

BUILDING RECORDING
OF HOP KILNS
AT
MANOR FARM, POWICK,
WORCESTERSHIRE

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Project 3232
Report 1666
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Building recording of hop kilns at Manor Farm, Powick, Worcestershire

Shona Robson-Glyde

Part 1 Project summary

Archaeological building recording was undertaken of hop kilns at Manor Farm, Powick, Worcestershire (NGR SO 8332 5146) on behalf of Mr Thomas Hawkins. He intends the conversion of the group of traditional hop kilns to residential use. A planning application has been submitted to and approved by Malvern Hills District Council. The project aimed to establish the character, history, dating, form and development of a specified building.

The hop kilns recorded at Manor Farm incorporated a wall that dated to the 17th century and was probably erected as part of a structure associated with the 17th century farmhouse still in existence adjacent to the building. The hop kilns themselves were constructed in the late 18th century and consist of two brick-built kilns and an attached storage and processing area. Later additions in the 19th century consisted of extensions to the storage area and at the beginning of the 20th century a new, larger, brick-built kiln was constructed. The later 20th century saw the construction of three more kilns, made of breeze block. The development of the building reflected the development of hop farming in the county of Worcestershire.

Part 2 Detailed report

1. Background

1.1 Reasons for the project

Archaeological building recording was undertaken at Manor Farm (NGR SO 8332 5146), Powick, Worcestershire (Fig 1), on behalf of Mr Thomas Hawkins (the client). Mr Hawkins intends to convert a group of traditional hop kilns to residential use and has submitted, and had approved, a planning application to Malvern Hills District Council (reference 03/0374 and 03/0375). It is considered that a site of archaeological interest may be affected (WSM 27078).

1.2 Project parameters

The project conforms to the *Standard and guidance for the archaeological investigation and recording of standing buildings or structures* (IfA 2008).

The project also conforms to a brief prepared by the Planning Advisory Section of Worcestershire Historic Environment and Archaeology Service (HEAS 2008a) and for which a project proposal (including detailed specification) was produced (HEAS 2008b).

1.3 Aims

The Institute for Archaeologists defines building recording as ‘a programme of work intended to establish the character, history, dating, form and archaeological development of a specified building, or structure, or complex and its setting, including its buried components, on land or under water’ (IfA 2008, 1). More specific aims related to this survey have also been identified:

- Provide a descriptive account and interpretation of the building, including discussion of its local, regional and national significance.

2. Methods

2.1 Documentary search

Prior to fieldwork commencing a search was made of the Historic Environment Record (HER) In addition to the sources listed in the bibliography the following were also consulted:

Cartographic sources

- Ordnance Survey maps dating to 1886, 1904, 1928, 1940 and 2008

Documentary sources

- County Records Office – 1840 tithe map WRO x850 BA 1572 and f760/523 BA1572
- County histories (VCH 1924).
- Place names (Mower and Stenton 1927).

2.2 **Fieldwork methodology**

2.2.1 **Fieldwork strategy**

A detailed specification has been prepared by the Service (HEAS 2008b).

Fieldwork was undertaken between 13th and 16th May 2008. The site reference number and site code is WSM 39862.

Building recording consisted of a photographic survey of the interior and exterior of the buildings, analysis of their development, annotation of existing survey drawings and measured survey. All photographs were taken with photographic scales visible in each shot. The photographic survey was carried out with a Nikon D70 digital camera. All photographs were recorded on pro-forma Photographic Record Sheets. Annotation of existing ground plans and elevations, and completion of pro-forma Building Record and Building Phase sheets, complemented the photographic record along with measured drawings completed to scale on permatrace drafting film.

2.2.2 **Building analysis**

Analysis of the building was based on the study of the photographic record, building recording forms, annotated drawings and measured drawings. It was also informed by the documentary sources listed above.

2.3 **Building recording methodology**

The project conformed to the specification for a Level 3 survey as defined in the English Heritage document *Understanding historic buildings: a guide to good recording practice* (EH 2006). This level of survey is described as ‘an analytical record’ comprising of ‘an introductory description followed by a systematic account of the buildings origins, development and use’ (EH 2006). This required the following elements of survey.

Survey and drawings

- Plans of all main floors and elevations as existing (provided by client).
- Measured drawings showing the form of any architectural or functional detail not more readily captured by photography.

Photography

- Overall appearance of rooms and circulation areas.
- Detailed coverage of the building’s external appearance.
- Any detail, structural or decorative, relevant to the building’s design, development and use, which does not show on general photographs.

2.4 **The methods in retrospect**

Having undertaken the project the following comments may be made with regard to the methods adopted. All areas of the building were open and accessible for the survey to be carried out. Externally, the building was open on the south east side but was obscured on the north-east by ‘green staging’ and kiln equipment. Therefore, a full record of this elevation could not be made. Part of the south-west elevation was obscured by a large fuel oil tank and therefore a full record of the elevation also could not be made. However, the survey produced high quality records that have enabled the development of the building to be discerned and therefore the aims of the project have been fulfilled.

3. Topographical, historical and archaeological context

3.1 Topography

Powick, is a large parish about two miles south-west of Worcester. The soil is loam and clay with a subsoil of Mercian Mudstone, which has provided great soil for the crops of wheat, barley and hops. On the east and north of the parish are the Severn and the Teme rivers. The Teme flows into the Severn here. The land rises slightly towards the village, which is situated on a slope overlooking the river valleys and the city of Worcester (VCH 1924, 184). Powick village stands at the junction of the roads from Great Malvern and Upton upon Severn to Worcester.

3.2 History

Powick was first recorded as *Poincguic* in the 10th century. It was known as *Poiwic* and *Poiwicha* in the 11th century; *Poywyk* from the 12th to 14th centuries; *Poyswyke* in the 13th century; *Puwyk* in the 14th century; *Powyck* in the 16th century and by the 19th century it had become *Powyke*. It is possible that the name comes from an Old English name ‘Pohha’, *Pohha’s dairy farm* (Mawer and Stenton 1927, 224).

Seven manses of land in Powick were confirmed to Pershore Abbey by King Edgar's charter of 972. Powick was given with many other Pershore lands by Edward the Confessor to Westminster Abbey. Before the Conquest it was held by eight radmen who mowed for one day a year in the meadows of their lord and did all the service that they were bidden. In 1086 the estate was gelded at 3 hides and was held of the abbot by Urse the Sheriff, Gilbert Fitz Turoid, Walter Poer (Ponther), and a Frenchman Artur respectively. The manor of Powick was given, in the 12th century, by the Abbot of Westminster to the priory of Great Malvern, at a fee-farm rent of £24 a year with Henry I confirming the grant. The estate was confirmed to the priory by Pope Honorius III in 1217. The priors continued to pay a rent of £24 13s. 4d. to the Abbots of Westminster as overlords till the Dissolution. The manor was leased for twenty-one years to Richard Berde in 1541, and in 1545 the reversion was granted to Edward Lord Clinton and Ursula his wife. They sold it with Hanley Castle to the king in 1547. It was owned by the Crown till 1590, when it was bought by Henry Bromley of Holt. The manor descended with Holt until 1649, when it was sold to Thomas, Lord Coventry, after which it descended with Croome D'Abitot, with the Earl of Coventry being the owner still in the early 20th century (VCH 1924, 184).

3.3 Archaeology

Manor Farm lies within the village of Powick, immediately adjacent to the Church and the road junction of the Upton (B4424) and Worcester (A449) roads (Fig 1). A number of historical and archaeological sites within the vicinity of Manor Farm have been recorded on the Worcestershire Historic Environment Record (HER). These are detailed in Table 1 below and on Figure 2. Very little in the way of fieldwork has been carried out in the area of the site. Three separate watching briefs (WSM 30538, 34319, 38469) have taken place at St Peter’s Church to the immediate north east of Manor Farm revealing deposits related to the construction and use of the church and its cemetery. A large evaluation (WSM 34499) took place on land attached to Manor Farm to the south that revealed settlement evidence of Romano-British date and of the former use of the fields for growing hops (Milward 2005). A number of historic buildings in the area are also recorded on the HER along with the 12th century St Peter and St Lawrence Church (WSM 973). These buildings include Manor Farmhouse (WSM 975), the two sets of barns at Manor Farm (WSM 27841 and 40176) and the hop kilns themselves (WSM 27078).

Table 1: List of sites in the vicinity (italic entries relate to the site)

HER Ref	Name	Description	Dates	OS Ref
Buildings				
973	St Peter & St Lawrence Church	Church - medieval - restored	12 th – 15 th C 1845, 1896	SO 83423 51526
975	<i>Manor Farm, Upton Road</i>	<i>Dwelling</i>	<i>1600-1900</i>	<i>SO 83361 51476</i>
976	The Terrace	House	1750-1850	SO 83261 51649

20317	42, 43, 44 The Village	House, timber framed building	1600-1850	SO 83253 51560
20334	Cross House	House, timber framed building	1550-1850	SO 83195 51548
27078	Manor Farm	Hop kilns	1540-1900	SO 83340 51479
27841	Manor Farm	Barn	1540-1900	SO 83283 51466
40176	Manor Farm	Barn complex	1800-2050	SO 83322 51442
40178	Lea Tomb, Powick churchyard	Tomb	1874	SO 83462 51481
40179	Red Lion, The Village	Pub, timber framed building	1600-1650	SO 83250 51551
40180	Virginia House	House	1825-1875	SO 83243 51586
Activities				
30538	St Peter's Church	Watching brief in 2001 - cemetery	1066-2001	SO 83419 51521
34319	St Peter's Church	Watching brief in 2005 - wall foundation - burial vault	12 th C 1838	SO 83424 51518
34499	Manor Farm	Evaluation - settlement - hop yards	1 st -3 rd centuries 19 th -20 th C	SO 8349 5113
38469	St Peter's Church	Watching brief in 2007	-	SO 83446 51526
Find Spot				
30958	St Peter's Church	Find spot - medieval tiles		
Monuments				
972	Pound, Upton Road	Pound	1540-1900	SO 83270 51368
974	Tithe barn	Tithe barn	1066-1539	SO 83350 51470
37501	St Peter's Church	Graveyard	1066-2050	SO 83491 51503

4. Manor Farm

Manor Farm currently consists of a large house that is brick and part timber-framed and probably dates from the 17th century. Adjacent to this are two ranges of brick built barns dating from the early 19th century and a range of three hop kilns with attached drying and storage barns. All of these structures were in existence by 1840 when they are depicted on the tithe map (Fig 3, WRO x850 BA1572). The tithe apportionment shows that the farm was owned by the Earl of Coventry but was occupied by Edmund Herbert. The tithe also shows that he was tenant of other property in the parish owned by the Earl of Coventry, Earl Beauchamp, John Pakington, the poor of Powick and trustees of Nash's Charity. In total Edmund Herbert tenanted 363 acres, 23 rods and 1 perch of land, which included Manor Farm (known as Powick Farm), Cross House and two other dwellings. The majority of the land was pasture and arable with meadows and woodland (WRO f760/523 BA1572).

Edmund Herbert is shown in the 1841 census as the occupier of Powick Farm where he is described as a farmer. The 1851 census records that Edmund Herbert, born in Powick, was the head of the household and a farmer. He was farming 450 acres and employing 15 labourers and 3 boys. By 1861 he was farming 500 acres and employing 21 labourers and 3 boys. At this time he was 72 years old and it seems he died soon afterwards as he does not appear in the 1871 census. By 1876 the Post Office Directory (Kelly 1876) shows a John Cooper as farmer of Manor Farm (known as Powick Farm).

5. Hop Kilns

The buildings recorded at Manor Farm were hop kilns (Plate 1). Of the 363 acres of land farmed by Edmund Herbert in 1840, only one field was given over to hops, Linnburg Hopyard, which is a small amount of land considering that Manor Farm has two large square kilns with an attached stowage barn at this time. The archaeological evidence of hop growing on other fields on the farm appears to date to later cultivation of the crop. Therefore it seems probable that at this time in the 19th century, Edmund Herbert was also drying the crops of other farmers in the area.

Hop kilns are a common feature of parts of the English landscape, especially in Herefordshire, Kent, Sussex and Worcestershire. These areas were the dominant producers of hops for the brewing industry. The definition of a hop kiln is 'a kiln for drying hops in a brewery or maltings complex' and is 'distinct from the oasthouses found on farms' (EH 1999). 'Hop kiln' has become the description of all the hop drying structures, whether on farms or breweries, in Herefordshire and Worcestershire.

Hop kilns began to be constructed in England in the mid-16th century, soon after hops were first introduced into the country; however there are none left surviving from this date. The earliest description of hop kiln dates from 1574 in Reynolds Scot's book *A Perfite Platforme of a Hoppe Garden* (Walton 1984). A hop kiln was a small building of 18 feet by 9 feet in plan, with walls 9 feet high. The central furnace was 6 feet long, 2 feet 6 inches high and with a 13 inch internal width. The upper floor was only some 5 feet above the ground floor and was the drying floor. The hops were laid directly on to this slatted floor (Walton 1984). The oldest surviving hop kiln is at Golford, Cranbrook near Tunbridge Wells, which dates to around 1750 (Walton 1984).

A hop kiln, or oast, consisted of a stowage and cooling area, drying kiln, and hop press. The process of producing the dried hops (Fig 4) began with the freshly picked, or 'green', hops. These were picked by gangs of pickers, and were put into large hessian sacks. The sacks were taken into the stowage at first floor level. This was sometimes an outside area called the 'green stage'. A hoist was often used for this purpose.

The green hops were then spread out in the kilns on the drying floor. This floor consisted of wooden battens with gaps between them and was covered with a horsehair cloth. The hops were spread in a 12inch layer over the battens and the furnace would be lit below in a room called the plenum chamber. The furnace would be lit in a central hearth and a flue would then lead from this hearth widening out to the width of the drying floor.

When green hops are picked they have a moisture content of 80% that needs to be reduced to 6% in the kiln. The kiln did not cook the hops, like an oven, but merely dried them using a constant flow of heated air through the kiln. This was achieved through a vent on the top of the kiln to create an up-draught to draw the hot air through the slatted floor and through the hops.

Once the hops were dry, they were removed from the kiln and spread out on the floor of the store to cool. Often the walls of the store would have a metal lining to protect them from the heat of the newly dried hops. The hops would then be pressed into large jute sacks called 'pockets'. These 'pockets' were suspended below the floor and were filled with hops through a circular hole cut into the floor. This is called a treading hole because the hops were originally pressed into the pocket by someone trading them down. Later this job was done with a hop press. Each pocket, containing 1¼ hundredweight, would be stencilled with the name of the grower, the farm and the year (Walton 1984).

6. Results

6.1 Analysis

The buildings recorded are located on Figures 1 and 2. Analysis of the buildings has enabled phase plans of the buildings to be drawn up and is included on the ground plans. The ground plans and elevations have been reproduced as Figures 5 and 6 with further relevant illustrations as Figures 7 – 9. Photographs of the buildings have been reproduced as Plates 1 – 32.

6.2 Phase 1 Late 17th to early 18th century (see Fig 5)

At some point in the late 17th or early 18th century a building was constructed close to the farmhouse of Powick Farm, as Manor Farm was known then. All that survives of this structure is one wall which has a 90° angle in it and now forms the lower part of the east wall of the oasthouses (Plate 2). The wall is constructed of bricks measuring 8 ¼-9 ¼" by 2 ½-2 ¾" by 4-4 ½" that date to the late 17th or early 18th century. They are coursed very roughly using broken bricks in place of headers. There is a large variation in colour and some of the bricks are misshapen.

At its maximum height the wall stands at 2.68m. It may have been part of a boundary wall for the 17th century house or belonged to a farm building associated with the house. The closeness of the building to the house suggests that it had some form of importance something akin to that of a granary or coach house.

6.3 **Phase 2 Late 18th century** (see Fig 5)

In the late 18th century, two kilns and adjoining storage were constructed close to the farmhouse of Powick Farm (Plate 3). The buildings incorporated the late 17th century wall, which created the east wall of the range of buildings. The buildings were constructed in bricks measuring 9-9 ¼” by 3-3 ¼” by 4 ¼-4 ½” coursed in Flemish Garden Wall bond. The size of the bricks allows the building to be dated to this period. The south portion of the building (Plate 4) contains the storage and processing area with the kilns to the north. The south elevation originally had three large segmental headed openings (Plate 5) formed from moulded bricks with a chamfer and chamfered brick doorjambs. There were also sandstone blocks used as decoration and as bases for the hinges for the double doors in the openings (Plate 6).

The kilns (Plate 7) most likely did not have the conical roofs they have today, but more likely had a single hipped roof over the two drying floors with conical, internal, structures and vents on the roof ridge line. The individual conical roofs capped with a cowl and lined with plaster (Plate 8) were introduced later, around 1835 in Worcestershire (Grundy et al 2007, 87). Below the roof the floors were slatted and covered with horsehair cloth to allow the warm air to be drawn through the hops from the ground floor

On the ground floor of the kilns was the plenum chamber where a fire burned within a furnace with a flue or conical space widening out to the underside of the drying floor (Fig 4). This flue would have been constructed of either lath and plaster or brick. The date of the construction of these kilns is on the cusp of the change from lath and plaster to brick (Brunskill 1999, 97). However, there were no signs of a brick flue being removed from the kilns at a later date so a lath and plaster flue is more likely. The plenum chamber was accessed from the exterior of the kilns. Access openings for each kiln are still visible (Plate 9).

The storage building, with the large doorways, was used for hop storage, drying and packing. This processing was carried out on the first floor where the hop press was also located. The packaged hop pockets were stored on the ground floor. The ground floor, with its large doors, had access for carts that may have only been for removing the hop pockets out to market but could also have been for storing a cart or large farm implement as well.

The tithe map (Fig 3) and the 1st edition Ordnance Survey map (Fig 7) show another structure between the kilns and the farmhouse to the east. Evidence of this structure can be seen on the east elevation where building scars are visible (Plate 10). There is no surviving evidence for this structure, with the exception of the building scar, and there is also no evidence for the function of the building. The mere fact that the structure was adjoining the farmhouse suggests that it had a function associated with this building, such as a granary or coach house.

6.4 **Phase 3 c1800** (see Fig 5)

Around 1800 an extension was added to the west gable of the 18th century stowage (Plate 11). The building was constructed of red-brown, hand-made bricks. They measured 8 ¾” by 2” by 4” and were coursed in Flemish Garden Wall. Some of the bricks had finger marks on their surfaces showing were they had been picked up prior to be fired in the kiln (Plate 12).

The building consisted of a two-storey structure that had, on its south elevation, a large opening with red sandstone hinge bases (Plate 13). This opening probably had a segmental head to match the openings on the adjacent 18th century building. The upper floor windows were probably made to match those on the 18th century structure too (Plate 14).

The original function of this building has been lost due to later alterations. Its function may have been associated with the hop processing being carried out in the adjoining oast however, Herefordshire often has hop kilns incorporated with a cider mill (Brunskill 1999, 100). It is possible that this structure was a cider mill; its large door also suggests that it may have been a coach house or cart shed.

6.5 **Phase 4 Early 19th century** (see Fig 5)

In the early 19th century a small extension (Plate 15) was added to the south elevation of the original oast and its c1800 extension, across the point where they join. This extension was constructed of bricks very similar to those used in the construction the oast but they were much more uniform in size. The bricks measure 9" by 3" by 4 ¼" and were coursed in Flemish Garden Wall bond. Some of the bricks had finger marks on them and at least one had a footprint from a small hoofed mammal, such as a sheep or goat (Plate 16). The function of this structure has been lost due to later alterations but it is likely that it was open on its east side and therefore may have been an open store associated with hop processing or storage.

Also at this time the roofs of the kilns were altered to have separate cones (Plate 7) capped with cowls. The cowl would turn into the wind, to gain the greatest up-draught for drawing the warm through the hops. Within the conical shaped space below the cowl, the roofs were lined with plaster (Plate 8).

6.6 **Phase 5 Early 20th century** (see Fig 5)

In the early 20th century another kiln was added to the range of oast buildings. This structure first appears on the 1923 Ordnance Survey map (Fig 8) but is not shown on the 1904 map (Fig 9) and therefore must have been constructed between these dates. This kiln was larger than the original square kilns and was constructed against the north elevation of the c1800 building. The furnace of this kiln was probably a free standing furnace in the centre of the ground floor and not surrounded by a flue and plenum chamber. The development of furnaces for hop kilns was continuing throughout the 19th century. By the end of the century new forms of furnace were being used that allowed for a free standing furnace with a large open space above it.

Much of this early 20th century kiln is now obscured by later machinery and green staging, however the opening into the furnace area is visible on the ground floor (Plates 17 and 18) and the joint between the adjoining kiln structure can be seen on the first floor in the east wall of the drying room (Plate 19). The interior of the cone also has a slightly different appearance on this kiln (Plate 20) partly because of its later age, but also because of its increased size in comparison to the original kilns on the site. It is probable that this kiln never had a wooden cowl but instead had a wooden louvre-vent (Plate 21) from its inception, which would fit with its age of construction. It is therefore probable that the cowls on the two earlier kilns were removed at this stage and replaced with louvre-vents also (Plate 22).

6.7 **Phase 6 Mid 20th century** (see Fig 5)

In the mid 20th century the open front of the early 19th century extension was blocked with modern 'London' bricks and iron-frame casement windows were included in the wall (Plate 23). At the same time the first floor of the c1800 extension was rebuilt (Plate 24), also with 'London' bricks. The 'London' bricks are striped cream and pale red in colour and measure 8 ½" by 2 ½" by 4 ¼". They were coursed in Flemish Garden Wall bond. This rebuild included the reconstruction of the floor of the structure including a ladder hole in the floor at this end of the building (Plate 25).

6.8 **Phase 7 Late 20th century** (see Fig 5)

The late 20th century saw a large amount of change to the building range. Three new kilns were constructed to the west of the original buildings (Plate 26). They were constructed of modern breezeblock and incorporated honeycomb panels (Plate 27) and large openings, the modern equivalent of the cowl. To construct these kilns, openings in the brick walls of the mid-20th century (Phase 6) first floor extension had to be created. These allowed access into the breezeblock kilns.

The ground floor of these new structures was taken up with a large gas air-drying machine (Plate 28). This required that a tunnel leading from the machine and through each of the brick kilns be constructed. It consisted of a space 1.25 metres wide internally and 18.178 metres long (Plate 29). This tunnel had vents in it to allow the heated air into the kilns (Plate 30).

To the north of all of the structures a large area of ‘green staging’ was constructed. This was where the hops were brought into the buildings, straight from the fields. It was constructed of a wood frame and had metal steps with wood treads to allow access from the ground. The green staging created a covered area on the ground that became a storage area (Plate 31). The flooring of the staging was constructed of the same wooden battens as the drying floors in the kilns (Plate 32).

7. Synthesis

Manor Farm is a compact farming settlement within a loose courtyard arrangement. In order to gain a full understanding of the development of the farm and its component buildings, a survey encompassing all of the structures would need to be completed. However the survey of the hop kilns has allowed a keyhole view at just one aspect of this farmstead within Powick.

The hop kilns at Manor Farm show a history of development dating back to the 17th century. This first phase of construction was carried out around the time the farmhouse was built. The surviving structure of this date, within the buildings surveyed, was the east wall of the oasts. This wall, close to the farmhouse, may have been formed part of a boundary for that building however the surviving height of the brick wall, 2.68m, is probably taller than would be expected for a boundary wall. Therefore it the wall may have been part of a building. The tithe map of 1840 and the 1st edition Ordnance Survey show that the farmhouse was attached to the oasts and although this mapping shows a later structure it may have been a rebuilding or replacement of the original 17th century building. The closeness of the structure to the farmhouse shows that the building was high status and may have been quite large and impressive. It is possible that it was a granary or coach house, both structures that are placed close to the farmhouse.

The hop kilns were constructed much later than the initial phase of development, but they used the wall of the 17th century structure and incorporated it within the east wall of the kiln and storage building. Hop production in Britain was at its height in the late 18th and 19th century. The oast houses at Manor Farm were constructed in the late 18th century and with their lath and plaster flues in the plenum chamber were at the cusp of the change to all-brick construction and were probably among the first kilns to use a cowl which was also developed in the 18th century. The kilns were attached to a storage building which was to store the picked hops and to cool the dried hops and then to pack them, all on the first floor. The ground floor, with its large openings, may have been used as a cart shed, a practical use considering that the hop pockets would be placed directly on to the carts for taking to the market. The building would only be used for processing hops for about two months of the year leaving it for other uses for the rest of the year. In Herefordshire oast houses were often used for cider production, and housed a cider mill on the ground floor. There is no evidence of this occurring here but it cannot be ruled out. In the last years of the buildings use, the kilns were also used for drying animal feeds and it is possible that this was also happening throughout the life of the building.

The later additions to the oast house are a sign of the development of hop growing in this county. Hop production increased in Worcestershire throughout the 19th century so that by 1880 Herefordshire and Worcestershire alone were producing a quarter of all the British hop harvest. By this time additions had been added to the west and south of the original oast house creating further storage and suggesting that more hops were being processed here. Indeed enough hop processing was being carried out that at the beginning of the 20th century a new kiln was constructed and all of the kilns were using on open style of furnace instead of the outdated lath and plaster flue. Even the cowls had been altered to louvre-vents to create a better flow of air that provided a more consistent drying temperature. The 20th century kilns, constructed of breeze-block, are a testament to the still thriving hop industry. Manor Farm must have been growing more hops in order to need to construct three new modern kilns fuelled by the new gas furnace. The hop production in Britain has now shifted its emphasis onto Herefordshire and Worcestershire and along with Kent these three counties produce 95% of all the UK hops.

7.1 Research frameworks

Hops and oast houses have been studied and a number of publications have been produced although these tend to concentrate on the south eastern oast houses, *Kentish Oasts 16th – 20th Century: Their History, Construction and Equipment* (R and I Walton 1998) and *The Oast Houses: Their Life and*

Times (A Major 2006). In Herefordshire *A Pocketful of Hops* (Grundy, Paske and Walker 2007) deals with the whole of the historical hop industry and contains one chapter on hop kilns in particular. A survey of the hop kilns of Hereford and Worcester was produced in 1997 for a Masters course at the Ironbridge Institute (Griffiths 1997). This includes a gazetteer of many of the kilns in Herefordshire and Worcestershire.

The Post Research Agenda for the West Midlands Regional Research Framework for Archaeology (http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/) has yet to be published and cannot therefore be referred to here. The seminar paper dealing with the later post-medieval in Worcestershire (Dinn 2003) is noticeable due to its lack of discussion about the hop industry of Worcestershire in this period. This industry produced the distinctive hop kilns of the region that litter the skyline in some parts of the county and was economically important to the County.

There is an already recognised need to record agricultural buildings, prior to their loss, which can be seen by existing publications on farm buildings such as R W Brunskill's *Traditional farm-buildings of Britain* already in its fourth edition (Brunskill 2007). Other studies have concentrated on individual areas such as *The development of farm buildings in Western Lowland Staffordshire up to 1880* (J E C Peters 1969) and *Historical Farm Buildings of Wales* (E Wiliam 1986). An analysis of the agrarian settlement and buildings of Worcestershire is one which is missing in the library of historic building studies.

8. **Publication summary**

The Service has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, the Service intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication.

Archaeological building recording of hop kilns was carried out at Manor Farm, Powick, Worcestershire (NGR SO 8332 5146, SMR ref WSM 39862). The survey was required in order to record the building prior to it being converted. The hop kilns recorded at Manor Farm incorporated a wall that dated to the 17th century and was probably erected as part of a structure associated with the 17th century farmhouse still in existence adjacent to the building. The hop kilns themselves were constructed in the late 18th century and consist of two brick-built kilns and an attached storage and processing area. Later additions in the 19th century consisted of extensions to the storage area and at the beginning of the 20th century a new, larger, brick-built kiln was constructed. The later 20th century saw the construction of three more kilns, made of breeze block. The development of the building reflected the development of hop farming in the county of Worcestershire.

9. **Acknowledgements**

The Service would like to thank the following for their kind assistance in the successful conclusion of this project, Mr Thomas Hawkins (the client) and Mr Mike Glyde (the curator).

10. **Personnel**

The fieldwork and report preparation was led by Shona Robson-Glyde. The project manager responsible for the quality of the project was Hal Dalwood. Fieldwork was undertaken by Shona Robson-Glyde, photograph preparation by Shona Robson-Glyde, and illustration by Shona Robson-Glyde and Carolyn Hunt.

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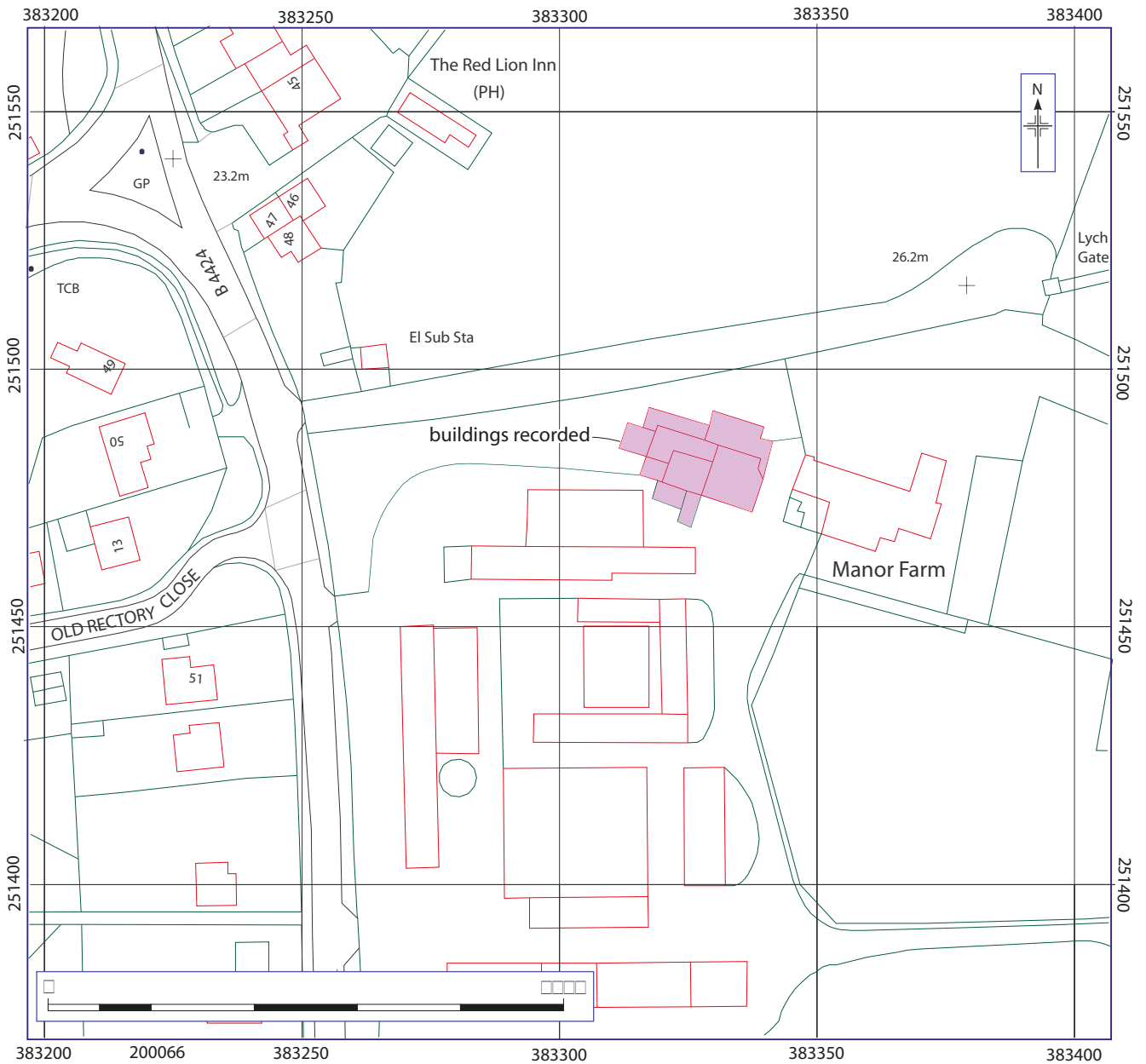
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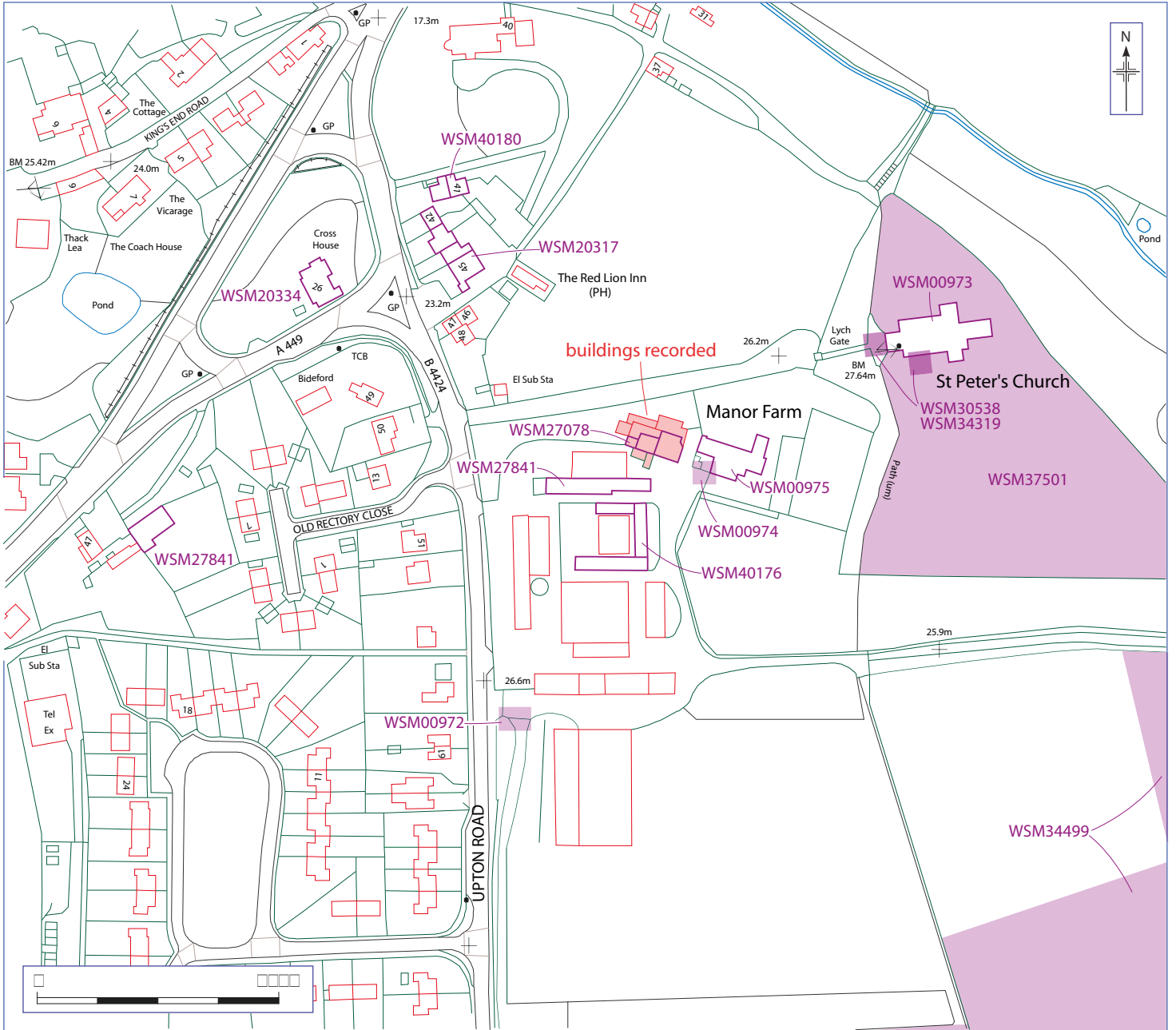
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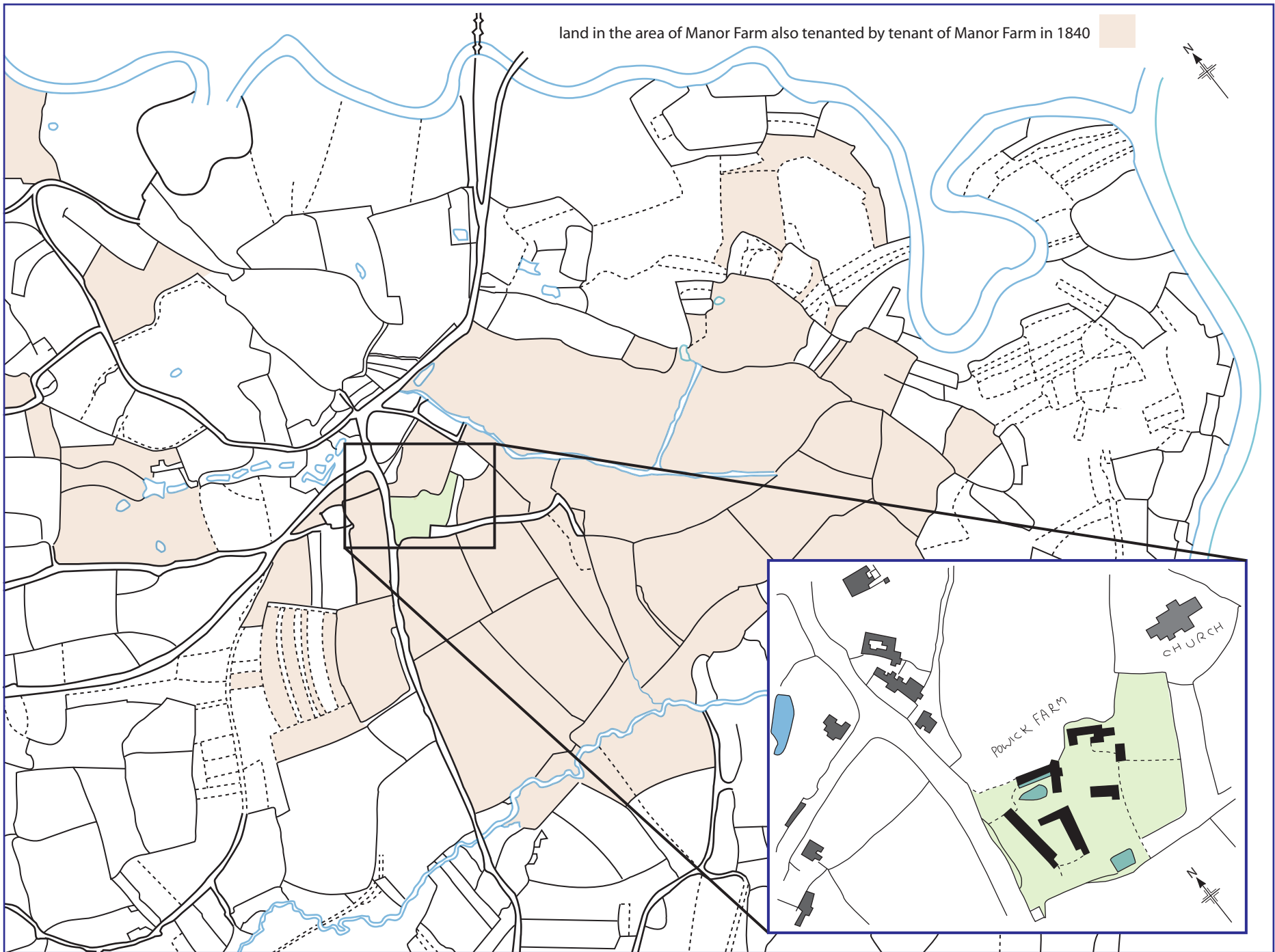
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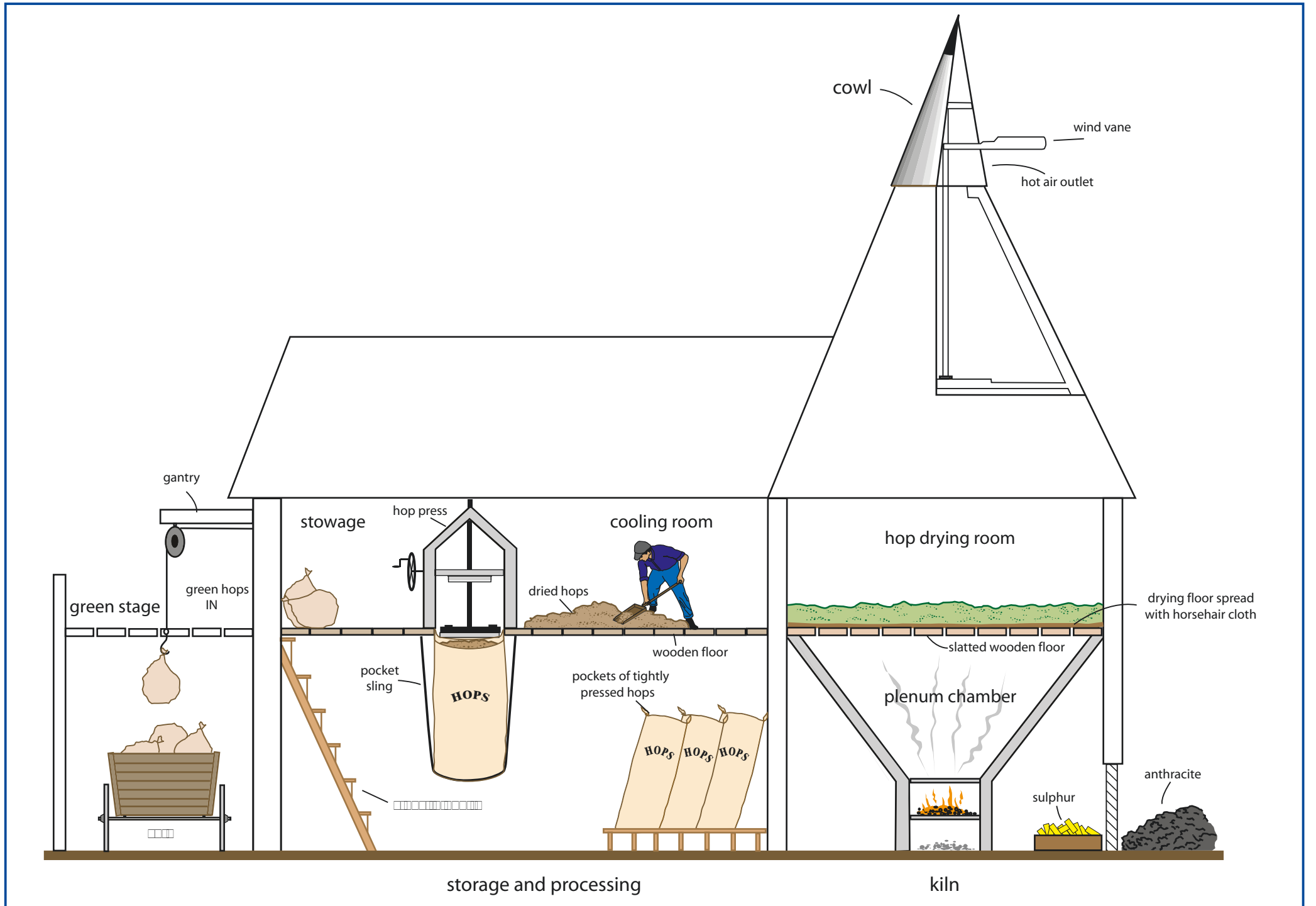
Figures

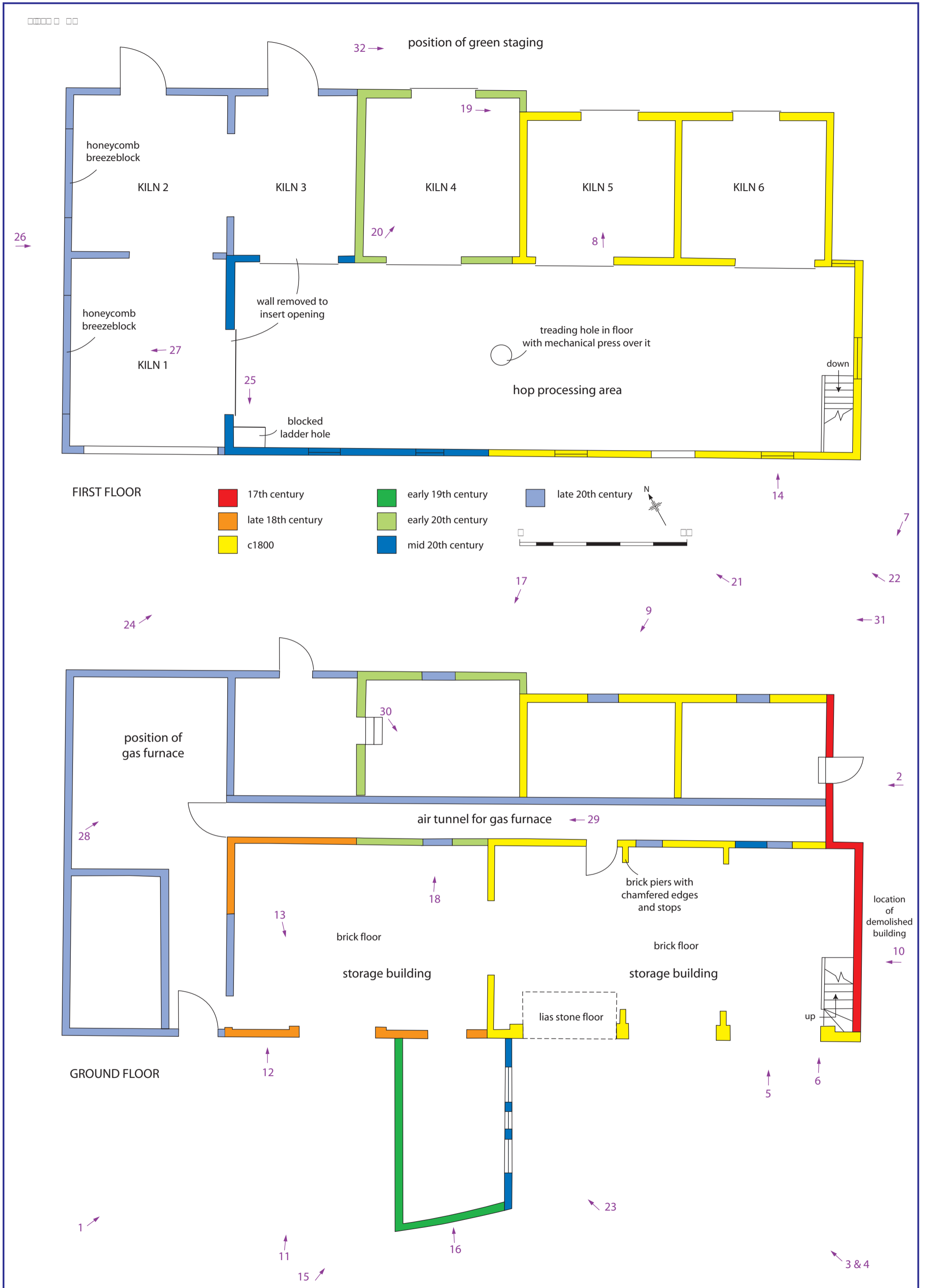




land in the area of Manor Farm also tenanted by tenant of Manor Farm in 1840



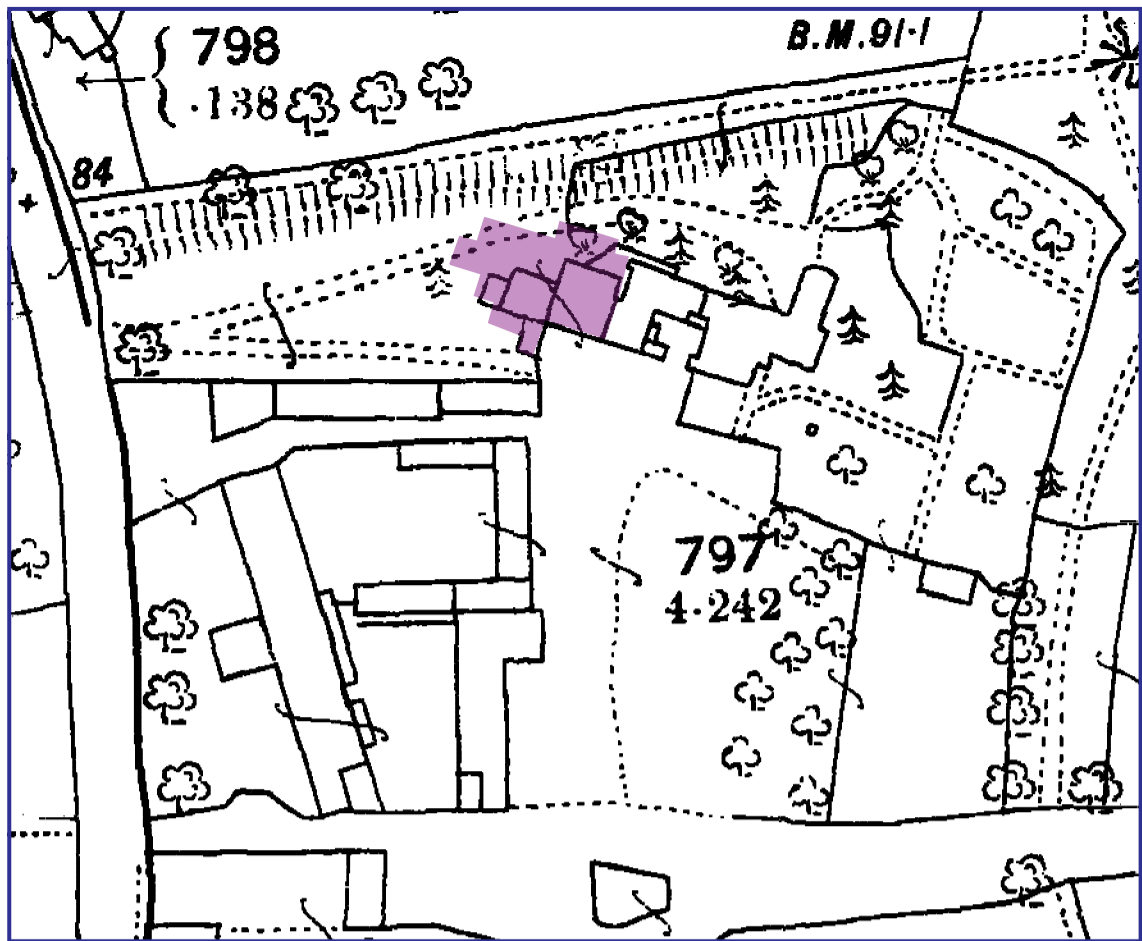




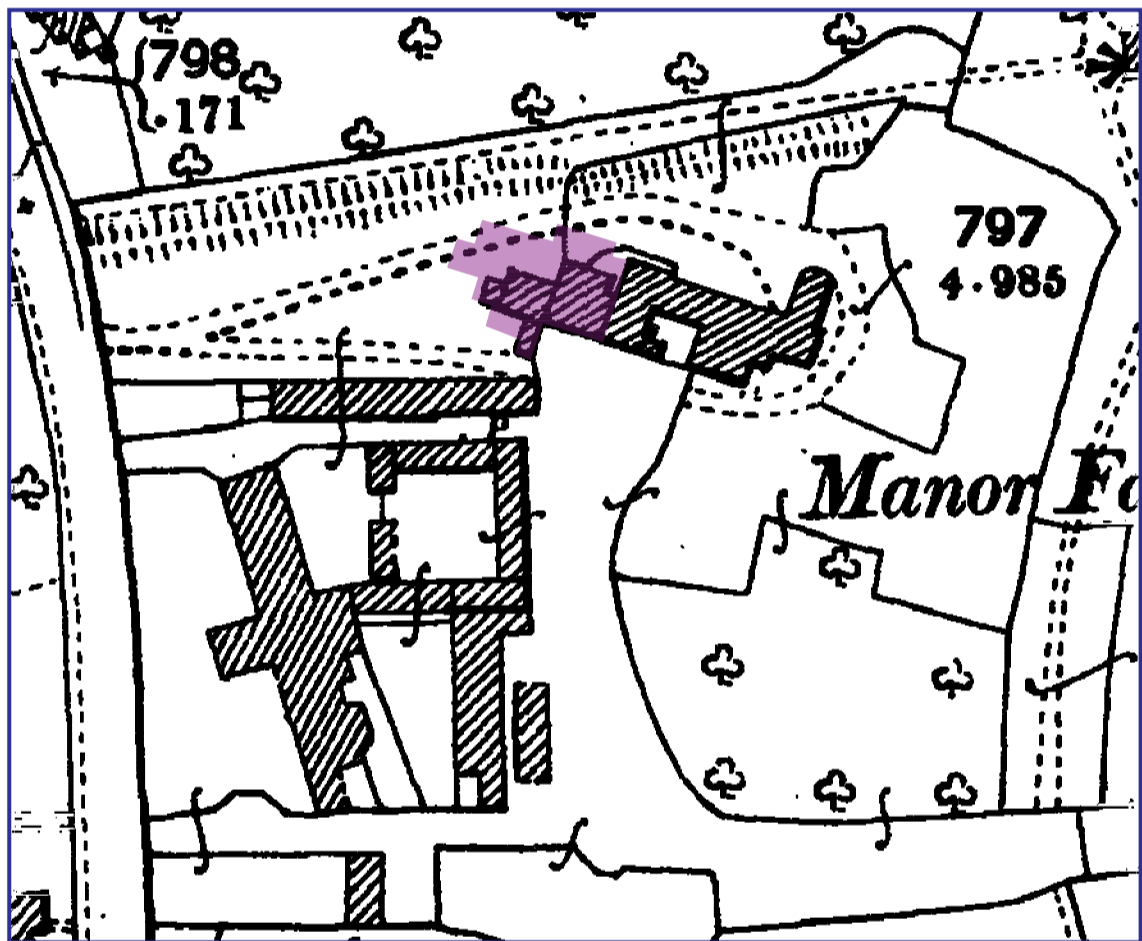
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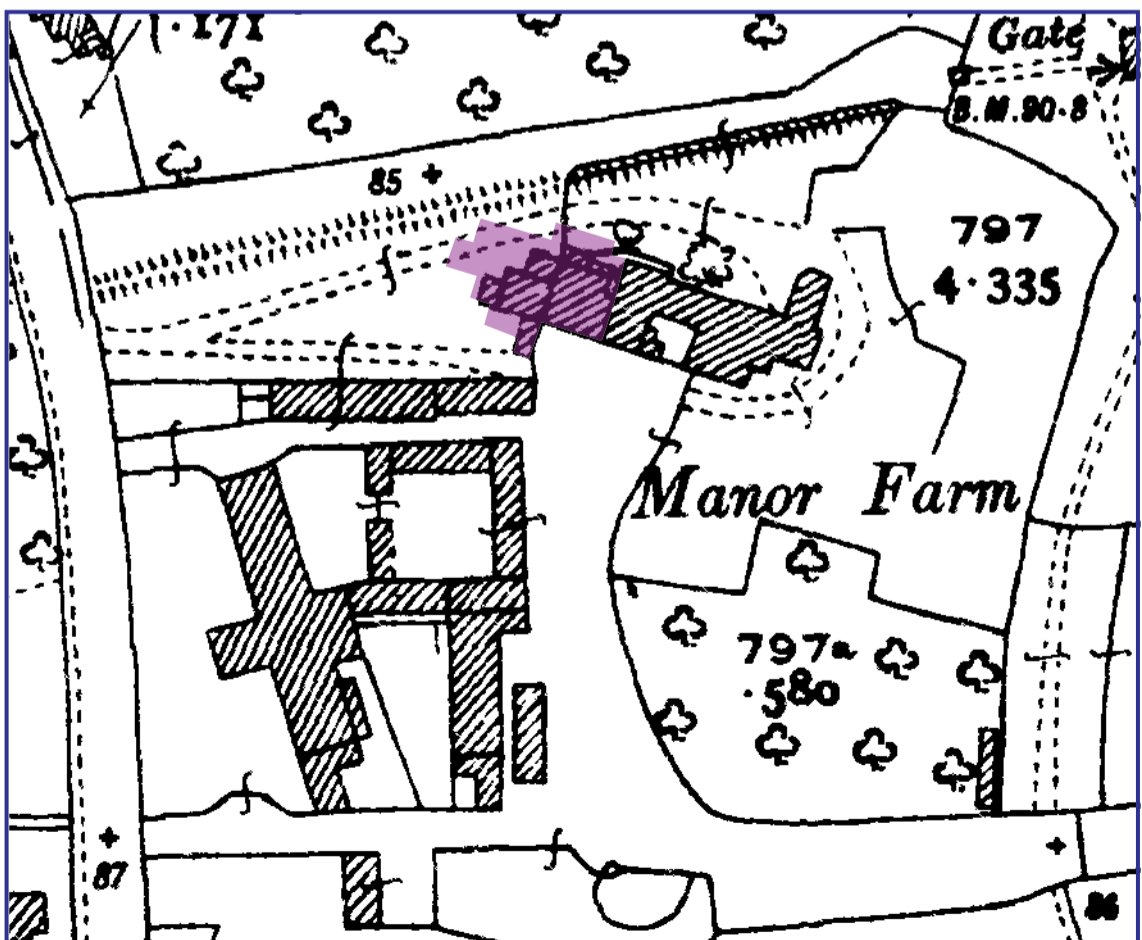
1896 Ordnance Survey



1904 Ordnance Survey



1928 Ordnance Survey



Plates



Plate 1: The buildings from the west



Plate 2: 17th century wall now part of east wall of the hop kilns



Plate 3: Late 18th century hop kilns from the south east



Plate 4: Storage and processing area



Plate 5: One of original late 18th century segmental head openings



Plate 6: Moulded chamfered brick and decorative sandstone



Plate 7: East elevation of late 18th century kiln



Plate 8: Internal space of the cone lined with plaster



Plate 9: Segmental head doorway to plenum chamber hidden behind later oil-burning furnace



Plate 10: Building scar on east elevation of storage structure



Plate 11: c1800 extension to west of the oast house (ground floor)



Plate 12: Example of finger marks on c1800 wall surface



Plate 13: Large opening of c1800 with red sandstone hinge bases



Plate 14: Segmental arch head window with chamfered brick cill



Plate 15: Early 19th century extension



Plate 16: Small hoofed mammal footprint on brick in early 19th century wall



Plate 17: Early 20th century kiln with segmental head opening into furnace area



Plate 18: Opening into furnace area within early 20th century kiln



Plate 19: Joint between original kiln and early 20th century kiln

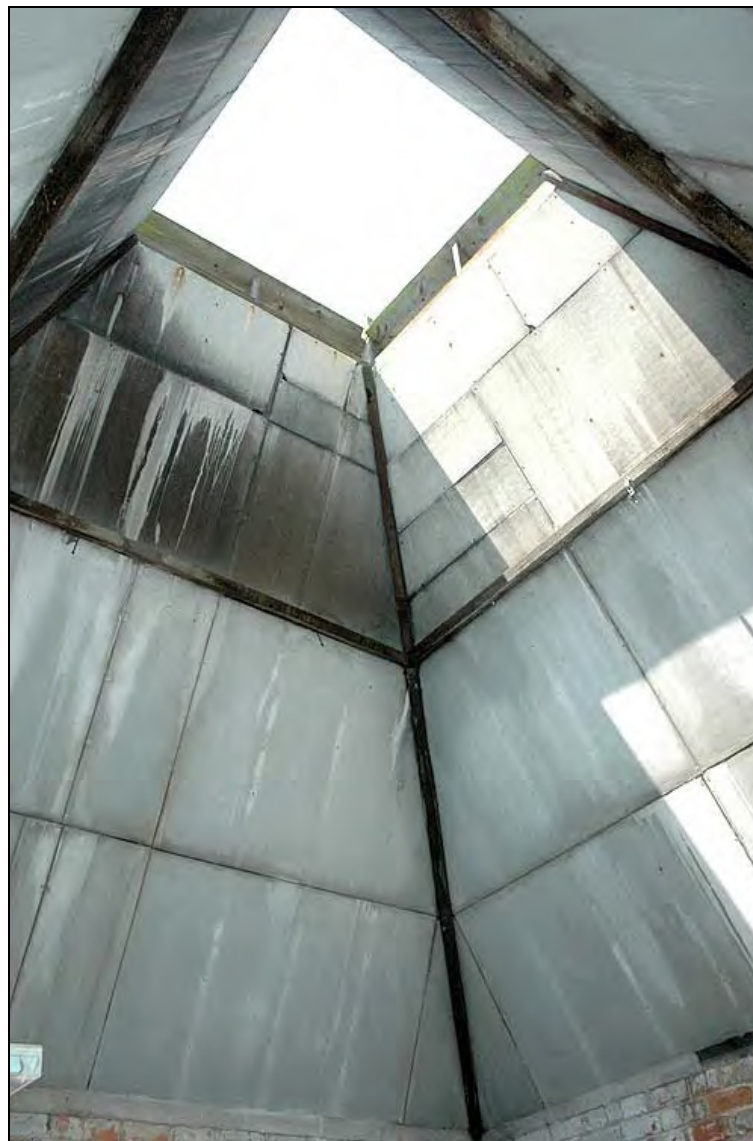


Plate 20: Interior of early 20th century cone



Plate 21: Louvre-vent on early 20th century kiln



Plate 22: Louvre-vents on original kilns



Plate 23: Mid 20th century blocking of early 19th century extension in London brick and iron-frame casements



Plate 24: Mid 20th century rebuilding of first floor of c1800 extension



Plate 25: Ladder hole



Plate 26: Late 20th century kilns



Plate 27: Honeycomb panel in modern breezeblock kiln



Plate 28: Late 20th century large gas air-drying machine



Plate 29: Air tunnel leading through the ground floor of the kilns



Plate 30: Vent and exterior of air tunnel inserted into the kiln



Plate 31: Storage space below the green staging



Plate 32: Green staging

Appendix 2 Technical information

The archive

The archive consists of:

- 3 Fieldwork progress records AS2
- 4 Photographic records AS3
- 275 Digital photographs
- 1 Building Record Forms AS43
- 1 Building Record Notes
- 10 Scale drawings

The project archive is intended to be placed at:

Worcestershire County Museum
Hartlebury Castle
Hartlebury
Near Kidderminster
Worcestershire DY11 7XZ
Tel Hartlebury (01299) 250416