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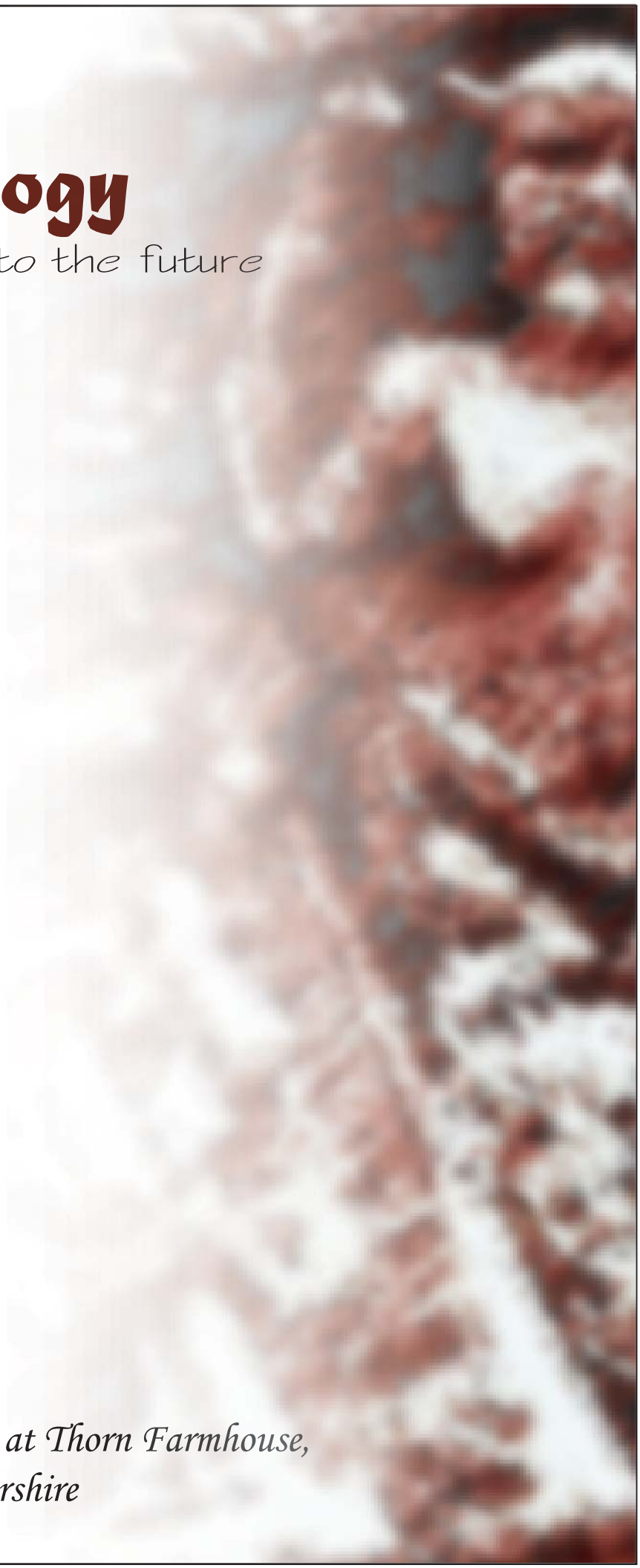

Historic Building Recording at Thorn Farmhouse, Thorn, Inkberrow, Worcestershire

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A report for Mr and Mrs Bailey

September 2006

Paul Williams

Project: PJ 165

WSM 35095

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1. Project Background

1.1. Location of the Site

The sprawling village of Inkberrow straddles the A422 Worcecter to Stratford-on-Avon Road, close to the eastern country boundary of Worcestershire. Thorn Farmhouse is located at Thorn (NGR SP 0102 5573), a former small hamlet around 2 kilometres to the south-west of the village core of Inkberrow. The farm is set back from the A422 along an unadopted track that links with the road to the Lenches, then onto Evesham. Inkberrow may be described as a large village with an historic core of buildings dating from the 16th and 17th century with later ribbon development following the main road. Thorn now consists of two farmhouses, a couple of cottages and converted farm buildings, which now form the premises of Trifolium UK, which produce seeds commercially.

1.2. Development Details

There is a proposal at pre-planning stage, to restore and alter Thorn Farmhouse, to provide a family home for the applicants, Mr and Mrs Bailey. The building is Grade II Listed and prior to an application for Listed Building Consent for the restoration works, it was agreed by Wychavon District Council, the Planning Archaeologist, Worcestershire County Council and the clients, that an historic building recording should be undertaken in order that the historic and architectural significance of the structure is better understood. As a result, the Planning Archaeologist, Worcestershire County Council, wrote a detailed brief of work (WHEAS 2006) and a subsequent written scheme of investigation by Mercian Archaeology was accepted.

1.3. Reasons for the Historic Building Recording

> The data contained within the Sites and Monuments Record suggested that the building conversion work would affect a building contained on the local list of historically important buildings (WSM 34664).

In such circumstances a programme of archaeological work is attached to planning conditions for any development. In this instance, an historic building recording was suggested to record the buildings prior to conversion.

2. Methods and Process

2.1. Project Specification

- The project conforms to the *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (IFA 2001).
- The buildings were recorded to at least Level 1 as defined by the Royal Commission for Historic Monuments of England (RCHME 1996).
- The buildings were recorded following guidelines contained in *Understanding Historic Buildings: A Guide to Good Recording Practice* (English Heritage)
- The project conforms to a brief prepared by the Planning Advisory Section, Worcestershire Historic Environment and Archaeology Section, Worcestershire County Council (WHEAS 2006) and for which a project proposal and detailed specification was produced (Mercian Archaeology 2006).
- The project conforms to the service practice and health and safety policy as contained within the Mercian Archaeology Service Manual (Williams 2003)

2.2. Aims of the Project

The aims of the historic building recording were to compile an archive of the building(s) within their topographical setting. This was to consist of both written and photographic records. The results of the fieldwork were to be used to produce a report chronicling changes and development within the building(s) and where possible, to attach relative dates to individual phases of building. The documentary survey was to be used to assist the chronological phasing of the complex and also, to ascribe function and use to the building(s).

2.3. Background Research

Prior to the commencement of fieldwork all known relevant and available documentary and cartographic sources were consulted.

Documentary research was carried out at Worcestershire Record Office (WRO). The following sources were specifically consulted and were of use:

3. The Documentary Research

Abbreviations Used: WRO ~ Worcester Records Office

PRO ~ Public Records Office

VCH ~ Victoria County History

3.1. Background

By the early 20th century Inkberrow parish, in the Oswaldslow Hundred, extended to 6,879 acres, of which over around a third were arable, almost two thirds permanent grass and just 203 acres being woodland. The sandy clay soils with marl subsoil were traditionally suited to growing wheat, barley, oats, beans and root crop. There are outcrops of sandstone occurring across the parish that have been quarried over many centuries to supply building materials for local houses, farm buildings and walls (VCH III, 418-30).

There is evidence to suggest that the area around Thorn has been the focus of settlement and activity from the prehistoric period; Mesolithic microliths, Neolithic and Bronze-Age flint tools and flakes have been found adjacent to the west of Thorn Farmhouse (WSM 04080; WSM 08654; WSM 08655) and to the north-west close to the main road (WSM 04078). Further evidence of possible prehistoric activity is evident in earthworks, close to the flint find-spots to the west of the farmhouse, where a linear feature and hollows have been identified (WSM 08653) and cropmark enclosures have been identified around 200 metres to the north (WSM 00808), although these features cannot be dated without intrusive work.

Recent archaeological work following previous finds of Roman pottery and coins in the vicinity (WSM32541; WSM 32190) identified Roman Severn Valley ware ceramics and metal artefacts, evidence suggestive of a Roman settlement nearby (WSM 29053).

There is also significant evidence to suggest Anglo-Saxon settlement at Thorn. A document of AD 963 records the lease of 3 hides of land at 'Thorndon' by Oswald, Bishop of Worcester to his servant Aethelstan (WRO: BA 527/20, 899:44). This evidence is supported by Saxon pottery found close to Thorn Farmhouse (WSM 08650).

At Domesday, Inkberrow was divided into two manors, which were both held by the Bishop of Hereford. This appears to have created tenure problems and the Bishopric of Worcester claimed the overlordship of both manors (VCH III, 421). The pattern of medieval ownership is complex and is not significant here; those interested should consult the Victoria County History Volume 3.

The first medieval record of Thorn (or Thorne) located during the documentary search dates from 1304; a document refers to the '*Lord of Thordene and all the men of the vill, being bound to appear every third year at the court of the abbey of Pershore at Allesborough*, (PRO E210/8438). The seat of the Lord of Thordene is likely to have been at Thorn Dene Farm (WSM 33839), adjacent to the north-eastern side of Thorn Farmhouse, which still has a partial

moat (WSM 07937) enclosing the modern farm buildings. There are further medieval references to Thorn: in 1428, William Gerard and Edmund Crowley held half a fee in Thorndon; John Gerard is recorded as holding land at Thorndon in 1431 and by the 1530's John Russell held the manor of Thorndon (WRO: BA 527/20, 899:44); the Russells' held Thorn manor until 1663 when Sir Thomas Russell died, although there is some dispute as to whether Thorn was a recognised manorial seat (VCH III).

3.2. Specific Background

The earliest located documents relative to the site dated from the mid 17th century, although close family ties between the ownership of Thorn Farm and Thorn Dene made interpretation somewhat confusing and the two may have been in common ownership prior to the mid-17th century. What is clear from the research is that Thorn Dene was the manorial seat.

It appears that around 1650 John and Elizabeth Lacy held estate at inkberrow including Thorn Farmhouse. Administration was granted on the will of John Lacy in 1664 passing his estate at Thorn to Hesther Poole (also known as Hesther Sollars) (WRO BA 8965/5/I, 705:962). Hesther Poole was married to Robert Sollars and was the Grandaughter and heir of John Lacy (WRO BA 5312/2, 705:627).

In 1667 Robert and Hesther Sollars leased Thorn Farm to Bartholomew Gregory. An Indenture of 1670 indicates that ownership of the estate was then passed to Thomas Rous – 'all that capital messuage called The Thorn'(WRO: BA 5312/2, 705:627).

In 1676 Thomas Rous passed the estate by his last will and testament to his son Francis, who married Frances Archer in 1682. Francis Rous died around 1688 and left the estate to his wife Frances, who seems to have passed it to her family, the Archers (WRO: BA 5312/2, 705:627).

In 1743 Lord Henry Archer leased Thorn Farmhouse to John Dovey and later to John Fortnam. Around the same time Thorn Dene was known as 'Woodwards', then in the possession of William Parr. This was clearly a substantial house, with parlour, little parlour, buttery, hall, buttery by the hall door, parlour chamber, little chamber adjacent to the parlour chamber, chamber over the hall and a cheese chamber (Gower and Laugher deeds, WRO: BA 5119/6, 705:170). During demolition of the house in 1889 a carved mantel beam was uncovered sealed beneath later plasterwork. This was inscribed: -

> "The taxes of the parish Ingbaro. Cokhill viiis. Aswod viis. Fecknam xiiis. Knighton vis. Egok and Clodselle £1-8s. Mortom £4. Boutts… Nowbiri viis. Grt Ingbaro viis. Little Ingbaro viiis. Id. Thurn vis….Harri Wodwarde £1-8s for his taxes".

Harry Woodwarde was a named executor of the will of the vicar of Inkberrow who died in 1588 (Bradebrook 1902). Henry Woodwarde, Yeoman of Inkberrow appears in a document of 1620 relating to lease of property at Thorn to Thomas Bercrofte (WRO: MS 3197/ACC 1919-025/280877).

The Harrisons' acquired Thorn farmhouse from the Archers' in 1789 and held it until the Cowley family became incumbent around 1812. The Harrisons leased out the farm to John Fortnam and later to his son Joseph Fortnam.

Land Tax Assessments for Inkberrow show that the Cowley family owned Thorn Farmhouse from around 1812.

Prior to the turn of the 18th century, Inkberrow in common with all lowland parishes of the English midlands (and further a field) would have been farmed using a two field rotational system (although often a three field system was used). Generally a village, or settlement was surrounded by two or three large open fields, which were farmed in 'strips', or 'lands'. These fields were commonly, although not always, named North Field, South Field, West Field or East Field, the name(s) often surviving into the modern day, even if the area has been 'urbanised'. This system had its origins in the Anglo Saxon period and was commonplace during the medieval period, when the lord of the manor allocated each farmer within the community strips of land within the fields. The strips would be spread across the fields, so that each farmer had a share of the good and bad land equally and no two strips farmed by an individual farmer were located together. Each farmer's allocation extended to (generally) around 20 acres across some 70 strips. Each strip measured about a quarter of an acre, or a 'furlong'. This system continued into the post-medieval period, with tenants paying the estate owners rent, whereas earlier they paid with service to the lord (customary tenants), or in produce. This category of field system pre-dates the enclosed field landscape that forms the mosaic of hedged fields that we see today across the modern rural landscape. Generally, in lowland England, this new field pattern was overlaid onto the open fields at the time of Parliamentary enclosure (inclosure), although earlier private enclosure was well underway by this time. The process and reasoning for enclosure is too complex for this report and those interested should refer to *Reed 1990*. Basically, before about 1840 over 5000 Parliamentary Acts were passed to enclose previously held common land, effectively ending the three-field system and changing the way agriculture was managed. Inkberrow was subject to this form of enclosure in between 1814 and 1818.

The Inclosure award of 1818 shows that the prominent landowners at Inkberrow were Earl Beauchamp of Madresfield Court and Lord Abergavenney, with ownership at Thorn being split between Jenny Laugher, who held Thorn Dene and William Cowley who held Thorn Farmhouse. The Award (WRO BA841, f926.491and BA 850 818/5) indicates that William Cowley of Abotts Morton, Gent, was in ownership of Thorn Farmhouse and the surrounding land. At this time, Thorn Dene was also referred to as Thorn Farmhouse (also in other documents as Thorndon). The Inclosure Plan shows Thorn Farmhouse as 'H' shape in plan, with a series of small farm buildings to the north, west and east; there are also two ponds depicted on the northern side.

In 1836 the Tithe Commutation Act was passed by Parliament, resulting in an extensive survey of land across England in order to produce a series of Tithe Apportionment Maps that relayed information about land ownership and use, aimed at converting the commutation of tithe in kind to land taxation (Hoskins 1972, 37). The Tithe Apportionment and Tithe Map for Inkberrow were produced in 1840. The Apportionment indicates that Thorn Farmhouse was still owned and occupied by Thomas Cowley. Thorn Dene was owned and occupied by Mary Laugher (WRO: BA 10603/1(x)2).

Littlebury's Trade Directory of 1860 shows Thomas Crowley farming at Thorn in 1860 and Billings' Directory of 1855 shows that he was there five years earlier.

The 1st edition Ordnance Survey 25" map of the area was not available at the records office, but the slightly later edition of 1904 shows the building in the same plan form as today (Figure 4).

3. The Historic Building Recording

3.1. The Fieldwork Methodology

The building recording was undertaken between 20th July and 3rd August 2006 prior to any development work being carried out at the site.

A full photographic survey was carried out using digital photography. Either a 2-metre or 1-metre scale was used where possible.

Proforma Building Record Forms were used to record the structure in tandem with site notes and reference to site photographs, to produce the final record contained within this report.

The methodology adopted and the favourable working conditions meant that the aims and objectives of the brief could be fully met and the fieldwork was successfully concluded.

4. The Fieldwork Results

4.1. General Description of the Structure

Thorn Farmhouse is a substantial 'H' plan timber-frame, brick and stone structure beneath a handmade clay tile roof. The hall range (central section) is 1½ storied with the pair of cross wings (north and south ends) of two stories (Plates 1 and 2). A hearth below an offset to central brick chimneystack heats the hall, with two further stacks within the southern cross-wing; the northern cross-wing is unheated. The building is much altered and externally displays evidence of phases of building, alteration and repair from the 17th to 20th centuries. There is an attached lean-to store and porch to the western elevation (Plate 3).

The former farmhouse stands in its own grounds extending to around 3.5 hectares, with former farm buildings to the north and south.

4.2. The Timber-Framing

The majority of the timber used in the timber frame construction is elm, notably with the exception of the cruck frame, which is of oak. This is further discussed below.

The timber frame element of the upstanding fabric offers the best evidence to understanding the development of the building and from this we can determine that two adjacent timber-framed buildings were later incorporated into the present single 'H' plan building. The

evidence shows that there was a freestanding timber-framed structure, now incorporated into the northern cross-wing, alongside a second timber-framed building where the hall now stands. This is likely to have represented a dwelling house with a detached kitchen or service block on the northern side, although this is further discussed below.

The evidence for the detached building is as follows: -

- There is a gap of 40 centimetres between the former end frame of the dwelling house (the present hall) and the southern elevation of the detached structure. This can be identified in Plate 4, which shows an original post of the detached building with the wall plate sawn through and removed and a plaster filled gap between it and the wall frame of the hall.

- The remains of the wall plate of the former detached building can be seen in-situ above the inserted staircase (Plate5).

- Empty mortises and peg holes in the wall plate indicate that the studs to the southern elevation of the detached building (rear) were spaced at 45 centimetres apart. There is a rebate for a tiebeam lap-dovetail joint on the upper face of the wall plate, indicating the location of a further roof-truss.

- The northern elevation framing has been altered / modified; there are empty peg holes in the wall plate indicating that it was once close studded; the difference between the framing of the southern wall, where the studs were spaced at 45 centimetre intervals and the northern close studding, indicates that the southern wall was not visible from outside. There are three stave holes between each mortise on the wall plate, indicating that the panels were of wattle and daub.

- The north-east corner post is set back 1.80 metres from the north-eastern corner of the cross-wing, indicating either some framing was lost during the conversion, or that the building was narrower than the cross-wing. The latter seems probable.

Further Observations on the Former Detached Building

The likelihood is that the present entrance is the location of the original entrance, although the form of this is masked by the insertion of the later doorway. This indicates that the framing that forms the eastern side of the through-passage must have been inserted when the two buildings were combined. The evidence for this is as follows: -

- The present configuration would not allow access to the western side of the space within the detached building.

- Although masked by timber architrave and coats of bitumen, it appears that the framing that forms the eastern side of the through-passage is a later insertion. The transverse bridging beams are supported on a central Sampson post (Plate 6), which can be seen in the frame. The planked western partition of the passage is also a later insertion indicating that the ground floor of the structure was originally a single space.

A lateral cross-frame now divides the upper story into two basic units (sub-divided by inserted partitions). The existing partition frame is of studwork nailed between the truss tie-beam and mid-rail, with plaster infill panels and a doorway on the southern side (Plate 7), but empty peg-holes in the tiebeam indicate that there were originally three studs tied to the frame (although this may have been a pair of braces with a central post). Although access to the loft

space was limited, it was possible to see that a pair of raking queen struts below a collar completed the truss. The truss had been roughly infilled with wattle and daub, suggesting that the space was originally open to the roof and although the other face of the truss could not be seen, it is possible that the infill was part of a smoke bay, which stood centrally within the detached building, with a baffle entry against the northern side of the hearth.

The Northern Cross-wing Framing

The surviving external timber-framing of the northern cross-wing is to the western gable truss, which is of four queen struts over tie-beam with a pair of raking struts (V strut) above the collar. There are visible carpenters marks on one of the queen struts (II) and on the southern corner of the tiebeam / principal assembly (VI).

The Hall Framing and its Association with the Northern Cross-wing

The northern end framing of the hall is close studded, with studs and panels of equal width (Plate 21). This can be seen at 1st floor level and in the loft space and empty peg holes in the mid-rail indicate that the ground floor framing was also studded similarly, although the western half has been obscured by a cut through doorway and later studding and brickwork adjacent to the chimneyplace. The evidence for any possible doorway through the frame at lower level is therefore inconclusive, although the low height of the mid-rail suggests that this was unlikely.

There are a series of carpenters' assembly marks on the face (northern side) of the upper studs and tiebeam. These are only visible in obtuse light due to the degraded condition of the timbers and several cannot be deciphered (Plates 8 and 9).

The upper doorway, which now links the hall and the northern cross-wing, has been cut though the tiebeam of the frame and the studs below have been removed to form the aperture (Plate 10). There is evidence of smoke blackening on the inner face of the frame from a former open hearth within the hall.

The Hall Cruck-Frame

A pair of heavy and substantial cruck blades, forming one cruck frame (a pair of crucks) are located just off the present central axis of the hall, making the southern bay slightly longer than the northern bay (further discussed below). It is likely that the cruck frame was originally one of four or five pairs of crucks forming a two bay hall, with a service bay (lower end) to the north, and a solar (upper end) to the south.

The cruck frame is visible at first floor level and within the loft space and the remains of associated cruck-studs can be seen externally within the fabric of the later brickwork side elevations of the hall. The cruck blades disappear into the sidewalls of the hall just above first floor level and the western blade is almost totally obscured by the inserted chimneystack. The configuration of the blades suggest that the cruck-frame was of the type referred to as a 'raised cruck', where the feet of the blades would be raised up on the side walls of the structure, although the evidence is masked by the later brick walls of the modified hall. From the outside it can be seen that cruck-studs were through pegged into the blades by a pair of large pegs to either side and it is likely there were further pegs below, which were removed with the lower levels of the blades when the brick elevations of the modified house were built. The visible cruck studs both have a scotch (socket for support during construction) close to the junction with the wall plate.

The cruck frame consists of a pair of substantial oak blades, around 50 centimetres across at the elbow, slimming down to 35 centimetres above. A curved collar is pegged between with three pegs to each side. The blades are chamfered to both arrises and a pair of chamfered arched braces form a curve below the collar, which has been cut into by a later partition post (Plates 11 and 12). The blades rise to a broad two-piece saddle, which now supports a ridge piece (Plate 13); the top section of the saddle was a later addition, indicating a change from a roof cover of thatch, to clay tile. Originally there were a single pair of purlins tenoned into each side of the frame; a pair of trenched purlins to either side has replaced these. Only the northern face of the cruck frame (the lower side) was clearly visible and this had been agitated at some stage to take plaster, in common with much of the visible internal framing of the hall.

The cruck was moderately smoke blackened, as was the southern face of the hall end frame (referred to above), suggesting that the hall was open to the roof prior to the re-modelling of the hall and insertion of an upper floor. The remains of wattles in the gap between the cruck saddle and collar may well represent the remains of a second phase smoke hood, which would have vented smoke away via a louver in the roof. The roof timbers and purlins, however, were not smoke blackened, indicating that they are later replacements.

The Southern Cross-wing Timber Framing

Timber framing is visible at the partition of the upper western space in the southern cross-wing. The visible timbers include a cross-frame tiebeam and principals with a pair of raking queen posts below a collar (Plate 14). The purlins appear to be trenched, but are obscured by the ceiling and may in fact be clasped between the principals and the tiebeam. A remaining curved wind-brace from principal to purlin can be seen, with a further wind-brace visible within the WC on the opposite side. An access door from the landing into the western room stands between a pair of visible studs, which distinctly lean to the south.

There are carpenters assembly marks on the northern principal, tiebeam and queen posts (Plates 15 and 16).

The close studding above the tiebeam of the western gable frame can be seen internally and the remains of the south-western corner post can be seen through a crack in the brickwork inner skin at this corner.

Floor Framing: The Northern Cross-wing

The first floor beams of the northern cross-wing are chamfered, but are without the elaborate stops evidenced elsewhere in the house, although the joists on the southern side of the axial beams have similar, but less well-carpented stops. Those to the north of the central beams have no stops and seem to have been replaced. The joists over the passage do not appear to be original either. The flooring sits on a half-beam pegged to the northern frame, suggesting that the floor is probably inserted, although later brickwork masks definitive evidence.

Floor Framing: The Hall

Smoke blackening of the cruck and northern frame provides evidence that the hall was originally open to the rafters and that the upper floor was a later insertion. Crucks are not usually associated with upper floors as they did not provide much headroom, however, the raised cruck was elevated on sidewalls and so upper floors were sometimes contemporary with construction. Ordinarily, it would be possible to interpret the framing of an inserted floor,

however, at Thorn Farmhouse the side frames have been replaced by later brick walls masking / removing evidence.

The floors of the northern and southern bays of the hall are set at different levels, with greater headroom in the southern bay. Both frames are contemporary, although the northern frame is of two phases. The reason for the difference in ceiling height is unclear, but it is likely that the northern bay floor is framed into a mantel beam within the cruck-frame, which is obscured by plaster and the southern floor sits on top of the mantel.

Both hall bay ceilings are of chequerboard form (Plate 19), with central bridging beams (single in the southern bay and a pair in the northern bay) and axial beams tenoned in at the central point. The beams are chamfered with run-out and raised bar stops. The joists are similarly embellished.

There are Empty mortises in the floor framing on the western side of the northern bay, indicating that that section of flooring is later and must have been altered when the chimney-place was altered sometime after insertion of the original chimneystack and the floors.

Floor Framing: Southern Cross-wing

The axial and transverse beams of the upper floor of the southern cross-wing can be seen in the western space and are distinct from the pair of visible axial beams in the eastern space, which are plainer with a simple chamfer. The western space beams are embellished with chamfer and pyramid stops (Plate 20).

4.3. The Brickwork

The west and eastern elevations of the hall are constructed in 2 ½" x 8 ¾" handmade reddish brick and lime mortar in a Flemish bond, although in sections the bond is lost. The western elevation has been extensively underbuilt with 2 ½ " mass-produced red brick, probably due to excessive sporing of the outer skin of the earlier brickwork

The west and eastern gables of the northern cross-wing have been rebuilt in English garden wall bond with 2 ½" x 9 ¼" brick. The upper storey brickwork of the western gable is spored and the brickwork below is underbuilt, similar to the western elevation of the hall range; the eastern elevation of the north-eastern lower corner is also underbuilt.

The southern cross-wing eastern gable is also constructed of brick and mortar in a common bond with a 5th course of Flemish headers, but the west and southern elevations are of stone. There is evidence of some rebuilding of the southern cross-wing; a joint in brickwork at the juncture of the western elevation of the hall and cross-wing suggests that timber framing was removed from the cross-wing later than from the hall (Plate 18), the opposite side also shows evidence of later brickwork to the gable end.

The only occurrence of brick used for embellishment is in the northern cross-wing western gable truss, where diamond work is used in the 'V' strut panel.

The remaining timber-framed structure has panel infills of brick, replacing earlier wattle and daub or lath and plaster.

4.4. The Stone Masonry

The upstanding structure is founded on a mainly sandstone plinth, which can just be seen at ground level in places and to a greater height at the northern end, where the ground slopes away.

The western and southern elevations of the southern wing are constructed in ashlar stone masonry with distinct tooling marks. The western gable indicates that the wing was formerly of close-studded timber-framed; internally, a corner post could be seen embedded in the wall.

Lias stone flags are used as a flooring material in the northern cross-wing, with the exception of two areas of brick flooring in the western room (wash room). Stone flooring can also be seen in the lower end of the hall and the passage and ground floor eastern room of the southern wing. The western room has a timber-planked floor and concrete is used in the upper bay of the hall.

The remaining lower portion of the attached bread oven is also of ashlar sandstone masonry.

4.5. Windows and Doors

Light to the upper rooms of the hall is provided by 3 dormer windows, one to the eastern elevation and two to the western side. On the ground floor there are two three light casement windows below brick lintels to the eastern elevation, with a bricked up doorway, also below a brick lintel. This would not have been the location of an original doorway. The window on the opposite western elevation is set below a rough brick arch. A further blocked doorway, also below a rough brick arch was noted to the western elevation from inside the former lean-to structure (see below).

There are upper and lower windows to the east and western elevations of the southern cross-wing, those to the east below rough brick arched heads and those to the west below stone lintels with central keystone. There are two blocked window apertures in to the southern elevation and the position of the eastern chimneystack, which is one of two at this end, indicates they were blocked when the chimneystack and associated fireplace was inserted; stone was used as the blocking material, though the chimneystack is of brick. At the same time, new apertures were created in the adjacent stonework and the windows replaced. The lower window is a 12 light peg framed unit, with thin glazing bars. The window is recessed by only around 3 centimetres. The upper window may be the original window re-used from the blocked aperture, but the lower unit is not, although it may be re-used from elsewhere. A pair of French windows lead from the western room (parlour) to the garden.

At the northern end none of the windows or door and casement are original, the earlier windows most likely were framed and mullioned.

4.6. The Lean-to

A lean-to extension is butted onto the western elevation of the hall, which may have been a piggery, but more likely a utility store / woodshed, with a bread oven on the southern side; the bricked up heat vent from the internal flue to the oven can be seen in the western elevation of the main structure. This must have been bricked up in the 20th century when a new flue was added to the northern side of the stack for the insertion of an Aga cooker; the brickwork supported on an RSJ, which can be seen protruding through the wall into the lean-to space.

The lean-to is constructed in brick and mortar, with thin timber noggin and brick infill to the southern elevation. The structure has a rough a lias stone flagged floor and ashlar stone is used to wall the bread oven area.

4.7. The Plan Form

The plan form as found is a classic 'H' plan with a central hall and cross-wings at either end and was most likely adopted at the site in the mid-17th century. This plan form became commonplace after the mid-15th century and into the 16th and 17th centuries.

The evidence from the fabric survey at Thorn Farmhouse indicates that the H plan was not original and that it was the result of development, probably during the mid-17th century.

The revised H plan layout would have comprised a central 2 bay hall, at first open to the rafters with a hearth in the lower end of the hall (northern bay), but later floored over with a brick chimneyplace replacing an interim wattle and daub smoke hood with louver through the roof, the only visible evidence for which, is remnant wattles at the apex of the remaining cruck frame. The hall would have been entered by a cross-passage in the lower end of the hall, the blocked in doorway at the northern end of the western elevation of the hall, most likely mirroring the earlier doorway to this elevation, the opposing doorway lost during 18th century modernisation in brick. The cross-passage may have been screened from the hall. The layout of rooms in such a plan was fairly standardised. The lower end, or service end of the house, would have been to the rear of the central frame, in this case the northern end. The service (lower) end may contain service chambers, kitchen, buttery, dairy and pantry etc. The upper end would contain the solar at first floor level with a parlour or private rooms below.

The hall is divided into two bays by an off centre partition wall, which is the location of the remaining cruck frame. A back-to-back hearth and associated chimney has been inserted into the northern bay, with a fireplace facing the southern bay and a fireplace modified to provide extraction from an Aga cooker in the northern bay. This has obscured the flue arrangement to the former bread oven, which was provided by heat from an earlier hearth. The northern floor is of square red quarry-tiles and the northern bay has a concrete floor. There is some timber framing visible to the partition between the northern cross-wing.

The northern cross-wing is now divided into three lower spaces. A central passage leads from the entrance in the northern elevation to the hall and a winder staircase rises to the first floor. This is divided from a former cheese room on the eastern side; by an inserted timber frame with brick infill panels and a further service room (wash house) on the western side, by a plank partition. This room contains an early Belfast style sink and a cast iron pump with an area divided off as a coal store. The floor across the space is mainly of lias flagstones, with a step down in the service room to a brick floor with central stone flagged row (Plate 17).

The upper storey of the northern cross-wing is divided into three spaces off a landing at the head of the stairs (service chambers, buttery etc). The western space has lately been used as a bathroom and still contains a Victorian roll top ball and claw foot cast-iron bath. The space opposite the central landing has a sliding timber shutter across the window. The eastern space has visible timber-framing to two elevations.

The access to the upper hall from the northern crosswing is via a low doorway cut through the tiebeam of the timber cross-frame that now forms the partition between the two. The well-proportioned chimneystack is situated against the western elevation, with a fireplace on the opposite side, in the southern bay. The space is split into two bays (chambers) by a partition

inserted into the substantial cruck frame. The southern bay is reached via a step up through the partition. The space is plastered over apart from a pair of purlins, which are visible on either side. These are waney edged and a rebate cut into one indicates re-use from elsewhere.

The lower southern cross wing is divided laterally by a brick wall partition incorporating a corner fireplace; the eastern room has a further fireplace. The eastern room and passage, which adjoins the hall, have flagstone floors, whilst the western room (parlour) is floored in timber. A winder staircase rises from the passage to the space above.

The southern cross-wing has a central landing above the staircase from below, with a large space to the western side (chamber) with visible timber framing at the partition, a partitioned space lately used as a WC and a further space (chamber) on the eastern side.

This layout may be compared with the description of the layout at Woodwards in the 18th century (section 3.2 above). This is described in a document of 1742 as containing a 'parlour, little parlour, buttery, hall, buttery by the hall door, parlour chamber, little chamber adjacent to the parlour chamber, chamber over the hall and a cheese chamber', indicating the degree of standardisation.

Fixtures and Fittings

The building is unusual in that it retains a high proportion of fixtures and fittings from all phases of development of the house. These notably include several 17th century plank and ledged doors complete with carved wooden handles and latches; 18th century window catches and Iron door catches and 19th century fireplaces and roll top ball and claw foot bath (Plates 22 to 27).

A timber sliding-shutter (Plate 28) in the upper storey (northern elevation) of the northern cross-wing is not original to the frame, but appears to date from the second phase re-modelling of the building (see phasing and dating below).

4. Dendrochronology (by Michael Worthington)

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Only one timber from the primary phase of the building was suitable for analysis, this was the east cruck blade, from what appears to be the centre open truss of a large cruck framed hall house. This timber has produced a 90 year chronology spanning the years AD 1419-1508. Once the sapwood from a secondary sample was taken in to account, a date range of AD 1535-40 was assigned for this timber (Table 1 & 2: Appendix 1 below).

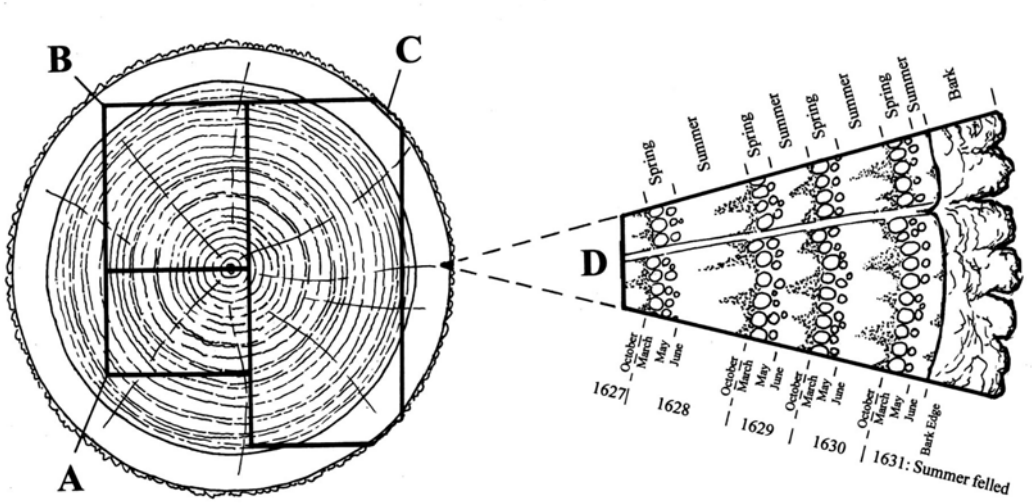
How Dendrochronology Works

Dendrochronology has over the past 20 years become one of the leading and most accurate scientific dating methods. Whilst not always successful, when it does work, it is precise, often to the season of the year. Tree-ring dating is well known for its use in dating historic buildings and archaeological timbers to this degree of precision. However more ancillary objects such as doors, furniture, panel paintings, and wooden boards in medieval book-bindings can sometimes be successfully dated.

The science of dendrochronology is based on a combination of biology and statistics. Fundamental to understanding how dendrochronology works is the phenomenon of tree growth. Essentially, trees grow through the addition of both elongation and radial increments. The elongation takes place at the terminal portions of the shoots, branches, and roots, while the radial increment is added by the cambium, the zone of living cells between the wood and the bark. In general terms, a tree can be best simplified by describing it as a cone, with a new layer being added to the outside each year in temperate zones, making it wider and taller.

An annual ring is composed of the growth, which takes place during the spring and summer until about November when the leaves are shed and the tree becomes dormant for the winter period. For the European oak (Quercus robur and Q. petraea), as well as many other species, the annual ring is composed of two distinct parts - the spring growth or early wood, and the summer growth, or late wood. Early wood is composed of large vessels formed during the period of shoot growth which takes place between March and May, which is before the establishment of any significant leaf growth, and is produced by using most of the energy and raw materials laid down the previous year. Then, there is an abrupt change at the time of leaf expansion around May or June when hormonal activity dictates a change in the quality of the xylem and the summer, or late wood is formed. Here the wood becomes increasingly fibrous and contains much smaller vessels. Trees with this type of growth pattern are known as ring-porous, and are distinctive in the contrasting open, light-coloured early wood vessels compared to the dense, darker-coloured late wood.

Dendrochronology utilises the variation in the width of the annual rings as influenced by climatic conditions common to a large area, as opposed to other more local factors such as woodland competition and insect attack. It is through the comparison of these climate-induced variations in ring widths that allows calendar dates to be ascribed from a firmly-dated sequence to one which is not. If a tree section is complete to the bark edge, then when dated a precise date of felling can be determined, precise to the season of the year, depending on the degree of formation of the outermost ring. Therefore, a tree with bark which has the spring vessels formed but no summer growth can be said to be felled in the spring, although it is not possible to say in which particular month the tree was felled.



Section of tree with conversion methods showing three types of sapwood retention resulting in A terminus post quem, B a felling date range, and C a precise felling date. Enlarged area D shows the outermost rings of the sapwood with growing seasons (Miles 1997, 42)

Another important dimension to dendrochronological studies is the presence of sapwood. This is the band of growth rings immediately beneath the bark and comprises the living growth rings which transport the sap from the roots to the leaves. This sapwood band is distinguished from the heartwood by the prominent features of colour change and the blocking of the spring vessels with tyloses, the waste products of the tree's growth. The heartwood is generally darker in colour, and the spring vessels are blocked with tyloses. The heartwood is dead tissue, whereas the sapwood is living, although the only really living, growing, cells are in the cambium, immediately beneath the bark. In European oak (Quercus robur sp), the difference in colour is generally matched by the change in the spring vessels. Generally the sapwood retains stored food and is therefore attractive to insect and fungal attack once the tree is felled and therefore is often removed during conversion.

Sapwood in European oaks tends to be of a relatively constant width and/or number of rings. By determining what this range is with an empirically or statistically-derived estimate is a valuable aspect in the interpretation of tree-ring dates where the bark edge is not present (Miles 1997). The narrower this range of sapwood rings, the more precise the estimated felling date range will be.

Methodology: The Dating Process

All timbers sampled were of oak (Quercus spp.) from what appeared to be primary first-use timbers, or any timbers which might have been re-used from an early phase. Those timbers which looked most suitable for dendrochronological purposes with complete sapwood or reasonably long ring sequences were selected. In situ timbers were sampled through coring, using a 16mm hollow auger. Details and locations of the samples are detailed in the summary table.

The dry samples were sanded on a linisher, or bench-mounted belt sander, using 60 to 1200 grit abrasive paper, and were cleaned with compressed air to allow the ring boundaries to be clearly distinguished. They were then measured under a x10/x30 microscope using a travelling stage electronically displaying displacement to a precision of 0.01mm. Thus each ring or year is represented by its measurement which is arranged as a series of ring-width

indices within a data set, with the earliest ring being placed at the beginning of the series, and the latest or outermost ring concluding the data set.

The principle behind tree-ring dating is a simple one: the seasonal variations in climate-induced growth as reflected in the varying width of a series of measured annual rings is compared with other, previously dated ring sequences to allow precise dates to be ascribed to each ring. When an undated sample or site sequence is compared against a dated sequence, known as a reference chronology, an indication of how good the match is must be determined. Although it is almost impossible to define a visual match, computer comparisons can be accurately quantified. Whilst it may not be the best statistical indicator, Student's (a pseudonym for W S Gosset) t-value has been widely used amongst British dendrochronologists. The cross-correlation algorithms most commonly used and published are derived from Baillie and Pilcher's CROS programme (Baillie and Pilcher 1973), although a faster version (Munro 1984) giving slightly different t-values is sometimes used for indicative purposes.

Generally, t-values over 3.5 should be considered to be significant, although in reality it is common to find demonstrably spurious t-values of 4 and 5 because more than one matching position is indicated. For this reason, dendrochronologists prefer to see some t-value ranges of 5, 6, or higher, and for these to be well replicated from different, independent chronologies with local and regional chronologies well represented. Users of dates also need to assess their validity critically. They should not have great faith in a date supported by a handful of t-values of 3's with one or two 4's, nor should they be entirely satisfied with a single high match of 5 or 6. Examples of spurious t-values in excess of 7 have been noted, so it is essential that matches with reference chronologies be well replicated, and that this is confirmed with visual matches between the two graphs. Matches with t-values of 10 or more between individual sequences usually signify having originated from the same parent tree.

In reality, the probability of a particular date being valid is itself a statistical measure depending on the t-values. Consideration must also be given to the length of the sequence being dated as well as those of the reference chronologies. A sample with 30 or 40 years growth is likely to match with high t-values at varying positions, whereas a sample with 100 consecutive rings is much more likely to match significantly at only one unique position. Samples with ring counts as low as 50 may occasionally be dated, but only if the matches are very strong, clear and well replicated, with no other significant matching positions. This is essential for intra-site matching when dealing with such short sequences. Consideration should also be given to evaluating the reference chronology against which the samples have been matched: those with well-replicated components which are geographically near to the sampling site are given more weight than an individual site or sample from the opposite end of the country.

It is general practice to cross-match samples from within the same phase to each other first, combining them into a site master, before comparing with the reference chronologies. This has the advantage of averaging out the 'noise' of individual trees and is much more likely to obtain higher t-values and stronger visual matches. After measurement, the ring-width series for each sample is plotted as a graph of width against year on log-linear graph paper. The graphs of each of the samples in the phase under study are then compared visually at the positions indicated by the computer matching and, if found satisfactory and consistent, are averaged to form a mean curve for the site or phase. This mean curve and any unmatched individual sequences are compared against dated reference chronologies to obtain an absolute calendar date for each sequence. Sometimes, especially in urban situations, timbers may have come from different sources and fail to match each other, thus making the compilation of a

site master difficult. In this situation samples must then be compared individually with the reference chronologies.

Therefore, when cross-matching samples with each other, or against reference chronologies, a combination of both visual matching and a process of qualified statistical comparison by computer is used. The ring-width series were compared on an IBM compatible computer for statistical cross-matching using a variant of the Belfast CROS program (Baillie and Pilcher 1973). A version of this and other programmes were written in BASIC by D Haddon-Reece, and re-written in Microsoft Visual Basic by M R Allwright and P A Parker.

Ascribing and Interpreting Felling Dates

Once a tree-ring sequence has been firmly dated in time, a felling date, or date range, is ascribed where possible. For samples which have sapwood complete to the underside of, or including bark, this process is relatively straight forward. Depending on the completeness of the final ring, i.e. if it has only the early-wood formed, or the latewood, a precise felling date and season can be given. If the sapwood is partially missing, or if only a heartwood/sapwood transition boundary survives, then an estimated felling date range can be given for each sample. The number of sapwood rings can be estimated by using a statistically derived sapwood estimate with a given confidence limit. A review of the geographical distribution of dated sapwood data from historic building timbers has shown that a 95% range of 11-41 rings is most appropriate for the Welsh borders (Miles 1997), which will be used here. If no sapwood or heartwood/sapwood boundary survives, then the minimum number of sapwood rings from the appropriate sapwood estimate is added to the last measured ring to give a terminus post quem (tpq) or felled after date.

Some caution must be used in interpreting solitary precise felling dates. Many instances have been noted where timbers used in the same structural phase have been felled one, two, or more years apart. Whenever possible, a group of precise felling dates should be used as a more reliable indication of the construction period. It must be emphasised that dendrochronology can only date when a tree has been felled, not when the timber was used to construct the structure under study. However, it is common practice to build timber-framed structures with green or unseasoned timber and that construction usually took place within twelve months of felling (Miles 1997).

Details of Dendrochronological Analysis

The results of the dendrochronological analysis for the building under study are presented in a detailed tables. The most useful of these is the summary Table 1 (Appendix 1 below). This gives most of the salient results of the dendrochronological process, and includes details for each sample, its location, and its felling date or date range, if successfully tree-ring dated. This last column is of particular interest to the end user, as it gives the actual year and season when the tree was felled, if bark is present, or an estimated felling date range if the sapwood is incomplete. Occasionally it will be noted that the felling date ranges may coincide with the precise felling date ranges. This is nothing to be overly concerned about so long as these are not too far apart. It must be remembered that the estimated felling date ranges are calculated at a 95% confidence level, which means that statistically one sample in 20 will have felling dates which actually fall outside the predicted range. (Miles 1997).

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5. Phasing of the Buildings and Dating

Discussion of the Fabric and Dating Evidence

There is clear evidence that there are two separate buildings incorporated into the whole. A rectangular detached timber-framed building has been incorporated into a larger northern cross-wing of a later phase. This may have been a detached kitchen, service block or even a separate house; this is further discussed below. If as suspected, the entrance to this structure remains in its original place, then the cross-frame that separates the lower internal spaces must be a later insertion, as it separates the eastern space (cheese room) from any access to it. The bridging beams to the cheese room and the western room, support an upper floor and there is no reason to suspect that this was not original to the build, although later modernisation in brick has masked definitive proof; the present winder staircase is a later insertion and relates to the amalgamated building.

The relationship between this detached building and the building to the south (the hall and southern cross-wing) is less than straightforward Only 40 centimetres separated the two individual structures. The dendrochronology dated the cruck frame within the hall to AD 1535-1540 and this provides the date of earliest occupation of the upstanding structures, but there is no evidence to demonstrate that the cruck-framed building and the northern detached building were contemporary, although a 16th century date would be typologically congruent with the style of framing of the detached building.

Position, sole survival and relatively late date of the cruck frame present certain problems in interpretation of plan form. The style of the cruck frame (chamfered arrises and braces, tenoned purlins, girth, quality, smoke blackening) suggests that this was a central frame of the hall, the status it retained into the later 17th century rebuild. Therefore, at least two cruck frames have been removed from the sequence and it is more likely that four cruck-frames have been removed, the original plan of the cruck building being a four-bay structure with a tw0-bay central hall and services at the northern end with private chambers to the south. This evidence indicates that the detached building is later, as it lies within the proposed footprint of such a building.

The position of mortises in the cruck frame to take the side purlins indicates that the remaining cruck is not associated with the northern cross-frame of the hall, as there would be similar tenons in that frame if the two were contemporary.

From this we can determine that a cruck-framed open hall was built on the site between 1535 and 1540 and that only one cruck-frame survives from this phase of building, possibly due to demolition or just as likely to the ravages of fire sometime before 1600 (unsubstantiated).

After the loss of the cruck-framed structure, a new close studded box frame structure was built, retaining the former central cruck-frame within the hall. Whilst the retention of the one cruck may seem strange, this is likely to be tied into the hierarchical ideology of the late medieval period, which makes distinction, even in carpentry, between the upper and the lower order in society (further discussed below). The detached northern building was also built at

this time and is likely to have been the service block, or detached kitchen and services for the hall house. It cannot be determined if the southern cross-wing is contemporary with the second phase hall, although this seems likely, indicating a 'T' plan open hall and two storied cross-wing with a detached service block to the north.

Sometime around 1650, the buildings were extensively remodelled with a northern cross-wing added incorporating much of the framing of the formerly detached building. The hall was floored over at this time and a brick chimneyplace inserted.

Much of the external framing had been removed by the middle of the 18th century and replaced by more fashionable brick. It is sometimes possible to date domestic architecture (approximately) using brick typology. Generally, bricks got gradually larger between the 16th and 18th centuries and in 1784 a brick tax was introduced, resulting in standardised 3" bricks. The bricks used at Thorn Farmhouse are generally hand-made 2 ½" items.

The evidence suggests that minor alterations and modification continued to be made between the 18th and 20th centuries, including blocking of doorways, addition of the lean-to, further removal of timbers and additional brickwork. Two elevations of the southern cross-wing were constructed in ashlar stone at different times, as they are not tied together. It is difficult to determine whether the stone elevations pre-date the brick or vice-versa, but the order of construction suggests that the brickwork was later, although the window-style (12 light) suggests a mid to late-18th century for the stonework, similar to the brickwork. There is also no evidence to suggest that the southern cross-wing was originally reconstructed entirely in stone, as may be expected

Later in the 18th century a further hearth, flue and chimneystack were added facing the lower end of the hall, which by now was divided into two-spaces (removing the social importance of the central frame), and part of the upper floor renewed, as it had to be dismantled for insertion of the second hearth.

Two window apertures in the southern elevation of the southern cross-wing were blocked up with ashlar stone when a chimney was inserted during the 19th century; the second chimney to the cross-wing appears earlier and perhaps dates from around 1800.

6. General Discussion

The scantling of timber used and the quality of carpentry of the remaining cruck-frame at Thorn Farmhouse indicate that the 1535-40 structure was fairly high status. It is suggested that the carpentry of cruck-frames from the western part of Worcestershire is of a higher quality than that of the eastern parts, making an assessment of status of the original freeholder difficult, although it is likely that the hall house at Thorn was built by a yeoman farmer. Crucks were generally replaced by box framing for houses from the mid-16th century (Alcock 1981, 75), making Thorn a late example.

The form that the original cruck-framed hall house took can only be speculative, due to the scant remains. It is likely to have been a four bay structure, with central hall, upper solar and lower service end. The smoke blackened remaining cruck indicates that there was an open hearth in the lower bay of the hall, although remnant wattling at the apex suggests a smoke-

hood was a later addition. A pair of empty mortises in the cruck blades indicates that there were trenched purlins and a saddle carried a ridge piece (Type C apex joint), which is possibly later, as it appears an upper section has been added to the saddle to support a ridge. It has been suggested the use of a ridge piece was rare in Worcestershire crucks (Charles 1967, 33).

The use of oak for the crucks is to be expected, as the nature and size of the tree makes it ideal to be used in cruck carpentry, however, cruck frames were often fabricated from other timber; the Cholstrey barn from Herefordshire, now rebuilt at Avoncroft Museum of Buildings has crucks of black poplar, although the remainder of the frame was oak. At Thorn, the majority of the structure appears to be of elm (Worthington pers comm), with the only remaining pair of crucks of oak.

The form of cruck-frame used at Thorn is unclear, as the lower portion of the blades is either obscured or removed. The evidence as it stands, without intrusive investigation, suggests that the cruck was of a type known as a raised cruck, where the feet of the blades were located in sidewalls, possibly up to 2-metres high. This suggests that the house may originally have had stone-walls, although this is speculative and a thatched roof is likely. It is probable that the lost crucks were of oak, similar to the retained pair, the frame, however, may have been of elm, which was used extensively in framing across Warwickshire and Worcestershire.

It appears from the evidence that the cruck structure was dismantled relatively soon after construction, possibly around 1600. The reason for this is unclear, but a fire seems the most likely scenario, although this would not explain the survival of the central cruck-frame. After this time two separate buildings were erected on the site, the central hall frame seemingly retained in the same place. This demonstrates the accepted social importance of the central-frame, which was the pivotal point of those that served and those whom they served. This is reflected in the carpentry of central frames and layout of the hall, with elaborate carving and higher standard carpentry faced towards the upper end on the upper face of the frame, the larger bay of the hall, including the high table and dais, also located being at the upper end; the same distinctions are evident in stone houses, where arched headed windows may be used to the upper end rooms whilst other rooms have plain heads (Cooper 2002). This represented the accepted hierarchy of society, with those that served at the lower end viewing the less elaborate carpentry of the lower faces. Of course this raises questions about the view of the peasant / yeoman farmer within the hierarchy, the arrangement of their own halls with lower end services and private upper end mirroring, although at a smaller scale, the acknowledged layout of the aristocratic household of the lord; whilst the peasant often enjoyed a less than harmonious relationship with his lords, he seems to have stuck to the ideology of upper and lower within his own household (Dyer 1997).

The detached building on the northern side of the second phase hall must have been a separate service block or kitchen, as the new hall terminated 40 centimetres from the structure and was therefore without a service bay. There are ongoing debates regarding detached kitchens and their status (Martin and Martin 1998, 2001; Smith 2001). Basic criteria for differentiating a detached kitchen from a small dwelling house includes ‘no differentiation between an upper and lower end of the structure and no elaboration of carpentry, location close to the lower end of the hall, easy access between the two and of course a cooking place’ (ovens or hearth) (Martin and Martin 2001, 20-21). The detached building seems to fit into this general arrangement, although later alteration has undoubtedly obscured definitive evidence, the space now lacking a hearth.

The narrow period of change within the buildings needs further discussion here. The original cruck-framed open hall house is of a relatively late date for the use of crucks in a domestic

context, the oaks used felled between 1535 and 1540. This was at a time of great change in land ownership across the county, following the Dissolution of the Monasteries, where King Henry VIII sold the monastic lands at basement prices in his endeavour to raise cash quickly resulting in a new class of gentrified landowners. At Inkberrow, the lands of Cookhill Priory were sold to Nicholas Fortescue in 1542. The short life of the cruck-framed hall is curious, with the second phase of structures replacing it perhaps only a few decades later. This suggests a catastrophe and the presence of a later detached kitchen would support a fire theory, although it appears from smoke-blackening on the new hall framing that an open hearth was still in use within the hall, although it is likely that thatch had been replaced by a tiled roof.

The second phase structure employed close studding, with studs and panels at equal intervals, the excessive use of timber suggesting wealth and some status, the status of the owners further demonstrated by remodelling a few decades later, with an upper storey added to the hall and the hearths contained within a brick chimneyplace. The carpentry and substantial timbers used suggest that the economic situation was favourable at the time of alteration. There has been great debate over the last half century regarding the notion of a 'Great Rebuilding of England' during the period 1570 to 1640 (Hoskins 1953; Machin 1977; Alcock 1983; Currie 1988; Johnson 1993), which is beyond the scope of this project. However, it is clear that the rebuilding at Thorn falls into the period of the Great Rebuilding, although the well thumbed argument that earlier buildings were replaced by later 'less-flimsy' structures does not hold up.

The background research was limited in its intention to put the farmhouse into its social and economic context, but this was mainly possible from analysis of its fabric form and structure. The main problem associated with the research was the confusion between Thorndene and Thorn and at one point they seem both to have been referred to as Thorn Farmhouse, Thorn Farm and the Thorn(e). The association between Thorn Dene and thorn Farmhouse is complex, although the remains of a moat at Thorndene indicate that this was the greater of the houses, a factor recognised in the Land Tax Assessments of the 18th and 19th centuries, which assess Thorndene at £8- 7 shillings and Thorn at £7-6 shillings. It is clear from the surviving documentation that a focused, but extensive programme of research may be able to interpret most of the post-medieval history of Thorn, although it is doubtful if the history could be pushed back as early as the mid-16th century.

7. Conclusion

The results of the historic building recording at Thorn Farmhouse determined that a cruck-framed hall house of a yeoman farmer stood on the site (dendro dated to 1535-4) until the later decades of the 16th century, when it was removed, apart from the central cruck-frame, possibly after a fire at the site. At this time a new close-studded box frame hall was built incorporating and focused on the remaining central cruck of the earlier hall. A separate service block was built adjacent to the northern side of the new structure.

The site was modified in the early to mid-17th century, when the hall and detached services were amalgamated into a larger 'H' plan building with a central hall flanked by cross-wings at either end. The hall was floored over and a brick chimneyplace and stack inserted. Around the mid-18th century the building was further modernised, with brick elevations replacing timber-framing; stone elevations of the southern cross-wing appear to be slightly earlier than the brickwork, although not original to the build as they encase some remnant timber framing. Modernisation continued into the 20th century, although the building retains many period features from the mid-17th century and 18th century re-builds.

8. Acknowledgements

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APPENDIX 1: TABLES

Table 1: Summary of Tree-Ring Dating

THORN FARMHOUSE, INKBERROW, WORESTERSHIRE

Sample number & type		Timber and position spanning	Dates AD bdry	H/S complement	Sapwood	No of rings	Mean width	Std devn	Mean sens	Felling seasons and dates/date ranges (AD)
						mm	mm	mm		
tfhw1a	c	East cruck 1419-1508				90	2.50	1.11	0.234	
tfhw1b	c	ditto -		30 ½C	53	1.16	0.73	0.304		AD 1535-1540
tfhw2	c	Brace east sideNot suitable for processing								
tfhw3	c	Collar Not suitable for processing								

Key: *, †, § = sample included in site-master; c = core; mc = micro-core; s = slice/section; g = graticule; p = photograph; ¼C, ½C, C = bark edge present, partial or complete ring: ¼C = spring (last partial ring not measured), ½C = summer/autumn (last partial ring not measured), or C = winter felling (ring measured); H/S bdry = heartwood/sapwood boundary - last heartwood ring date; std devn = standard deviation; mean sens = mean sensitivity

Explanation of terms used in Table 1

The summary table gives most of the salient results of the dendrochronological process. For ease in quickly referring to various types of information, these have all been presented in Table 1. The information includes the following categories:

Sample number: Generally, each site is given a two or three letter identifying prefix code, after which each timber is given an individual number. If a timber is sampled twice, or if two timbers were noted at time of sampling as having clearly originated from the same tree, then they are given suffixes '**a**', '**b**', etc. Where a core sample has broken, with no clear overlap between segments, these are differentiated by a further suffix '**1**', '**2**', etc.

Type shows whether the sample was from a core 'c', or a section or slice from a timber's'. Sometimes photographs are used 'p', or timbers measured *in situ* with a graticule 'g'.

Timber and position column details each timber sampled along with a location reference. This will usually refer to a bay or truss number, or relate to compass points or to a reference drawing.

Dates AD spanning gives the first and last measured ring dates of the sequence (if dated),

H/S bdry is the date of the heartwood/sapwood transition or boundary (if present). This date is critical in determining an estimated felling date range if the sapwood is not complete to the bark edge.

Sapwood complement gives the number of sapwood rings. The tree starts growing in the spring during which time the earlywood is produced, also known also as spring growth. This consists of between one and three decreasing spring vessels and is noted as *Spring* felling and is indicated by a ¼ C after the number of sapwood ring count. Sometimes this can be more accurately pin-pointed to very early spring when just a few spring vessels are visible. After the spring growing season, the latewood or summer growth commences, and is differentiated from the proceeding spring growth by the dense band of tissue. This summer growth continues until just before the leaves drop, in about October. Trees felled during this period are noted as *summer* felled (½ C), but it is difficult to be too precise, as the width of the latewood can be variable, and it can be difficult to distinguish whether a tree stopped growing in autumn or *winter*. When the summer growth band is clearly complete, then the tree would have been felled during the dormant winter period, as shown by a single C. Sometimes a sample will clearly have complete sapwood, but due either to slight abrasion at the point of coring, or extremely narrow growth rings, it is impossible to determine the season of felling.

Number of rings: The total number of measured rings on the samples analysed. If the pith is included or near to the beginning of the sequence, this is indicated by a ⊖ symbol if the pith is included in sample; Φ if within 5 rings of centre; and Ω if within 10 rings of centre.

Mean ring width: This, simply put, is the sum total of all the individual ring widths, divided by the number of rings, giving an average ring width for the series.

Mean sensitivity: A statistic measuring the mean percentage, or relative, change from each measured yearly ring value to the next; that is, the average relative difference from one ring width to the next, calculated by dividing the absolute value of the differences between each pair of measurements by the average of the paired measurements, then averaging the quotients for all pairs in the tree-

ring series (Fritts 1976). Sensitivity is a dendrochronological term referring to the presence of ring-width variability in the radial direction within a tree which indicates the growth response of a particular tree is "sensitive" to variations in climate, as opposed to complacency.

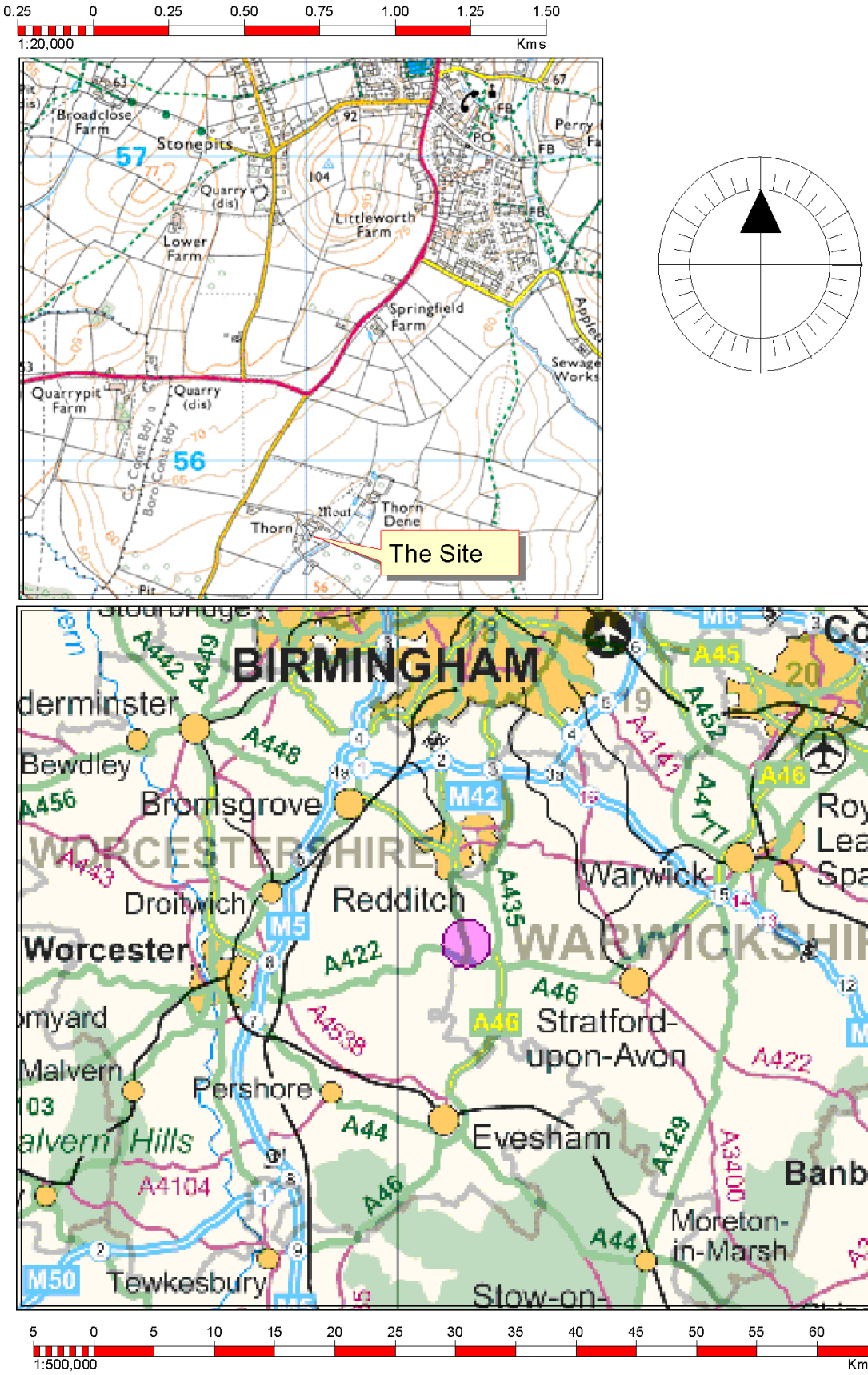
Standard deviation: The mean scatter of a population of numbers from the population mean. The square root of the variance, which is itself the square of the mean scatter of a statistical population of numbers from the population mean. (Fritts 1976).

Felling seasons and dates/date ranges is probably the most important column of the summary table. Here the actual felling dates and seasons are given for each dated sample (if complete sapwood is present). Sometimes it will be noticed that often the precise felling dates will vary within several years of each other. Unless there is supporting archaeological evidence suggesting different phases, all this would indicate is either stockpiling of timber, or of trees which have been felled or died at varying times but not cut up until the commencement of the particular building operations in question. When presented with varying precise felling dates, one should always take the *latest* date for the structure under study, and it is likely that construction will have been completed for ordinary vernacular buildings within twelve or eighteen months from this latest felling date (Miles 1997).

Table 2: Dating of site master TFHW1 (1419-1508) against reference chronologies at 1508

	County or region:	*Chronology name:*	*Short publication reference:*	*File name:*	*Spanning:*	*Overlap:*	t-*value:*
	Southern England	Southern England Master	*(Bridge 1998)*	SENG98	944-1790	90	4.51
‡±	Hampshire	Mottisfont Abbey	*(Miles 1996)*	MOTISFNT	1388-1538	90	4.55
	Buckinghamshire	Chenies Manor	*(Miles, Worthington & Bridge 2005)*	CHENIES1	1370-1551	90	4.57
	Wiltshire	Queen Manor Granary	*(Tyers and Groves1999; Tyers 1999)*	CL_QMFG1	1337-1602	90	4.60
	Wiltshire	Dog Kennel Farm, Clarendon	*(Miles, Worthington & Bridge 2005)*	**CLRENDN7**	1351-1603	90	4.73
	Dorset	Nave, Sherborne Abbey	*(Bridge 1993)*	SHERNAVE	1339-1474	56	4.92
	Buckinghamshire	House of Prayer Barn, Burnham	*(Miles and Haddon-Reece 1995)*	**BURNHAM**	1300-1505	87	4.93
		Welsh Borders Master	*(Fletcher 1978)*	MC19	1399-1800	90	5.54

Figure 1: Location of the Site



Location of the Site at Thorn, Inkberrow, Worcestershire

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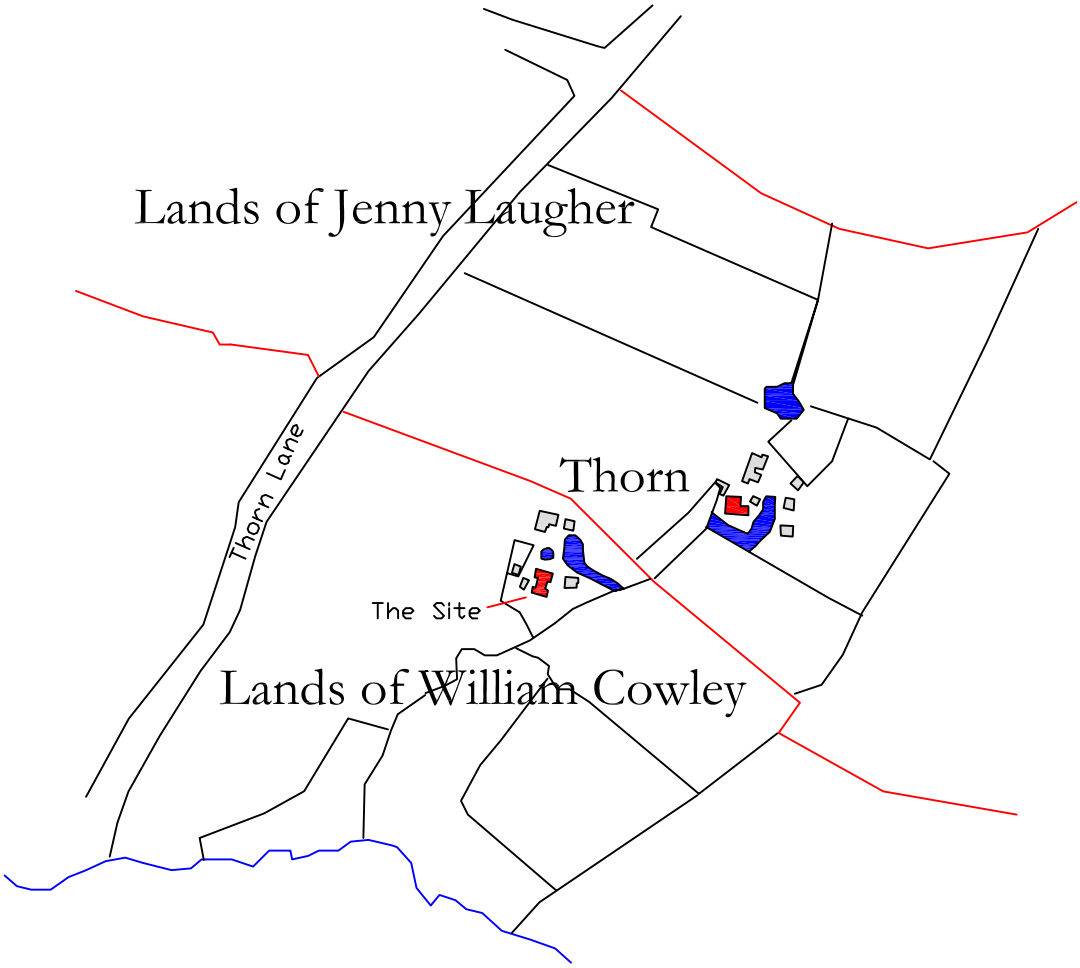


Figure 2: Extract from the Inkberrow Inclosure Plan (1818)

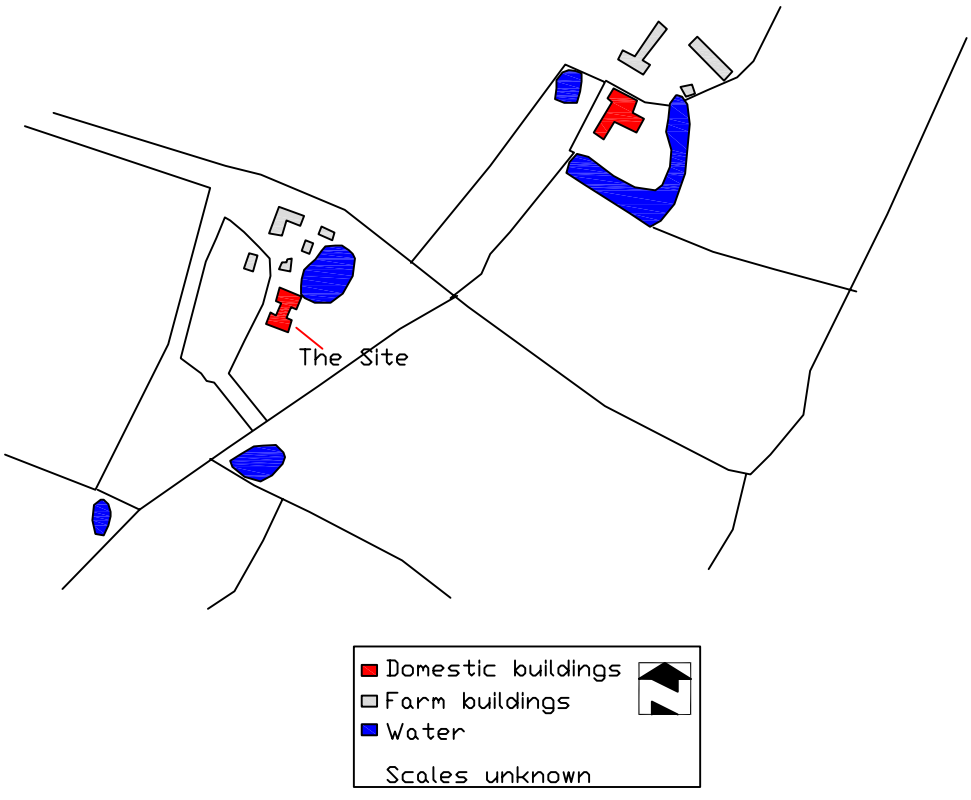
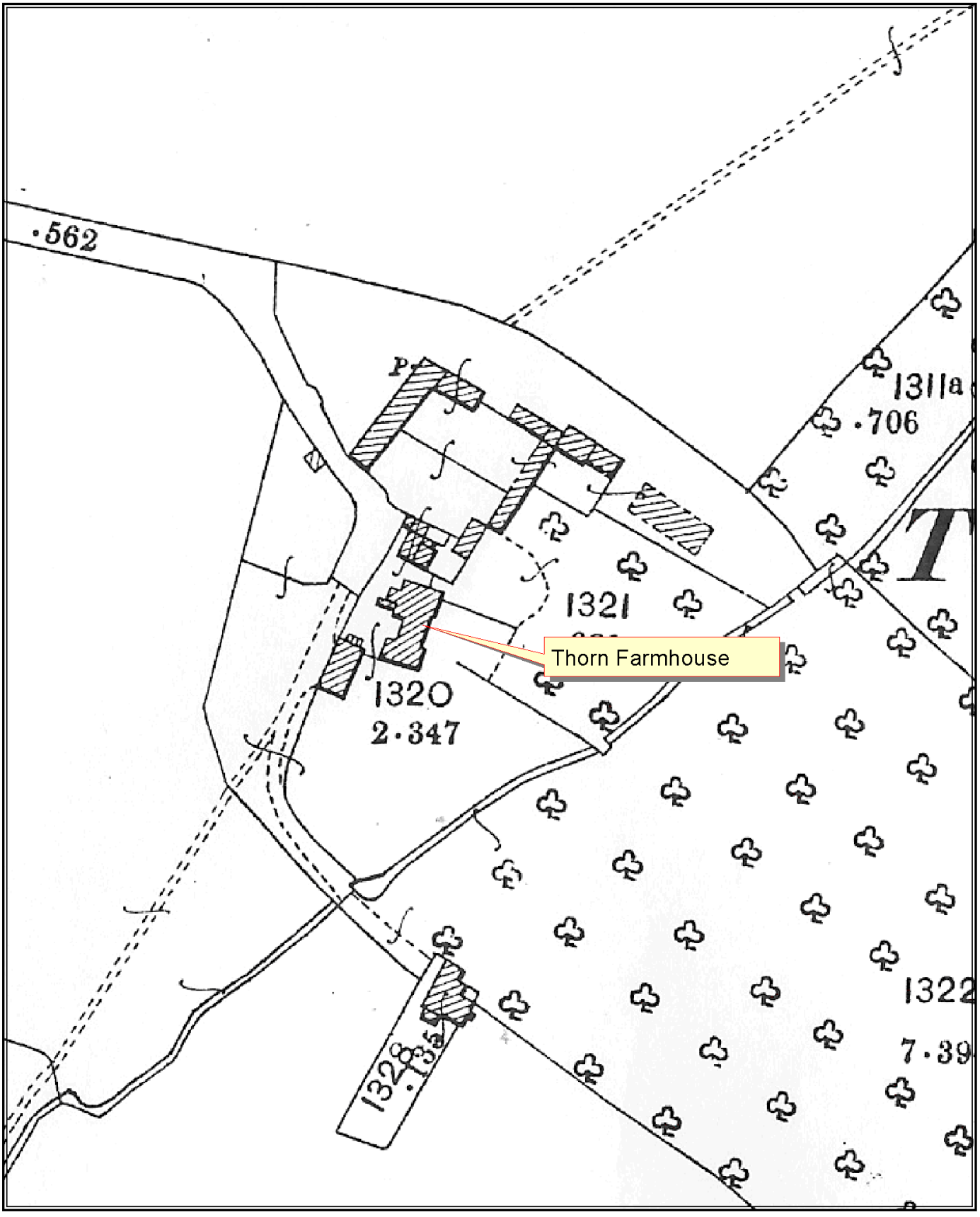


Figure 3: Extract from the Inkberrow Tithe Map (1840)

Figure 4: 2nd Edition Ordnance Survey (1904)



10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

1:1,250 metres

The 2nd edition Ordnance Survey map with the proposed development site shown

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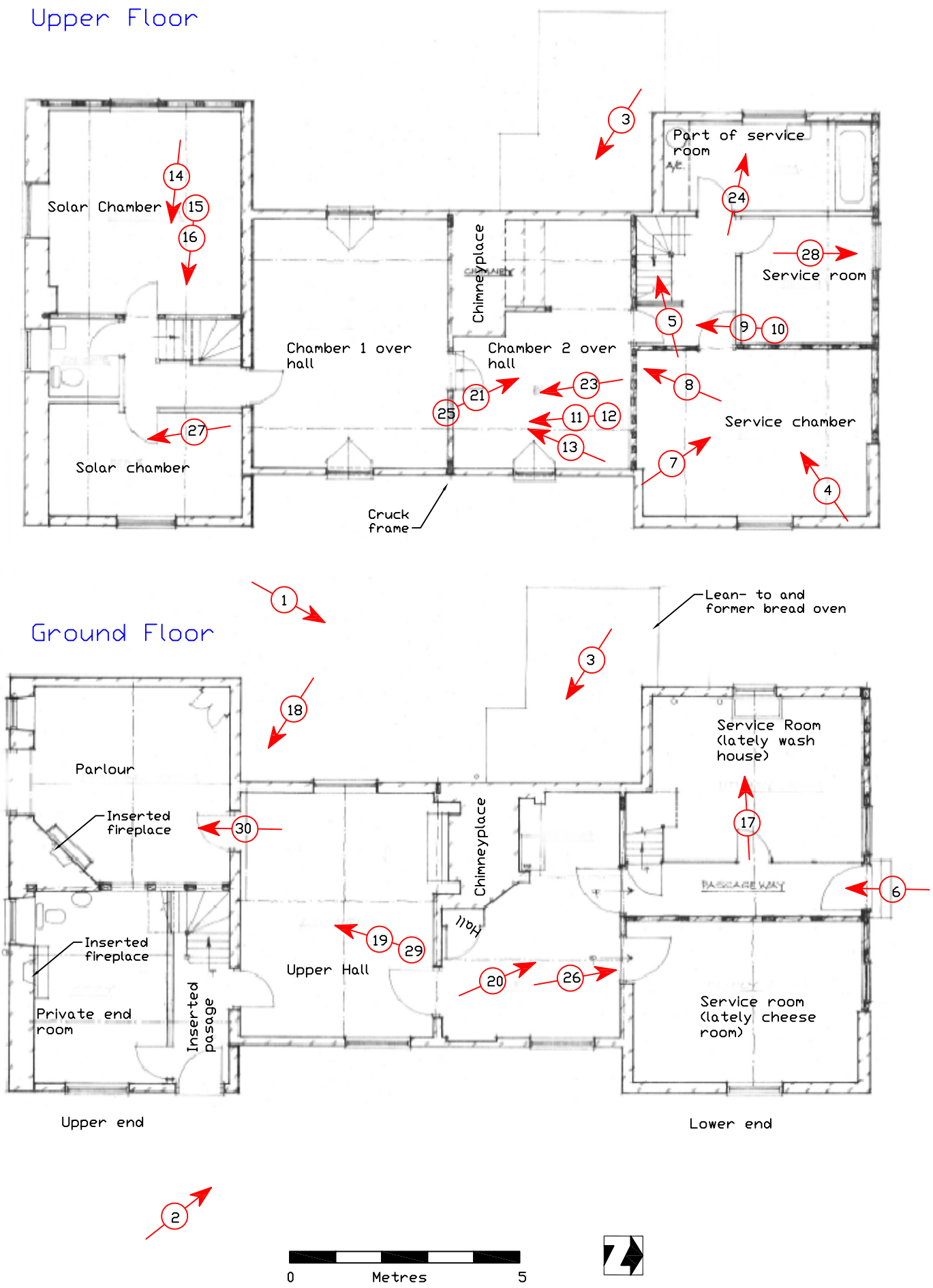
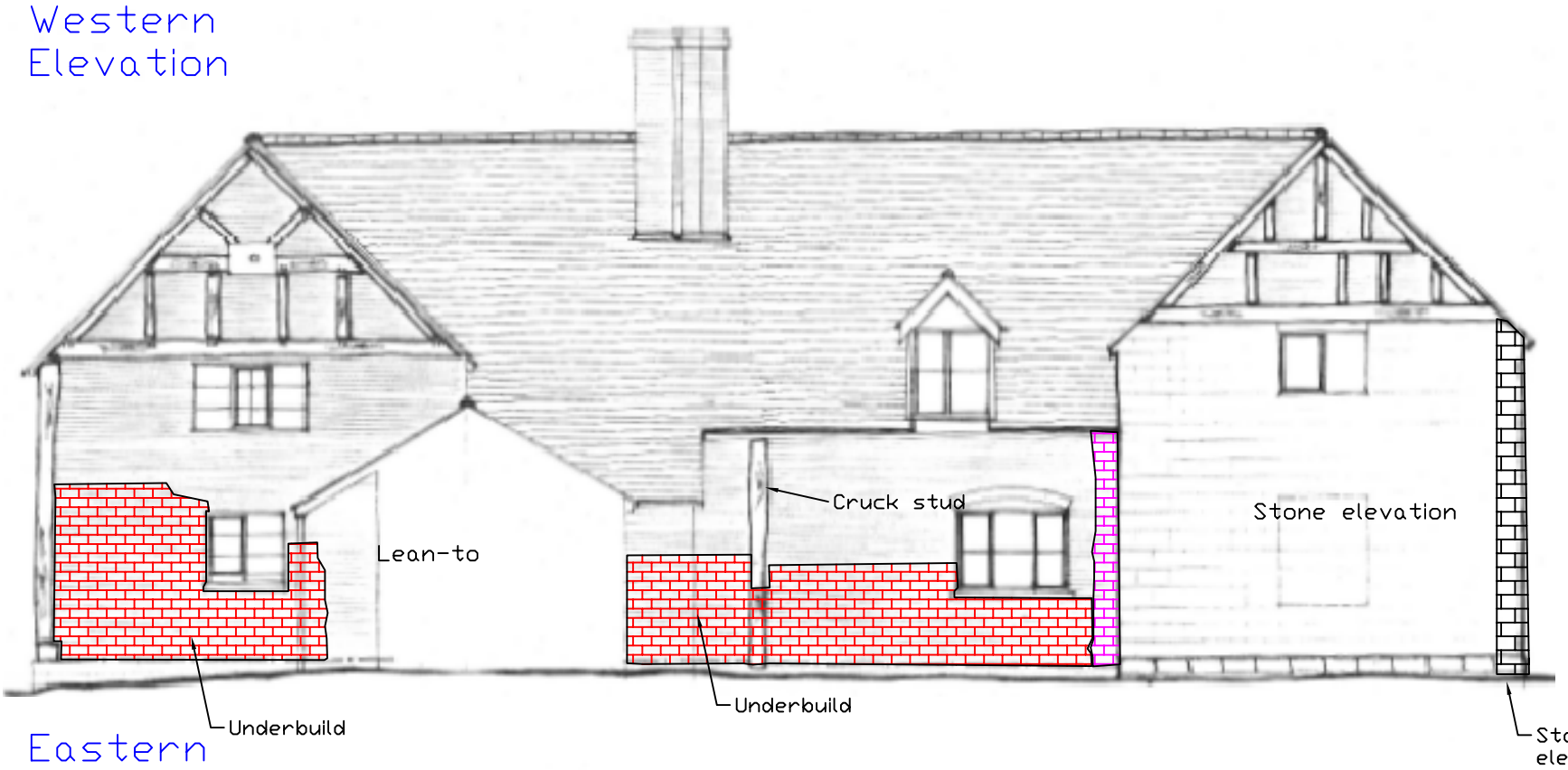
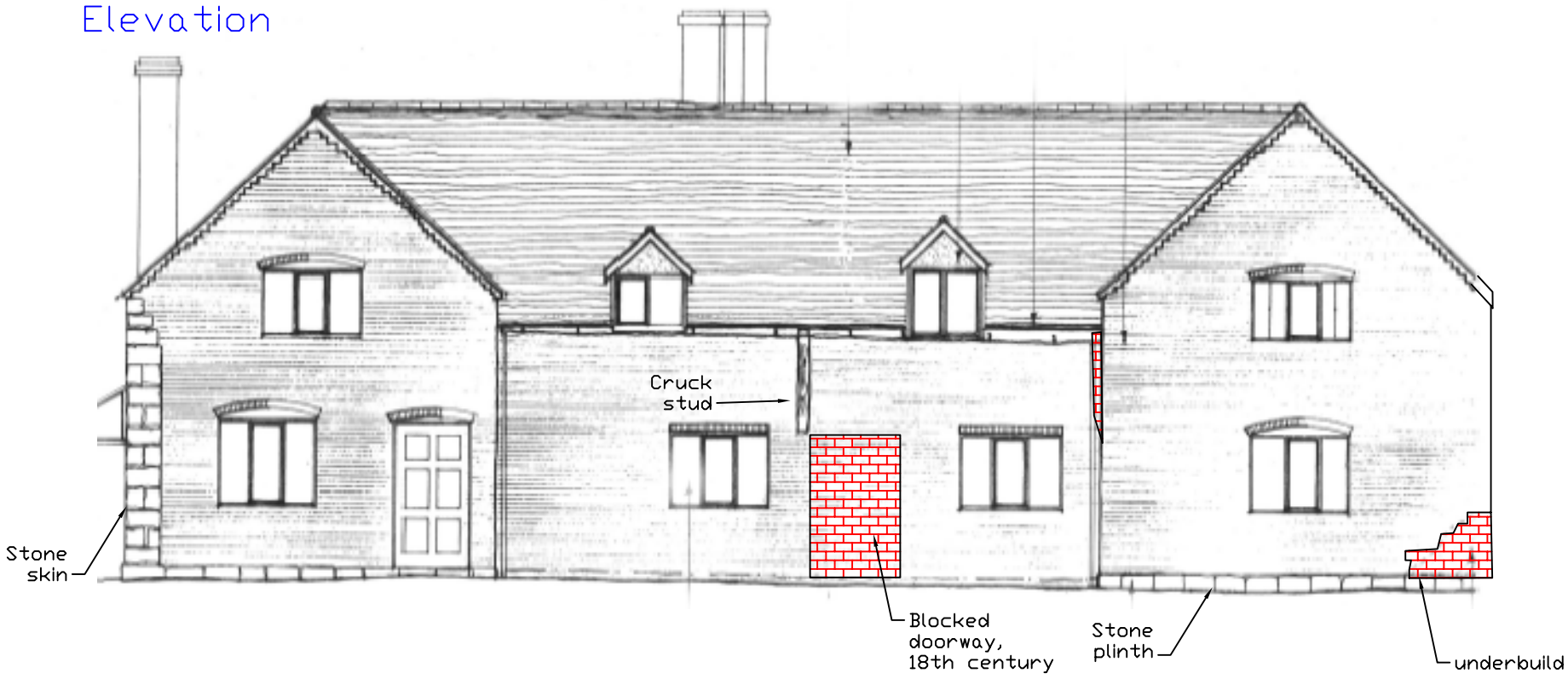


Figure 5: Floor plans (based on original survey drawings by ASD Group, Worcester). Photo directions contained in report shown by red arrows

Western Elevation



Eastern Elevation



Southern Elevation

Northern Elevation

0 Metres 5

Figure 6: Elevations (based on original survey drawings by ASD Group, Worcester)

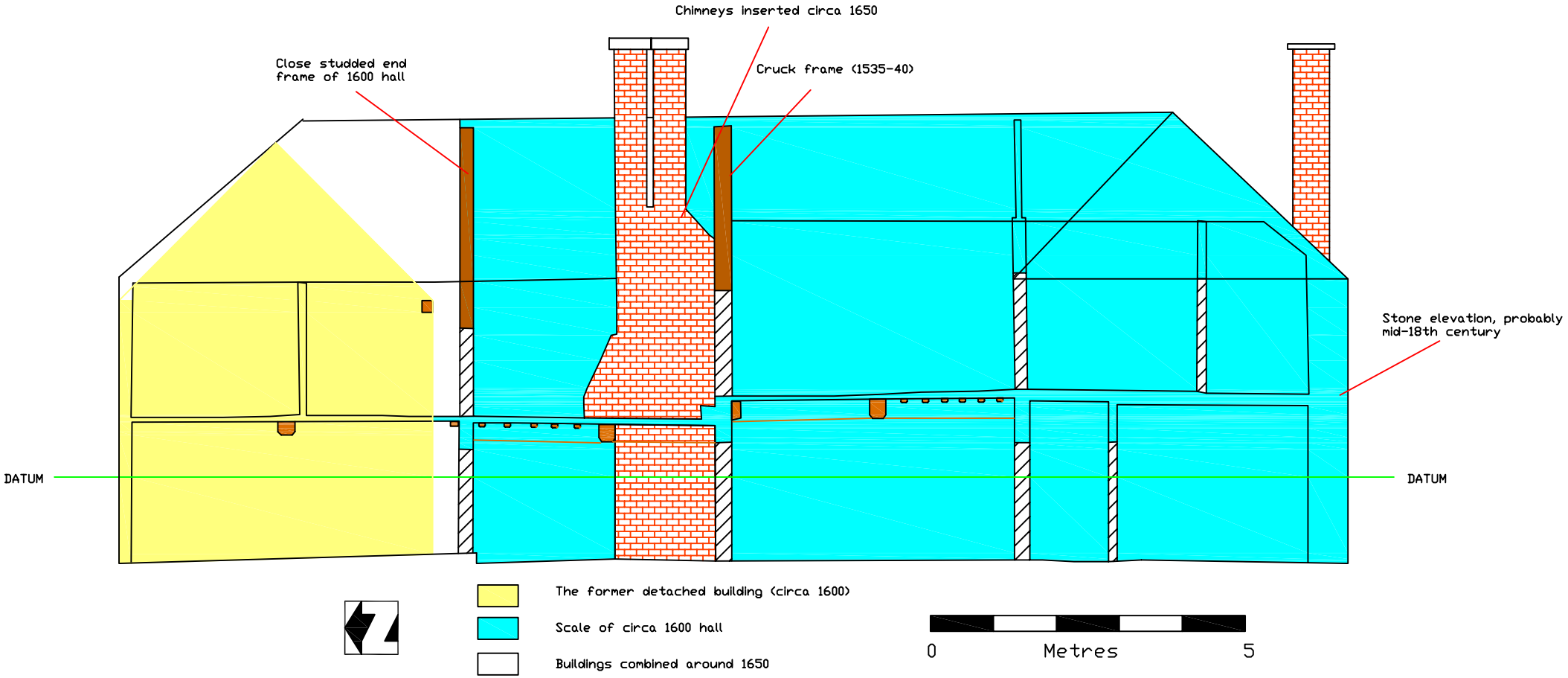


Figure 7: Cross-Section Through the Building, Including Phasing

Figure 8: Sketch Isometric Drawing Showing Remaining Significant Timber-Framing

Plate 1: *View to north-east (scale 2 metres)*

Plate 2: *View to north-west (Scale 2 metres)*

Plate 3: *Blocked door into hall (left) and stone coursing of bread oven (right) , from inside the lean-to*

Plate 4: *Southern post of central truss of the former detached building, showing 40 cm gap to the hall (Scale 2 metres)*

Plate 5: *Wall plate of S. elevation of former detached service block viewed from the inserted staircase*

Plate 6: *Cross passage in northern service block, looking south (Scale 1 metre)*

Plate 7: *Inserted central partition below the tiebeam of the upper floor of northern cross-wing (Scale 2 metres)*

Plate 8: *Carpenters assembly marks on the studding and tie-beam of the northern hall frame (northern face)*

Plate 9: *Carpenters assembly marks on the studding and tiebeam of the northern hall frame (northern face)*

Plate 10: *Doorway cut through the tiebeam of the northern framing of the hall (Scale 1 metre)*

Plate11: *Cruck-frame looking south*

Plate 12: *Cruck-frame lat first floor level*

Plate13: *Cruck-saddle and remaining wattles above the collar*

Plate 14: *Central truss of southern cross-wing in the western solar room (Scale 2 metres)*

Plate15: *Carpenters' assembly marks - tiebeam to queen-post, southern cross-wing central truss*

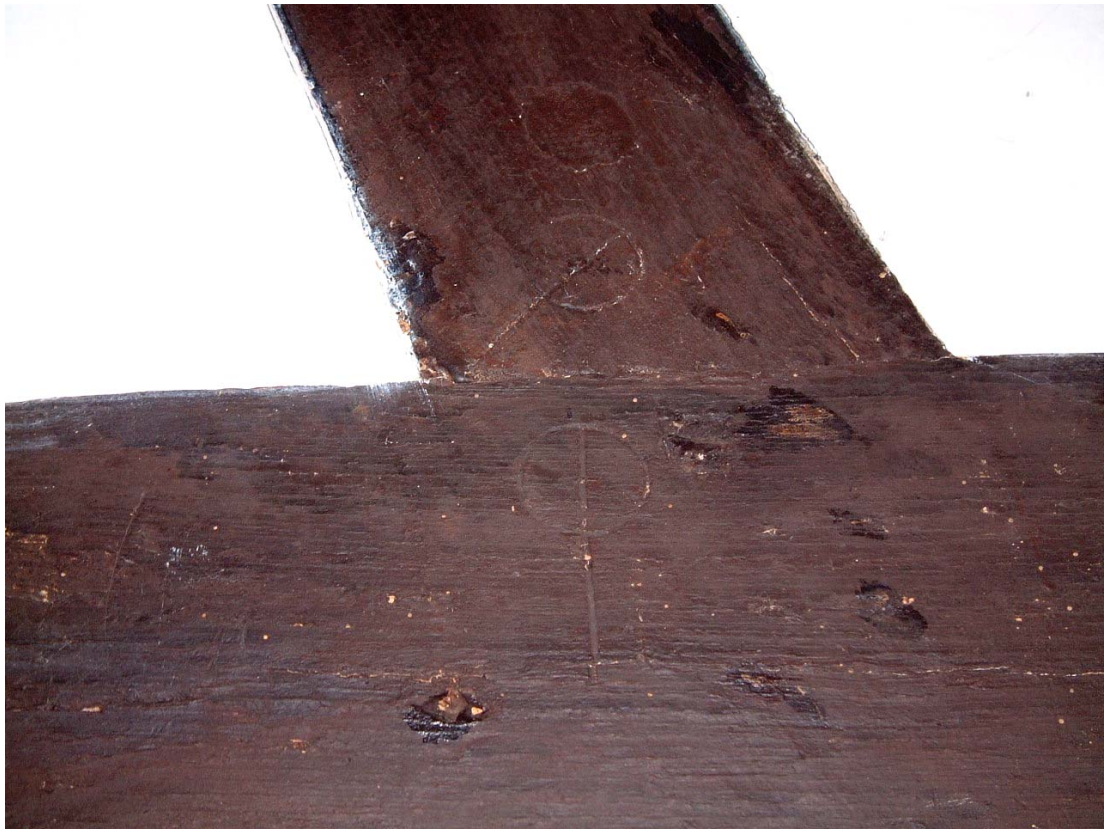


Plate 16: *Carpenters' assembly marks- northern post of the southern cross-wing central truss*

Plate17: *Pump and sink in wash room in the northern cross-wing*

Plate 18: *Infill brickwork at corner of hall and the southern cross-wing, looking east*

Plate 19: *Inserted upper-floor over the upper bay of the hall*

Plate 20: *Inserted upper floor over the lower bay of the hall*

Plate 21: *Northern frame of the hall viewed to the south*

Plate 22: *17th century door catch (service chamber at northern cross-wing)*

Plate 23: *17th century door catch and handle (inserted partition in cruck frame)*

Plate 24: *18th century window catch (service chamber, now northern bathroom)*

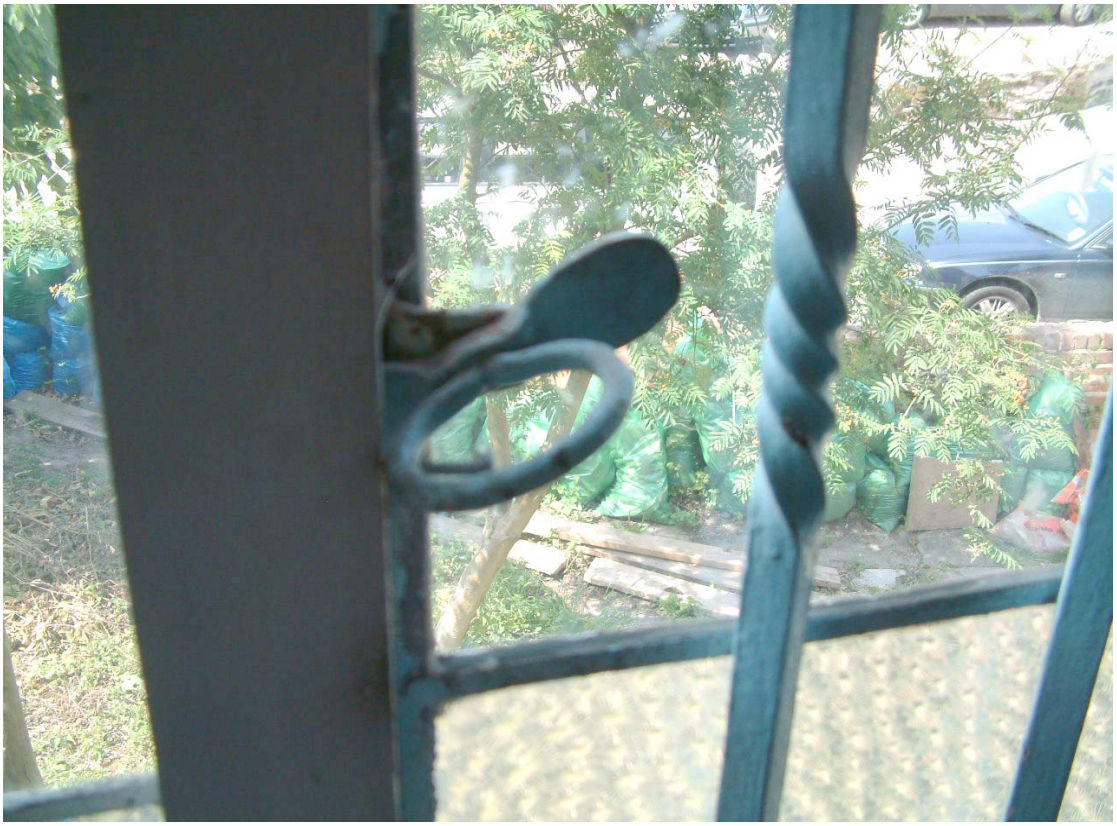


Plate 23: *17th century door catch and handle*

Plate 24: *18th century door catch*

Plate 27: *18th or early 19th century cast iron fireplace (southern cross-wing chamber)*

Plate 28: *17th century window shutter (northern service chamber)*

Plate 29: *Chamfer and stops on bridging beam within the hall*

Plate 30: *Pyramid stops on bridging beams in the southern cross-wing*