figure 6), by which time the cow sheds were present on this side of the building. Changes in the brickwork on the north-western side also not correspond with the locations of those on the opposite elevation. It is quite possible therefore that this was not a traditional threshing barn as considered in the listed building description. It is possible that one or even both of the doors were added post-construction to allow for access with larger carts or animals, but not intending to exit on the opposite side. Alternatively, the barn may have only had one threshing floor and one set of opposing doors at the northern end and the second set of doors added on one side at a later date, not for threshing, but for storage of large carts etc. This suggestion is supported by the continuation of brickwork in the entrance location as revealed during the excavation of evaluation Trench 3b (Section 5.3.12 and Figure 20).

4.6.6 The size of the barn, whether for storage or threshing, reflects the importance and the quantity of cereals stored on the site which is of no surprise given the size and importance of the site throughout its history.
4.6.7 The barn at St Bartholomew's Priory was undoubtedly one of the finest aised barns in the county and is a great loss to the local building stock. In West Suffolk, aised barns were normally built on manorial sites throughout the middle ages (Aitkens 1989).
5 **ARCHAEOLOGICAL EVALUATION**

5.1 **Aims**
5.1.1 The objective of this evaluation was to determine as far as reasonably possible the presence/absence, location, nature, extent, date, quality, condition and significance of any surviving archaeological deposits within the footprint of the barn as well as in the immediate area surrounding its footprint.

5.2 **Methodology**
5.2.1 Machine excavation was carried out under constant archaeological supervision with a tracked 360° excavator using a toothless ditching bucket. As agreed with Dr Tipper of Suffolk County Council’s Archaeology Service prior to the start of works, three trenches were located inside of the building and extending out on the south-eastern side (Trenches 1b, 2b and 3b). Additional trenches on the same alignment were located outside of the building on the north-west side (Trenches 1a, 2a, and 3a). The trenches were not continuous due to a significant fall in ground level on the north-western side of the building.

5.2.2 Spoil, exposed surfaces and features were scanned with a metal detector. All metal-detected and hand-collected finds were retained for inspection, other than those which were obviously modern.

5.2.3 All archaeological features and deposits were recorded using OA East’s *pro-forma* sheets. Trench locations, plans and sections were recorded at appropriate scales and monochrome photographs were taken of all relevant features and deposits supplemented by digital photographs.

5.2.4 Samples were taken from all excavated features for environmental analysis. A total of seven samples were taken, the results of which are given in Section 4.5 and a full assessment is presented in Appendix B.

5.2.5 Weather conditions were good, with sunshine and occasional cloud.

5.3 **Results**

The results are presented below, described trench by trench. Cut numbers are displayed in **bold** text, all other contexts in normal text. The location of all trenches can be seen in Figure 17 and detailed plans of trenches in Figures 17-19. Selected sections are shown in Figure 21.

**Trench 1a**

5.3.1 Trench 1a measured 13m in length, 4.50m wide and 0.45m deep. It was orientated approximately north-west to south-east and located outside of the barn, on the immediate north-western side (Figure 17). The trench was excavated using a 360° mechanical excavator to the level of the natural, undisturbed sands however, layers were encountered at the north-western end which were removed on one side of the trench using a machine-cut sondage (Figure 18).

5.3.2 The trench contained a brick-lined well and two chalk-packed post-holes at the south-eastern end of the trench (Plate 33). There were also two layers of demolition rubble which were partially removed to reveal a flint wall and a timber-lined drain. No dating evidence was recovered from any of the features or deposits.
- The well (31) measured 1.75m in diameter and was lined with orangish-red coloured hand-made bricks with an average dimension of 22cm x 11cm (Plate 34). The well was only partially excavated for safety reasons and a minimum of three courses of bricks were noted. The fill of the well (30) was a very firm, compacted silty, sandy clay deposit. The fill contained frequent flint stones and fragments of roof tile. No dating evidence was recovered to establish a precise date of back-fill for the well as only the upper-most deposit was encountered. An attempt was made to auger the fill/s to establish a depth however obstacles of tile and stones encountered preventing effective use of the auger.

- Two chalk-filled post-holes (27 and 29) were also encountered at the south-eastern end of the trench (Plate 35). Both post-holes had remnants of a wooden post which had been secured in the loose sand natural using chalk packing (Figure 22, Section 7). The posts were located 1m apart on a north-west to south-east orientation.

- To the immediate north-west of the well, layer 34 was encountered. This layer measured at least 0.04m in thickness and comprised compacted orange coloured sand and rounded stones and flints. This layer was partially concealed by layer 35.

- Layer 35 measured approximately 0.30m in thickness and comprised mostly demolition rubble. It contained frequent inclusions of broken bricks and roof tiles as well as crushed flint stones and loose sand. This layer was partially removed and the trench extended to reveal a flint wall (32).

- Flint wall (32), which was orientated approximately north-east to south-west, measured 1m wide and at least 2.20m in length (Plate 36) and continued beyond both trench edges. It comprised a variety of sizes of flint stones with no obvious bonding material or construction cut.

- A timber-lined drain was also recorded in Trench 1a. Located at the north-western end of the trench, two timbers were noted less than 0.25m apart with some flint back-fill or packing used to support them. It appears that at a later date, the drain was replaced with a ceramic one – possibly in the late 19th or early 20th century.

- At the very end of the trench, the corner of a compacted chalk surface was noted. This surface or perhaps backfill (33) comprised only solid white chalk with no other inclusions. This deposit was not investigated further.

5.3.3 Trench 1b was located within the barn footprint and continued beyond it on the south-eastern side (Figure 17). It was orientated north-west to south-east and measured 10.66m by 3.13m (Figure 19). The trench was excavated using a 360° mechanical excavator which was used to remove the concrete floor to the level of the natural, undisturbed sands immediately below. However, modern layers were encountered at the south-western end, outside of the barn which were recorded and then removed. A small part of the trench had been disturbed by the removal of a large corn hopper (shown as 49 "modern disturbance" on Figure 19) (Plate 37).

5.3.4 This trench contained a cluster of inter-cutting, soft, sand-filled features, considered to be quarry pits and a north-east to south-west orientated ditch which was concealed by a layer of compacted stones and rubble at the south-western end of the trench (Figure 19), which was recorded and removed.

- Pit 13 measured 2.33m long, 0.92m deep and at least 2m in width, continuing beyond the trench edge. It had steep, almost vertical edges and a flattenish base (Figure 22, Section 2). It contained two fills: primary fill 12 was a loose mid-pale greyish brown sandy silt with occasional flint and pebble stone inclusions and a maximum thickness of 0.43m. Finds recovered comprise two small flint flakes that are probably Neolithic in date, one of which was recovered from the environmental sample (sample number 5). Upper fill 11 was a...
loose, mid-yellowish brown silty sand with occasional flint and pebble stone inclusions and a maximum thickness of 0.50m. It contained two small flint flakes and a sherd of Roman grey ware which was recovered from the surface.

- Ditch/beamslot 15 which was linear in plan, and measured 0.45m in length continued beyond the trench edge and truncated the top of post-hole 17. It measured 0.45m in width and 0.32m deep. It had steep sloping edges and a rounded base (Figure 22, Section 5) and contained a single fill. Fill 14 was a loose and friable mid yellowish brown with occasional small pebble stone inclusions. No other datable finds were recovered from this deposit.

- Post-hole 17 was sub-circular in plan with steep sloping edges and a rounded base (Figure 22, Section 5). It measured at least 0.50m in width continuing beyond the trench edge. It measured 0.20m in depth and contained a single fill. Fill 16 was a loose mid grey brown sandy silt with occasional charcoal lumps and pebble stones. A small heavily burn flint and a rib bone from a medium sized mammal, most likely sheep were recovered.

- Post-hole 19 was sub-circular in plan with moderate sloping edges and a flat base. It measured 0.45m in length, 0.32m wide and 0.06m deep. It contained a single fill, (18) comprising a loose mid-dark grey brown silty sand with occasional small pebble stone inclusions. No datable finds were retrieved from this fill.

- Pit 37 was located against the edge of the trench and therefore shape in plan could not be ascertained (Plate 39). It had gradual sloping edges and a flat base. It measured at least 1.80m wide and 0.22m deep and contained a single fill. Fill 36 was a loose, pale grey-brown sandy silt with occasional pebble stone inclusions and patches of dark sand. No datable finds were recovered from this fill.

- Pit/ditch 42, although not excavated during the evaluation, was an irregular shape in plan and truncated by pits 44 and 46.

- Pit 44 was not fully excavated during the investigations. It was sub-circular in plan and measured approximately 1.65m wide and continued beyond the edge of the trench. Although not excavated, it is likely to form part of a group of inter-cutting quarry pits.

- Pit 46 was sub-circular in plan with steeply sloping edges (almost vertical on one side) and a flat base. It measured 2.15m in width and 0.84m in depth. It contained a single fill, (45) comprising a loose, mid-pale greyish brown sandy silt with occasional small pebble stones and pockets of sand. This fill contained one small flint blade and three small flakes, all considered to be Neolithic in date. A small fragment of flint-tempered pottery was also recovered, also likely to be Neolithic in date.

- Pit 48 was sub-circular in plan, continuing beyond the edge of the trench. It measured 1.30m in length and 0.48m deep with steeply sloping edges and a flattish base. It contained a single fill, (47), a loose, pale mid-grey sandy silt with occasional small flint and pebble stone inclusions. No datable finds were recovered from this fill.

- Ditch 06 was linear in plan, continuing beyond both edges of the trench. It measured 0.80m in width and 0.22m deep with moderate sloping edges and a rounded base (Figure 22, Section 11). It had a single fill. Fill 07 was a firm, mid grey brown sand with occasional rounded stone inclusions. There were no datable finds recovered from this deposit.

- Ditch 08 was parallel with ditch 06, extending beyond both trench edges and measuring 0.70m wide and 0.23m deep (Figure 22, Section 11; Plate 40). It had moderately sloping edges and a rounded base and contained a single fill. Fill 51 was a firm, mid orangey sand with occasional round pebble stone inclusions. No datable finds were retrieved from this fill.

- Ditches 06 and 08 truncated a layer/deposit 52 (Figure 22, Section 11). This layer was a firm, mixed mid grey brown sand with reddish orange patches. It measured no more than
0.15m in thickness and contained occasional small rounded pebble stones. There were no datable finds recovered from this deposit.

- A small cluster of pits/post-holes and stake-holes were present at the south-eastern end of Trench 1b (Plate 41).
- Pit/Post-hole 65 was sub-circular in plan with moderately sloping edges and a flat base. It measured 0.50m in width and 0.10m in depth and contained a single fill. Fill 66 was a firm mid-orange sand with no obvious inclusions and no datable evidence.
- Post-hole 59 was rectangular in plan and had three stakeholes in the base. It measured 0.40m wide with a maximum depth of 0.15m. It was filled by 60: a mid grey coloured silty clay with occasional large stone inclusions, chalk fragments and small fragments of red brick.
- Beamslot (?) 61 was sub-rectilinear in plan with straight, vertical edges and a flat, sloping base (Figure 22, Section 12). It measured 0.90m in length, 0.30m wide and 0.24m deep and contained a single fill. Fill 62 was a greenish grey silty clay with occasional chalk and fragments of ceramic building material. There were no other datable finds within this fill.
- Posthole 57 was sub-rectangular in plan with steep sloping edges and an irregular base. It measured 0.40m in length, 0.30m wide and 0.20m deep and contained a single fill. Fill 58 was a mid grey silty clay with inclusions of brick and chalk fragments and occasional small rounded stones.

**Trench 2a**

5.3.5 Trench 2a measured 10.5m in length, 3.20m wide and 0.25m deep. It was orientated north-west to south-east and located outside of the barn, on the immediate north-western side (Figures 16 and 17). The trench was excavated using a 360° mechanical excavator to the level of the natural where remnants of a cobbled surface were encountered.

5.3.6 This trench contained remnants of a cobbled flint surface throughout, a small deposit of demolition rubble and a small drainage ditch/gully.

- Drainage ditch/gully 74 was linear in plan, measuring 2.25m in length, 0.22m wide and 0.05m deep. It was orientated north-west to south-east and had moderately steep sloping edges and a flat base. It contained a single fill, (73) a dark blackish brown coloured silt sand with occasional small stone inclusions. No datable finds were retrieved from this fill.
- The remnants of a cobbled surface, (72), (Plate 42) was recorded in small patches throughout the trench where small flint stones were pressed into the natural sand below. Where surviving the layer was cleaned with a trowel and found to be very compacted and comprising stones no larger than 3cm in diameter.
- Demolition rubble layer 76 comprised a small area of broken hand-made red bricks, flint stones and sand. It measured an area no greater than 1.50m by 0.55m.

**Trench 2b**

5.3.7 Trench 2b was located within the barn footprint and continuing out on the south-eastern side (Figure 17). It was orientated north-west to south-east and measured 15.25m by 3.25m (Figure 20). The trench was excavated using a 360° mechanical excavator which was used to remove the concrete floor to the level of the natural, undisturbed sands immediately below.

5.3.8 This trench contained a layer which may be the remnants of a former surface. This layer concealed a ditch which was recorded continuing into Trench 3b; a second ditch
was also excavated at the other end of the trench. No dating evidence was retrieved from any features in this trench.

- **Ditch 05** was partially revealed in the base of the test pit excavated through layer 03 and is a continuation of that recorded in Trench 3b. It was not investigated within this trench.

- Layer 03 was investigated and recorded at the north-western end of the trench (Plate 43), however remnants of the layer were recorded in the top of the trench section continuing to the south-east which had been truncated by the recessed concrete floor. This layer was investigated through the excavation of a 1m by 1m test pit against the north-western wall of the barn (Figure 20). It measured 0.22m in thickness and continued beyond the trench edges. It was a moderately compacted light greyish brown clayey silt with frequent chalk flecks. No datable finds were retrieved from this deposit. A 20l soil sample (sample number 6) was taken for environmental analysis, this contained only modern roots and rodent bones (Appendix B).

- Layer 03 concealed ditch 05.

- At the south-western end of the trench, two inter-cutting ditches (02 and 25) were investigated; the relationship between the two was unclear.

- **Ditch 02** was linear in plan, orientated north-east to south-west, continuing beyond both trench edges (Plate 44). It measured 1.62m wide and 0.39m deep with moderately steep sloping edges and an undulating base (Figure 22, Section 1). It contained a single fill (01), a mid grey-brown silty sand with occasional round pebble stone and chalk inclusions. A 20l soil sample (sample number 1) was taken for environmental analysis, this contained modern roots and seeds as well as a rib bone from a medium sized mammal, most likely sheep (Appendix B).

- **Ditch 25** was linear in plan, orientated north-east to south-west, continuing beyond both trench edges. It measured 0.85m wide and 0.25m deep with steeply sloping edges and a flat base (Figure 22, Section 1). Fill 24 was a mid grey-brown silty sand with occasional round pebble stone inclusions. No datable finds were retrieved from this deposit.

**Trench 3a**

5.3.9 Trench 3a measured 7.5m in length, 3.10m wide and 0.30m deep. It was orientated north-west to south-east and located outside of the barn, on its immediate north-western side (Figures 16 and 20). The trench was excavated using a 360° mechanical excavator to the level where deposits and surfaces were encountered.

5.3.10 This trench contained a series of post-medieval layers and deposits considered to be related to the cattle shed construction and its subsequent demolition. Once photographed and noted, the trench was re-machined to remove layers of loose chalk and modern rubble (09 and 10) to clarify the extent of the layers (Plate 45). It also contained the base of a small rectangular brick construction (Plate 46), which is believed to be the pump as depicted on the 1904 Ordnance Survey Map (Figure 6), and three post-holes which contained modern pottery and brick.

- Layer 70 was a compacted dark orangey grey sandy clay with moderate sized pebble stone inclusions and occasional charcoal flecks. This layer measured a maximum 0.30m in thickness and contained post-medieval roof tile and fragments of brick.

- Layer 69 was a very compacted white chalk layer with occasional flint stone inclusions. It measured a maximum 0.08m in thickness and did not contain any dating evidence. This layer was above layer 70.

- Layer 68 was a compacted, dark brownish orange silty sand. It had the appearance of the natural sand, but was sandwiched between two redeposited chalk layers. It measured 0.10m thick and did not contain any dating evidence. This layer was over layer 69.
Layer 67 was the remnants of a compacted chalk layer measuring approximately 2.5m by 1m. It is thought to have been deliberately laid as a floor surface. It measured approximately 0.10m in thickness and no dating evidence was retrieved.

**Trench 3b**

5.3.11 Trench 3b was located within the barn footprint and continued outwards on the south-eastern side (Figure 17). It was orientated north-west to south-east and measured 15.45m by 3.25m (Figure 20). The trench was excavated using a 360° mechanical excavator which was used to remove the concrete floor to the level of the natural, undisturbed sands immediately below.

5.3.12 This trench contained two parallel ditches on a north-east to south-west orientation at either end of the trench. These are considered to be continuations of those recorded in Trenches 1b and 2b. The remnants of the continuation of the barn wall was also recorded. Interestingly, this was in the location of the former opening and may indicate the wall was originally continuous.

- Ditch 23 was located at the north-western end of the trench, orientated north-east to south-west and continuing beyond both edges of the trench (Figure 20). It had moderately steeply sloping edges and a rounded base (Figure 22, Section 3; Plate 47) measuring at least 0.80m wide and 0.48m deep. It contained a single fill. Fill 22 was a mid brownish orange sandy silt with occasional medium pebble and flint stones. It did not contain any datable finds.
- Ditch 23 was truncated on the north side by a small pit (39) and by a re-cut of the ditch on the south side (21).
- Ditch 21 was linear in plan, orientated north-east to south-west, continuing beyond the edges of the trench and truncating the south side of ditch 23. It had gradually sloping edges and a concave base measuring 1.39m wide and 0.42m deep (Figure 22, Section 3; Plate 47). It contained a single fill. Fill 20 was a dark brownish orange sandy silt with moderate small and medium sized pebble stone and occasional oyster shell inclusions. A 20l soil sample (sample number 2) was taken for environmental analysis, this contained charred wheat grains and vetch seeds, modern roots and elderberry seeds (Appendix B).
- Pit 39 was oval in plan with steep sloping edges and a concave base measuring 1.05m in length, 0.72m wide and 0.42m deep (Figure 22, Section 3; Plate 47). This pit truncated the top of ditch 23 and contained two fills. Primary fill 40 was a firm, dark orange grey sandy silt with occasional small pebble inclusions and lumps of charcoal, measuring 0.19m in thickness. A 20l soil sample (sample number 3) was taken for environmental analysis, this contained charred wheat grains and seeds of stinking mayweed and brassicas. No other finds were retrieved from this fill. Fill 38 was a light orange grey sandy silt with occasional medium flint stone inclusions and patches of orange sand. It measured 0.29m in thickness. No datable finds were retrieved from this deposit.
- At the south-eastern end of the trench a ditch on a north-east to south-west orientation was noted, but not excavated. This ditch measured 1.75m wide and is considered to be a continuation of that investigated in Trenches 1b and 2b.

**5.4 Finds Summary**

5.4.1 Very few finds were recovered from the archaeological evaluation. The majority of the finds assemblage comprised flints which were retrieved from the features recorded in Trench 1b, inside of the barn. Due to a lack of pottery and meaningful environmental remains, the spot dating of the worked flint by Richard Mortimer has been used to form the basis of the dating analysis. A very small assemblage of animal bone was
recovered during the evaluation and from the environmental samples, this was assessed by Chris Faine.

5.5 Environmental Summary

5.5.1 The charred plant assemblage consists of food waste in the form of cereals along with occasional weed seed contaminants. The cereal grains would have been accidentally burnt whilst cooking over open fires or through the deliberate burning of spilt grain. The seed assemblage is consistent with what one would generally expect to find amongst cereal crops growing on cultivated land with the presence of stinking mayweed suggesting cultivation of heavy clay soils.

5.5.2 The charred plant assemblage is too small to contribute to interpretation of the site, other than to confirm human occupation. The recovery of plant remains does however indicate preservation of such remains and, if further excavation is planned in this area, a targeted sampling procedure should be considered.

5.5.3 See Appendix B for the full environmental sampling report.

5.6 Discussion

Inside the barn

5.6.1 A number of features were found to be surviving beneath the barn. Although the barn floor had been replaced with a concrete pad with recessed central channel, this had impacted very little on the survival of earlier features, although any original wooden or stone floor has been lost.

5.6.2 Inside of the barn, the features can be summarised in two main groups; inter-cutting quarry pits in Trench 1b which have been tentatively dated by a small assemblage of flints as Neolithic and two parallel ditches on the same alignment as the barn which, although undated, must pre-date the 14th century barn construction and may represent boundary ditches which relate to the early 12th century priory site. These ditches are quite substantial and may represent the re-stating of a significant boundary over time. The lack of material culture may suggest they date to a period when occupation was not close by, but this could still relate to an earlier definition and division of space associated with the medieval priory, prior to the barn's construction.

5.6.3 The recovery of a sherd of Roman pottery from the surface of Trench 1b may indicate the presence of further evidence from that period within close proximity of the barn.

5.6.4 The fact that the barn has remained in place for more than 700 years has effectively preserved the archaeological features which are located in the natural sand beneath its floor. The prehistoric features noted in Trench 1b are located within a small cluster and there is no suggestion of their continuation in the other trenches inside of the building. Externally, the reduction of the ground level on the north-western side as illustrated on Figure 23 by 1m would have removed any features surviving at the same level inside the building. Survival of archaeological remains on the south-eastern side is as yet unknown. Figure 23 shows a steady rise in the ground surface level outside of the barn which may indicate the presence of a bank – possibly created from the material removed from the other side. The presence of this banked material may well have protected any surviving features which pre-date the 14th century. Although there have been scattered prehistoric flints found in the vicinity, none have been attributed to features until now.
External to the barn

5.6.5 Outside of the barn, a number of features which are all considered to be post-medieval in date were recorded, most of which may relate to the cow sheds that were present on the north-west side of the building as shown on the 1904 Ordnance Survey (Figure 6).

5.6.6 The small cluster of postholes on the eastern side of the barn in Trench 1b (57, 59, 61 and 65) are all considered to be contemporary although remain undated. These features may have been related to the construction of the barn, for example posts from the scaffolding used in the building process. Another suggestion is that they relate to an external structure or shelter. They are unlikely to be associated with the ditch as there were no similar features recorded to the east of the same ditch investigated in Trench 2b.

5.6.7 Demolition rubble comprising broken and crushed bricks was encountered in all three of the external trenches (Trenches 1a, 2a and 3a). This layer of brick is thought to relate to the demolition of the cattle sheds or other brick-built buildings on this side of the barn.

5.6.8 Remnants of a cobbled surface recorded in Trenches 2a and a chalk surface in 3a may be the original interior floor surfaces of the sheds previously located here i.e post0medieval in date. Also a rectangular brick wall which surrounded the pump that is represented on the early 20th century maps still partially survives.

5.6.9 The flint wall in Trench 1a may be a remnant of the boundary wall which separated the barn activities from the farmhouse and is clearly shown on Figures 5, 6 and 7. The well which was also investigated may pre-date the sheds as it would have been inside or very close to the buildings. The bricks used were, like the barn, hand-made, orange bricks with no sign of frogs or stamps and are most likely to be earlier than the sheds. It is not denoted on the 1904 map as the pump is and it is unlikely that two sources of water would have been required so close together at the same time.

5.6.10 The topographical position of the site is of significance, particularly in terms of the survival of archaeological remains. The site is in a commanding position located on a rounded hilltop, with views across the valleys below (Figure 1 illustrates the topographical position of the site). Set within a Lewes Nodular Chalk landscape, the site is positioned on a surprising deposit of light, well-drained outwash sand deposits from seasonal and post-glacial meltwaters (www.mapapps.bgs.ac.uk), unlike the land around. The topographical setting would have been a significant point in the landscape at any period, thus it is perhaps no surprise that Neolithic remains have been recognised. This would suggest the trenches are close to a focus of activity in this period. The small deposit of sand located in this position was quarried during this period and additional features of Prehistoric date, or later, may survive to the south-east, currently protected beneath the banked material.
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APPENDIX A. LISTED BUILDING DESCRIPTIONS FOR ST BARTHOLOMEW'S CHAPEL AND FARMHOUSE

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</table>

Chapel, now outbuilding. Early 15th century. Uncoursed flint rubble; gabled old tile roof. Rectangular single-cell plan. Offset diagonal corner buttresses and offset buttress to centre of 2-bay north and south elevations. Most window tracery has been lost. Moulded Tudor-arched architraves to east window, which has remains of cusped Perpendicular tracery to head; hood moulds with head stops over moulded 2-centred arched windows to north and south, with remains of cusped Perpendicular tracery to heads; hood mould over ancient studded door Set in moulded 2-centred architrave to west of south elevation; moulded Tudor-arched architrave to west window, which has 19th century brick to head. Interior: complete trussed rafter roof of uniform scantling with no longitudinal support. History: this chapel served the cell or grange of the Benedictine Westminster Abbey, in existence on this site from 1115 to 1538; there is also a 14th century barn (q.v.) and post-dissolution farmhouse on the site; the prior's lodging was demolished in 1779. (C F D Sperling, A Short History of Sudbury, 1896)
Farmhouse. Mid/late 16th century, with late 19th century alterations and extension. Render over timber frame; gabled plain old tile roof; brick end and ridge stacks. 3-unit plan to 16th century house. two storeys; five window range. Flat rendered arches over late 19th century casements with glazing bars; jettied and slightly-projecting gable to second bay from right; lean-to porch with reset mid C18 paneled door adjoins gabled bay to left, with late 19th century extension further to left. Late 19th century tripartite sashes and casements to rear evaluation, which has three late 19th century mock half-timber gabled bays. Interior not inspected but noted to have cased beams and other features of interest. Built on the site of a former cell or grange of the Benedictine Westminster Abbey, and probably built as a farmhouse soon after the Dissolution in 1538.
APPENDIX B. ENVIRONMENTAL REMAINS

By Rachel Fosberry

B.1 Introduction and Methods

B.1.1 Six bulk samples were taken from features within the excavated areas of the site at St Bartholomew's Priory Barn, Sudbury in order to assess the quality of preservation of plant remains and their archaeobotanical potential. Features sampled include pits and layers of a possibly prehistoric date beneath a sealed floor surface of a medieval barn and a pit outside of the barn area.

B.1.2 Ten litres of each sample were processed by water flotation (using a modified Siraff three-tank system) for the recovery of charred plant remains, dating evidence and any other artefactual evidence that might be present. The flot was collected in a 0.3mm nylon mesh and the residue was washed through a 0.5mm sieve. Both flot and residue were allowed to air dry. The dried residue was passed through 5mm and 2mm sieves and a magnet was dragged through each resulting fraction prior to sorting for artefacts. Any artefacts present were noted and reintegrated with the hand-excavated finds. The flot was examined under a binocular microscope at x16 magnification and the presence of any plant remains or other artefacts are noted on Table B1. Identification of plant remains is with reference to the Digital Seed Atlas of the Netherlands and the authors' own reference collection.

B.2 Results

B.2.1 The results are recorded on Table B1.

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Table B 1. Results

B.2.2 Preservation is by carbonisation and is poor. The charred plant material comprises cereal grains of wheat (*Triticum* sp.) and occasional weed seeds including stinking mayweed (*Anthemis cotula*), vetches (*Vicia* sp.) and brassicas (*Brassica* sp.).
B.3 Discussion

B.3.1 The charred plant assemblage consists of food waste in the form of cereals along with occasional weed seed contaminants. The cereal grains would have been accidentally burnt whilst cooking over open fires or through the deliberate burning of spilt grain. The seed assemblage is consistent with what one would generally expect to find amongst cereal crops growing on cultivated land with the presence of stinking mayweed suggesting that cultivation of heavy clay soils was being undertaken.

B.3.2 A single flint flake was recovered from the residue of Sample 5, fill 12 of pit 15.

B.4 Further Work and Methods Statement

B.4.1 The charred plant assemblage is too small to contribute to interpretation of the site at St Bartholomew's Priory Barn, other than to confirm human occupation. The recovery of plant remains does however indicate preservation of such remains and, if further excavation is planned in this area, a targeted sampling procedure should be considered.

B.5 Bibliography


www.seedatlas.nl
APPENDIX C. OASIS REPORT FORM
All fields are required unless they are not applicable.

Project Details
OASIS Number: oxfordar3-115968
Project Name: Building Survey, Fire Analysis and Archaeological Investigations at St Bartholomews Priory, Sudbury.
Project Dates (fieldwork) Start: 14-11-2011 Finish: 04-12-2011
Previous Work (by OA East) No. Future Work: Unknown

Project Reference Codes
Site Code: SUY106 Planning App. No. n/a
HER No.: SUY106 Related HER/OASIS No.: LB 275914

Type of Project/Techniques Used
Prompt: Listed Building Consent

Please select all techniques used:

- [ ] Aerial Photography - interpretation
- [ ] Aerial Photography - new
- [X] Annotated Sketch
- [ ] Auger
- [ ] Dendrochronological Survey
- [X] Documentary Search
- [X] Environmental Sampling
- [ ] Fieldwalking
- [ ] Geophysical Survey
- [ ] Grab-Sampling
- [ ] Gravity-Core
- [ ] Laser Scanning
- [X] Measured Survey
- [ ] Metal Detectors
- [ ] Phosphate Survey
- [ ] Photogrammetric Survey
- [X] Photographic Survey
- [ ] Rectified Photography
- [ ] Remote Operated Vehicle Survey
- [ ] Sample Trenches
- [X] Survey/Recording Of Fabric/Structure
- [X] Targeted Trenches
- [ ] Test Pits
- [ ] Topographic Survey
- [ ] Vibro-core
- [X] Visual Inspection (Initial Site Visit)

Monument Types/Significant Finds & Their Periods
List feature types using the NMR Monument Type Thesaurus and significant finds using the MDA Object type Thesaurus together with their respective periods. If no features/finds were found, please state “none”.

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- [x] Illustrations
- [ ] Moving Image
- [ ] Spreadsheets
- [x] Survey
- [x] Text
- [ ] Virtual Reality

### Paper Media

- [x] Aerial Photos
- [ ] Context Sheet
- [x] Correspondence
- [ ] Diary
- [x] Drawing
- [ ] Manuscript
- [x] Map
- [ ] Matrices
- [ ] Microfilm
- [x] Misc.
- [x] Research/Notes
- [x] Photos
- [x] Plans
- [x] Report
- [x] Sections
- [x] Survey
APPENDIX D. ST BARTHOLOMEW’S BARN, SUDBURY: AN INVESTIGATION OF FIRE SPREAD WITHIN A MEDIEVAL VERNACULAR STRUCTURE

By Dr Karl Harrison, Cranfield University

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St Bartholomew’s Barn, Sudbury

An investigation of fire spread within a medieval vernacular structure

Karl Harrison, Cranfield University
k.harrison@cranfield.ac.uk
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1 Summary

In November 2011 an investigation focused on determining the origin and nature of fire spread in the medieval barn of St Bartholomew’s barn, Sudbury was conducted as a part of a wider archaeological recording of the structure. It was hoped that this work might give some information related to the burning of the barn in January 2011.

Recording of fire characteristics visible on the internal wall faces and excavation through the debris lying within the structure revealed a number of directional and stratigraphic indicators that suggested a focus of low-temperature fire characteristics at a low height in the structure close to the eastern door that would be consistent with an origin point of the fire.

2 Introduction

2.1 Burning of St Bartholomew’s Barn

St Bartholomew’s, Sudbury has been described as being only Suffolk’s only surviving example of a complete priory, consisting of chapel, house and barn. In January 2011 the barn, consisting of a multi-phase brick-built foundation with timber superstructure and a thatched roof was destroyed by fire. Following action on the part of fire fighters, the remains of the barn have since been left, with some disturbance by people trespassing onto the site to steal metal from the remains of the building. Whilst subject to a police investigation, examination of the barn proved to be inconclusive immediately following the fire.

2.2 Instructions

As a part of an archaeological investigation mounted by Oxford Archaeology East, I was asked to work alongside archaeologists recording the remains of the upstanding structure. Using the techniques of archaeological investigation and forensic fire scene examination, I was instructed to consider specifically where within the structure the fire may have started, and how it might subsequently have spread to involved all areas.
3 Building fires and techniques of investigation

3.1 Compartment fires: Combustion processes within buildings

Energy as heat can be transmitted via three mechanisms: conduction; convection and radiation. Structural fires present a complex of these mechanisms, the traces of which manifest in different ways. Conduction is the direct transmission of associated molecules (Shields & Silcock, 1987). The effect of conducted heat is most notable in solid materials where molecular contact is closest (DeHaan, 1997). The direct effects of conduction are generally less obvious in archaeological structural fires than in contemporary ones, due to a lack of metal use in the construction of the former. Dense materials commonly utilised in archaeological structures such as timber or mud brick have a high degree of thermal inertia, which tends to counter any effect of conduction.

Convection is the transfer of thermal energy via the upward motion of hot liquids or gases (Hall & Brakhage, 1997), and generally plays a much more dominant role in the development of structural fires. Flaming combustion may give off as much as 70-80% of its thermal energy via the process of convection (Shields & Silcock, 1987). As a consequence the development of flaming combustion within a roofed structure will have a dramatically different effect to a fire started externally.

Unlike conduction or convection, radiation is a wave of electromagnetic energy that requires no intervening medium of transmission (Hall & Brakhage, 1997). Whereas convection will transmit the vast majority of its heat upwards, radiation will transmit thermal energy in all directions.

However a fire is ignited, once initiated and flaming, the resulting convection will act like a pump. As it expels hot oxygen-depleted smoky gases it will draw in cooler, denser air from its base. Combustion requires access to the ‘fire triangle’ of oxygen, fuel and heat in order to continue to propagate (DeHaan, 1997).

Fire scientists refer to blazes that develop in a room or other roofed enclosure of less than 100m³ as being ‘compartment fires’ (Drysdale, 1998; Hinckley & Williams, 1986). Regardless of relative differences in compartment geometry these fires form a distinct type because of changes to their behaviour brought about through their spatial restriction. In the early stages of fire development before the effects of spatial restriction become dominant both open and compartment combustions display very similar patterns of growth (Thomas, 1960). If allowed sufficient fuel to continue development however, the compartment fire will ultimately be altered in development by falling levels of oxygen and its inability to expel partially burnt combustion products, including carbon-rich smoke. Instead, these products will form a hot gas layer at the top of the compartment, which if not
vented by structural failure may ultimately reignite in a ‘flameover’ reaction, causing radiant heat transmission downwards from the hot gas layer in the roof space across the lower areas of the compartment (see figure 1).

Figure 1: A flaming combustion within a compartment causes a collection of partially burnt combustion products high up, which may reignite as the compartment temperature rises, resulting in the radiation of heat downwards across the compartment.

An intense, rapid flaming combustion followed by a flameover reaction may result in the floor of an archaeological structure preserving a relatively even layer of burning across its entirety, other than where obstructing items have served to absorb heat and protect underlying areas. Unlike non-flameover fires, these traces of heating need not relate to the presence of fuel in the immediate area (see figure 2).

Figure 2: Building 77 at Çatalhöyük exhibits heat alteration across much of the main room, suggesting a flameover reaction operating within the compartment (after Harrison, 2008; photo by author).
In contrast with flaming fires, slow-burning smouldering combustion prompted by either restricted ventilation or the burning of carbon-rich fuels such as charcoal may lead to significant degrees of localised damage (Cooke & Ide, 1985). Archaeological structures that lack sufficient integrity to retain combustion gases long enough to trigger a flameover fire will generally show less overall intensity of heat alteration and a greater distinction between foci of burning brought about by high centres of fuel load and open areas within the compartment. Thermal alteration may be more evident on collapse wall material affected by flaming combustion than on the building’s floor (Figure 3).

![Figure 3: Thermal alteration to collapsed plaques of daub from the line of a wall are distinct against a blackened but otherwise less fire-affected floor. St Mary’s, Colchester (Photo by author)](image)

3.2 Techniques of archaeological fire investigation

The aims of the forensic fire investigator are necessarily constrained by their role within the legal system. In the UK they are employed by fire brigades or forensic service providers and work alongside police crime scene investigators to establish whether a fire began as an act of deliberate arson, and where within a compartment it initially originated from (the ‘seat of fire’, which may preserve forensic evidence relating to the perpetrator, Ide, 1998).

The use of the methods of fire investigation in an archaeological context does not limit the consideration of traces of past burning to one of ‘accident or arson’. Rather, adapted fire investigation techniques allow consideration of potential seats of fire that may represent origin points, as well as traces that may inform more generally about the dynamics of burning within the structure, or the size and placement of fuel loads within the building.
As in contemporary forensic fire investigation, intentional burning is likely to reveal itself by indirect means within the burnt remains of an archaeological structure. Multiple seats of fire that suggest several discrete points of ignition, excessively large or anomalously placed fuel loads are all suggestive of intentional burning.

3.2.1 Directional fire indicators

1 Point of lowest burn

Systematic excavation of debris on forensic fire scenes is generally regarded as being best practice on the part of investigators, and this has been explicitly compared with the work of archaeologists (Cooke & Ide, 1985), although this forensic excavation does not acknowledge any concept of context. The primary reason for excavation on a forensic fire scene is to search for the lowest points of burning within the compartment, which may represent seats of fire. Due to the dominant effect of convection heating in the development stage of combustion, items low down tend to remain relatively cool and protected, unless they are close to the origin of the fire. These require close observation to ensure that they are separate from general radiant fire damage from flameover, and items falling from higher points in the compartment and continuing to burn must also be identified and discounted as secondary origins.

Figure 4: Low burning at the point of origin of a fire in a forensic context (Photo by author).

2 ‘V’ pattern analysis

A further technique linked to the upward spread of convection heat is ‘V’ pattern analysis (Ide, 1998; DeHaan, 1997). Flaming combustion will tend to expel smoke products upwards and, to a much lesser extent, laterally, forming a plume. This tendency results in the formation of a ‘V’ of deposited smoke, where the base of the ‘V’ indicates the seat of fire. As the fire continues to burn, smoke products are deposited and then burnt off, which can result in the ‘V’ pattern reversing.
Figure 5: ‘V’ patterning in a forensic context; the origin of the fire is located to the right hand side of the image. The radiator preserves one half of the ‘v’ to the left of the image, its angle directed toward the seat of fire (Photo by author).

Figure 6: ‘V’ patterning in an archaeological context; Building 77 at Çatalhöyük, where a timber upright has burnt in situ (Photo by author).

3 Heat shadowing

Conversely, directional fire indicators also include an assessment of those areas of a structure protected from burning. Observation of these protected or ‘heat shadowed’ areas can assist the archaeologist in discounting an area of the compartment from consideration as a seat of fire. Items or areas of building fabric that have other elements fall over them very rapidly may feature no appreciable smoke staining, whilst whole areas that are protected from radiant heat by a significant obstacle may remain relatively cool in relation to the rest of the compartment.
3.2.2. Intensity related fire indicators

Char depth analysis

Where a building has been constructed utilising structural timbers of similar dimensions, a measurement of the depth of preserved charring can assist in locating focal points of fire damage. There are a number of complicating factors to any technique reliant on char preservation as an indicator of fire intensity, not least because the forming charcoal is itself combustible, and at high temperatures will burn to nothing more than a thin lens of potassium and silica ash. Whilst complete combustion may be expected adjacent to a seat of fire, it has also been observed in relation to ongoing post-fire smouldering in collapsed timbers. It is thus best considered in concert with directional fire indicators. Distinctive char patterns observed in the forensic record suggest that careful excavation might allow variations in char presence and depth to inform about conditions during the fire (see figure 8).
5 Plaster spall analysis

Compartment that feature an internal lining of plaster or daub may be subject to this material crumbling and collapsing when heated. This is referred to as spalling in the fire science literature (Cooke & Ide, 1985; DeHaan, 1997), and is caused primarily by the expansion of intrinsic moisture within the surface. The degree of spalling and associated discolouration of wall material are both potential indicators of temperatures throughout the compartment, but variations in building fabrics make generalisations regarding response in fire conditions futile. Where a daubed or spread building material is thought to have spalled as a result of burning experimental trials and materials testing to establish thermal characteristics are essential if the relationship between the fire, the spalled material and its substrate are to be properly understood.

6 Geomagnetic alteration

Depending on the nature of earth-based building materials or the ground underlying the burnt structure, sharp boundaries of heat-related discolouration may correlate with physico-chemical alterations to the soil structure, which includes detectable degrees of magnetic susceptibility elevation (Hajpal, 2002). Geoarchaeological studies of magnetic elevation have noted that observed areas of intense thermal discolouration need not relate to those areas of greatest intensity of
burning (Canti & Linford, 2000), but this relationship requires greater research to ascertain the role of ventilation within a burning compartment in bringing about thermal discolouration.

Goethite (FeOOH) and haematite (Fe₂O₃) are iron-rich minerals which play a role in soil formation. Both are classified as ‘canted antiferromagnetic’ materials, characterised by relatively low levels of magnetic susceptibility (Dearing, 1999). Heating is one of the processes that can bring about mineralogical change, during which dehydration of native iron oxides results in the conversion of antiferromagnetic materials to ferromagnetic ones, which brings about an increase in magnetic susceptibility by more than an order of intensity (Mullins, 1977).

4 Fire at St Bartholomew’s Barn

4.1 Building Structure

Figure 10: St Bartholomew’s Barn prior to the fire
Prior to the fire, St Bartholomew’s Barn was built around an aisled structure, in which a post-and-plate structure of uprights and beams are held rigid with the use of timber cross braces (see figures 11 and 12). The exterior structure was then completed with horizontal straked planking to form the walls, and thatch secured to battens for the roof. This structure stood on a brick-built dwarf wall, which contained an internal space finished with a concrete screed floor. It was noted that this central floor was stepped higher in the two aisles to the sides of the barn, than along its central nave.

Figure 11: Internal view of St Bartholomew’s Barn, taken in 2007.
4.2 Building structure surviving post-fire.

Figure 13: View looking northeast across the site of the barn on investigation.

On examination of the barn site in October 2011, the surviving structure was primarily represented by the brick dwarf walls outlining the bases of exterior walls and internal aisles. In addition, the concrete screed floor appeared to survive beneath the fire debris. Along the north-eastern wall (the
farthest wall visible in Figure 12), a few charred timber uprights remained standing in-situ. Elsewhere in the structure, large fallen timbers were not in evidence within the structure. By contrast lines of char lying outside the building suggested the final deposition site of timbers falling outwards from the walls.

The block walls that once stood to the southern end of the structure (see Figure 13) had largely collapsed, but the remnants of them were visible close to where the walls had originally stood (see Figure 14). Large metal debris evident in photographs taken immediately following the fire (see Figure 15) was no longer in evidence by the time of the site examination.

Figure 14: Block wall in evidence along the southern side of the building.
Figure 15: Collapsed block wall in same southern corner as pictured in Figure 13.

Figure 16: Large metal debris in evidence to the northern corner of the building immediately following the fire.

4.3 The investigation
Given the high ceiling clearance inside the barn and the full involvement of the structure, it is highly unlikely that the origin point of the fire would have occurred in the centre of the barn. Flame
entrainment (the upward movement of flames) is enhanced by the presence of nearby walls, and even more greatly in the case of fires started in the corners of buildings. As a consequence it was decided an examination strategy that looked in detail at the walls which formed the aisled layout of the barn was most likely to reveal patterns related to the ignition of the fire.

![Figure 17: Plan of St Bartholomew’s Barn with the locations of numbered points of examination recorded. Letters and dashed lines relate to codes assigned to the respective aisles.](image)

Twenty-two separate sections were cleared and excavated through the fire debris in constructing a model for how the structure caught fire and was ultimately destroyed.

**Aisle A**

The south western wall of Aisle A featured a metal downpipe set immediately inside the barn interior (see figure 18). Char patterns to the wall immediately behind the metal pipe indicate protection from radiant heat, and suggest that the main focus of burning was located east of this location, most likely in the set of aisles to the south east wall, rather than the north west.

The wall to the north west of Aisle A exhibited more temperature-related destruction than that to the south west. Sections 1-3, dug through the debris along the north western wall reveal a range of debris characteristics:
Section 1: Exhibits a 1cm thick lens of black char uppermost, followed by a c. 3cm lens of grey ash, then a final 1cm thick lens of black char against the screed floor (see Figure 19).

Section 2: Debris here is represented by a homogenous, 8cm thick layer of black char containing small roofing elements with no apparent ash layer apparent (see Figure 20).

Section 3: Apparent high temperature alteration to plaster face set low on the wall, in conjunction with in-situ burning stratigraphy of uppermost thick char from the roof (c. 10cm), then underlying grey ash with shattered plaster and thin lens of black charred roof material lying directly against the concrete floor (see Figure 21).

Section 4: Reveals an apparent secondary seat of burning; a large deposit of black char containing thatch pins and an associated timber, suggesting a collapse of roof material (see Figure 22).

Figure 18: South western wall of Aisle A, featuring metal downpipe in situ.
Figure 19: Section 1, Aisle A

Figure 20: Section 2, Aisle A
Aisle B

Aisle B is opposite and to the south east of Aisle A. A large halo of burning directly onto the concrete floor dominated the middle of this area. Thatch pins and silica-rich slag here suggested that much of this destruction was the result of a collapse of burning roof material. Sections 5 and 8, discussed in detail below exhibit large quantities of vitrified cereal slag contiguous with the concrete floor,
suggesting either the storage of significant quantities of cereals here, or a major collapse of smouldering roofing material. The lack of high-temperature fire indicators on the north east wall of this aisle suggests that the burning here was characterised by a slow-burning, high-intensity smoulder combustion, offering very little radiant heat emission to bring about further fire spread.

Section 5: Against the northeast well separating Aisle B from Aisle D, loose char was found to be overlying solidified vitrified slag that had hardened against the line of the wall (see Figure 23).

Section 6: Excavated against the south eastern wall of Aisle B. Here the uppermost layer of debris was greening plaster which had spalled off the line of the brick wall. Beneath this was a layer of thatch char in turn overlying an initial spall of plaster, demonstrating that the rising heat of the structure had already caused damage to the plaster prior to roofing material fuelling further destruction in this area (see Figure 24).

Section 7: The temperature here appears lower than in sections 5 and 6. Here plaster collapse overlies a 6cm thick layer of black charred thatch, the texture of which was very well preserved (see Figure 25).

Section 8: Records a section excavated into the halo burn dominating the central floor area of Aisle B. It exhibits a thick layer of dramatically vitrified cereal remains that have effectively destroyed the thin layer of concrete beneath (see Figure 26).

Figure 23: Section 5, Aisle B.
Figure 24: Section 6, Aisle B.

Figure 25: Section 7, Aisle B.
Aisle C

Aisle C was found to be similar in character to Aisle B, with light grey slag fragments overlying vitrified and hardened black cereal slag in the centre of the bay. Green spalled plaster had collapsed onto debris along the south western wall of this bay. By contrast, the plaster from the other two walls of the aisle had survived largely without any evident spalling.

Section 9: The south western wall of Aisle C retains a section that details the stratigraphy of this area, with grey slag fragments and spalled plaster uppermost, overlying a thin lens of yellow-grey ash. Beneath this ashy layer is a black fibrous thatch char, solidified as a mass on the point of vitrification (see Figure 27). This pattern of destruction suggests an early collapse of roofing material into the Aisle, which continued to smoulder long enough for the temperature to rise sufficient to begin the process of vitrification in the fuel bed.

Section 10: Along the north western wall of Aisle C, Section 10 does not preserve any trace of the fused thatch mass evident in Section 9. Instead it features blackened thatch to a depth of c. 4cm with some mixed grey char directly overlying the concrete floor (see Figure 28). A thatch pin lying at the base of this deposit underlines the observation that this is fallen roofing material rather than stored cereals.

Section 11: Along the north eastern wall of Aisle C, Section 11 reveals a sharp distinction between the scorched but otherwise intact section of concrete floor adjacent to
liquefied bituminous roofing material, benefitting its propensity to burn at a smoulder (see Section 29).

Figure 27: Section 9, Aisle C.

Figure 28: Section 10, Aisle C.
Aisle D

The concrete floor of Aisle D features large quantities of organic material. The peak temperature of this area appears to be lower than that of Aisles B and C, as there is a lack of pale ash characteristic of total flaming combustion, and some straw survives in the fallen debris uncharred.

Section 12: Section 12 was cut through the debris in the centre of this Aisle, revealing a thick layer of charred organic material (c. 3cm depth), with no obvious accompanying ash lenses or high temperature vitrification (see Figure 30).

Section 13: This section was cut close to Aisle B, on the opposite side of the Aisle wall from Section 5. It demonstrates a mix of partly vitrified material adjacent to fibrous charred thatch that still preserves some elements only subject to partial combustion (see Figure 31).

Section 14: Further towards the south of Aisle D, the pale ash of more total combustion is in evidence. A layer of pale ash was found to lie beneath blackened charred material (see Figure 32).

Section 15: Against the outer wall to the south east of Aisle D, section 15 shows a collapse of mortar and brickwork with a small amount of overlying char sitting over a considerable deposit of small timber charcoal fragments (see Figure 33).

Figure 29: Section 11, Aisle C.
Section 16: The north eastern wall of Aisle D reveals the clearest evidence here for high temperature low burning. Here Section 16 preserves evidence of plaster spalling from the brick wall, with an associated layer of collapsed brick and mortar beneath (see Figure 34). This appears to occur at a very low level, and is not as closely associated with large deposits of roofing material as in other Aisles.

Figure 30: Section 12, Aisle D.

Figure 31: Section 13, Aisle D.
Figure 32: Section 14, Aisle D.

Figure 33: Section 15: Aisle D.
Figure 34: Section 16, Aisle D.

Aisle E

The south western and north western walls of Aisle E survive two courses above the level of the concrete floor, with a plaster render largely surviving intact with some discrete scorching. The north western wall of Aisle E survives as little more than a low line of render with intense scorching. The centre of the stall features what appears to be a collapse of roofing material (pale grey slag fragments with thatching pins overlying black thatch char and some partially burnt thatch). The wall behind the metal downpipe preserved evidence of thick surviving char, suggesting that the pipe acted to protect this section of the wall from a radiant heat source located to the south east.

Section 17: Along the north western wall of Aisle E, section 17 was cut directly adjacent to a patch of spalled plaster visible on the wall. It shows a concentration of roofing material falling close by the wall. A relatively thick (c. 2cm) layer of white/grey ash overlying black thatch was charred to the northern edge of the Section, but was vitrified directly beneath it. Two thatch pins are visibly set within the vitrified mass (see Figure 35).

Section 18: Section 18 was cut below the metal downpipe from the overhead water tank that had been set in the rafters overhead. This area exhibited a lesser degree of high temperature alteration than was evident in Section 17, with a thinner (c. 1cm) lens of ash lying beneath a thick (c. 3cm) layer of black thatch and timber char, which showed no evidence of vitrification. A small timber slat, c. 9cm wide and 2cm thick was found charred but intact at the base of the debris with a fine lower level of black thatch char. This was directly adjacent to an iron stopcock, rusted but otherwise unmodified by the fire (see Figure 36).

It is suggested that this stopcock has been secured to the downpipe with a zinc or similar fitting that melted at a relatively low temperature during the fire before most of the roofing material had fallen in this area, suggesting a sharp distinction in temperature between low levels and the height at which the stopcock had been originally set. This reinforces the observation that Section 17, just a metre away, represents a secondary rather than primary source of burning, and not the initial origin point of the fire.
Section 19: Section 19 is cut against the north eastern wall of Aisle E, where the wall’s survival is only tenuous. It exhibits baked lime mortar and tile plaques underlying a vitrified mass of smoulder-burnt roofing material (see Figure 37).

Figure 35: Section 17, Aisle E.

Figure 37: Section 19, Aisle E.
Figure 36: Section 18, Aisle E.
Aisle H

Aisle H is a large bay between the central and eastern doors of the barn. The south eastern wall forms the back of this aisle. Whilst there is some discrete char blackening, there is very little high temperature damage, other than the dramatic indicators apparent to the eastern end of the wall. Here a large ‘V’ pattern is evident in the char patterns and render spall. This pattern continues along the north eastern wall leading into the main nave of the barn. Here the north western half of the sill beam remains in situ over the brick wall, but the south eastern end has been entirely subject to burning (see Figure 38).

Section 20: This section was cut in front of the middle of the south eastern wall. Here is was evident that beneath the topmost layer of greening plaster was a layer of black
thatch char with no signs of vitrification. This char overlies in turn traces of spalled plaster following the line of the wall, demonstrating that much of the low level heating here occurred prior to the collapse of roofing material (see Figure 39).

Section 21: This section, just half a metre from Section 20 preserved a topmost layer of timber char, then burnt thatch over spalled plaster. Beneath this spalled plaster was a further layer of vitrified cereal slag that had fractured the concrete floor. No thatch pins were directly associated with this lowest layer of slag, which suggests that it represents stored cereals burning directly at ground level, rather than fallen roof deposits which are seen towards the top of the section (see Figure 40).

Figure 38: ‘V’ pattern of burning evident in south eastern corner, Aisle H
Aisle J

The opposite side of the sill beam investigated in section 21 was closely associated with the eastern doors of the barn.

Section 22: This section was located against the partially burnt sill beam sitting on the low brick wall running from the south eastern wall into the middle of the barn. It featured a topmost layer of timber char not obviously arranged in linear form to suggest a beam burning in situ, but thought rather to have dispersed from the sill beam. Beneath this timber char was a thick (c. 5cm) layer of thatch char, which exhibited no sign of vitrification. Lying beneath this thatch was a double layer of deformed and fractured window glass. Despite deformation, the thickness of this glass (6mm) matched that of the glass located adjacent to it (see Figure 41), the main difference between the two panes is the smoke staining; the pane exposed on the debris surface was clear, whilst the buried pane found in section 22 was thickly smoke stained on both sides.

This smoke stained glass lay directly on a piece of plasticised woven matting, like a thick linoleum. Between the glass and matting was a think horizon of friable dusty soil, c. 1mm deep that might relate to a natural accumulation at the base of the doors. The ground surface beneath the linoleum appeared to be a solid concrete
largely unaffected by the fire. There was no indication of plaster spall associated with section 22.

Figure 41: Section 22, Aisle J, showing stratigraphic distinction between smoke stained glass falling early in fire on left with late falling heat-cleaned glass.

5 Conclusion

The indications preserved across a number of the bays forming St Bartholomew’s Barn suggest that the fire began in the south eastern corner of Aisle H. A corner location would promote the rapid upward growth of the fire and ensure the early involvement of roofing materials so obvious elsewhere. The initial stages of this fire produced a number of discernible effects:

1. A high temperature rise immediately associated with the plaster render to the south eastern wall caused spalling and discolouration.
2. Smoke stain deposition on the glass pane immediately above the developing fire indicates that the glass was cool when the air was becoming smoky.
3. The temperature then rose sufficiently to allow the glass to soften (c. 700°C), at which point the pane failed and fell outwards away from the fire, onto the dusty linoleum lining the floor around the eastern doors.
Flame spread then began to involve the lower portions of the thatched roof. Initially on involving the roof, the fire moved laterally, causing early thatch collapse in other aisles along the southern wall of the barn, as in Aisle D.

Lateral flame spread was ultimately sufficiently powerful to ignite the sill beam close to the south eastern corner of Aisle H. Following an initial early phase of flaming combustion, a secondary smoulder combustion results in half of the sill beam being completely burnt, whilst the rest remains in situ over the brick wall.
Appendix 1 References


Appendix 2 The Investigator

I lecture in Forensic Archaeology at Cranfield University, where one of my primary research topics is the understanding of fire dynamics within the material record. My PhD thesis concentrated on the integration of techniques from archaeology and forensic fire investigation to improve the understanding of building fires in the historical record. My research into burnt buildings has included a number of sites, such as Çatalhöyük, Turkey, West Stow, Suffolk and Zalabiyeh, Syria.

Over the past ten years I have worked as a Scenes of Crime Officer, Forensic Scientist and Archaeologist and have produced a number of publications regarding this topic. I have completed the Fire Investigation Course at the National Fire College, Moreton-in-Marsh, and investigated numerous fires within a forensic context.
Figure 1: Site location
Figure 2: Plan of Priory site showing position of St Bartholomew's Chapel, Farmhouse and Barn

0 50 m
1:1500
Figure 3: Extract from Map of St Bartholomew's Priory surveyed by J. Prickett, 1802 (Westminster Abbey Muniment Room Ref. WAM 12577) after Breen 2001
Figure 5: Extract from 1st Edition Ordnance Survey Map, 1886, showing location of barn (green)
Figure 6: Extract from 2nd Edition Ordnance Survey Map, 1904 showing location of barn (red)
Figure 7: Extract from 1926 Edition Ordnance Survey Map showing location of barn (red)
Figure 9a: Sale Catalogue of St Bartholomew’s Priory Farm, 1841 (Suffolk Records office, Bury St Edmunds ref. EE 501/6/183)
Figure 10: Engraving of St Bartholomew's Priory by J. Hawksworth (undated)
Figure 11: Photo of St Bartholomews Chapel and Farmhouse c.1900
(ref pa167 from www.sudbury-suffolk.co.uk/photoarchive)

Figure 12: Undated photograph of barn (from Wall, 2004)
Figure 13: Floor plan showing location of plates and elevations used in report (from data kindly supplied by Tricker Blackie Associates)
Figure 14: External elevations of the barn (pre-fire), kindly supplied by Tricker Blackie Associates
Figure 15: Internal elevations of the barn (pre-fire), kindly supplied by Tricker Blackie Associates.
Figure 17: Plan showing location of evaluation trenches

Key

- Excavated Slot
- Archaeological Feature

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Report Number 1316
Figure 18: Plans of trenches 1a and 2a
Figure 19: Plans of Trench 1b

Trench 1b
(overlay of modern deposits)

Trench 1b
(archaeological features)
Figure 20: Plans of Trenches 2b and 3b
Figure 21: Plans of Trench 3a

- Trench 3a
  - (archaeological features)
  - (overlay of modern deposits)

- Brick Manhole
- Surface
- Compacted chalk
- Brown silt
- Brown silt
- Brown silt

- Section 5
- Mod.

- Pump
- Black post-medieval deposit

- Surface
- 67
- 68
- 70
- 67
- Mod.

Scale: 1:50

Legend:
- Brick Manhole
- Surface
- Compacted chalk
- Brown silt
- Black post-medieval deposit
- Section 5
- Mod.
- Pump
Figure 22: Sections
Figure 23: GPS surveyed section across the barn showing bank to south-east
Plate 1: Burnt remains of the barn showing proximity of priory farmhouse and chapel

Plate 2: South-east facing elevation of barn (pre fire)
Plate 3: St Bartholomew's chapel

Plate 4: St Bartholomew's priory farmhouse
Plate 5: South-east facing elevation of barn (pre fire)

Plate 6: Double doors on south-east facing elevation
Plate 7: Double doors on south-east facing elevation

Plate 8: South-west facing elevation of barn
Plate 12: North-east facing elevation
Plate 13: Interior of barn prior to fire
Plate 14: Remains of barn after fire (from south-west)

Plate 15: Detail of plinth of south-east facing elevation
Plate 16: Detail of plinth of south-east facing elevation

Plate 17: Detail of plinth of south-east facing elevation
Plate 18: South-west facing elevation

Plate 19: Detail of south-west facing elevation
Plate 20: Detail of plinth of north-west facing elevation

Plate 21: Detail of plinth of north-west facing elevation
Plate 22: Detail of ladder on north-west facing elevation
Plate 23: Detail of plinth on north-west facing elevation

Plate 24: Detail of plinth on north-west facing elevation
Plate 25: North-east facing elevation and burnt building remains

Plate 26: Thatch pins
Plate 27: Remains of barn showing location of interior bay plinths (from south-west)

Plate 28: Detail of burnt interior
Plate 29: Detail of burnt interior

Plate 30: Detail of burnt interior
Plate 31: Charred sill beam
Plate 36: Flint wall, Trench 1a

Plate 37: Trench 1b
Plate 38: Pit 13, Trench 1b

Plate 39: Pit 37, Trench 1b
Plate 40: Ditches 06 and 08, Trench 1b

Plate 41: Post holes, Trench 1b
Plate 44: Ditch 02, Trench 2b

Plate 45: Trench 3a
Plate 46: Remnants of pump base, Trench 3a

Plate 47: Ditches 21 and 23 and pit 39, Trench 3b