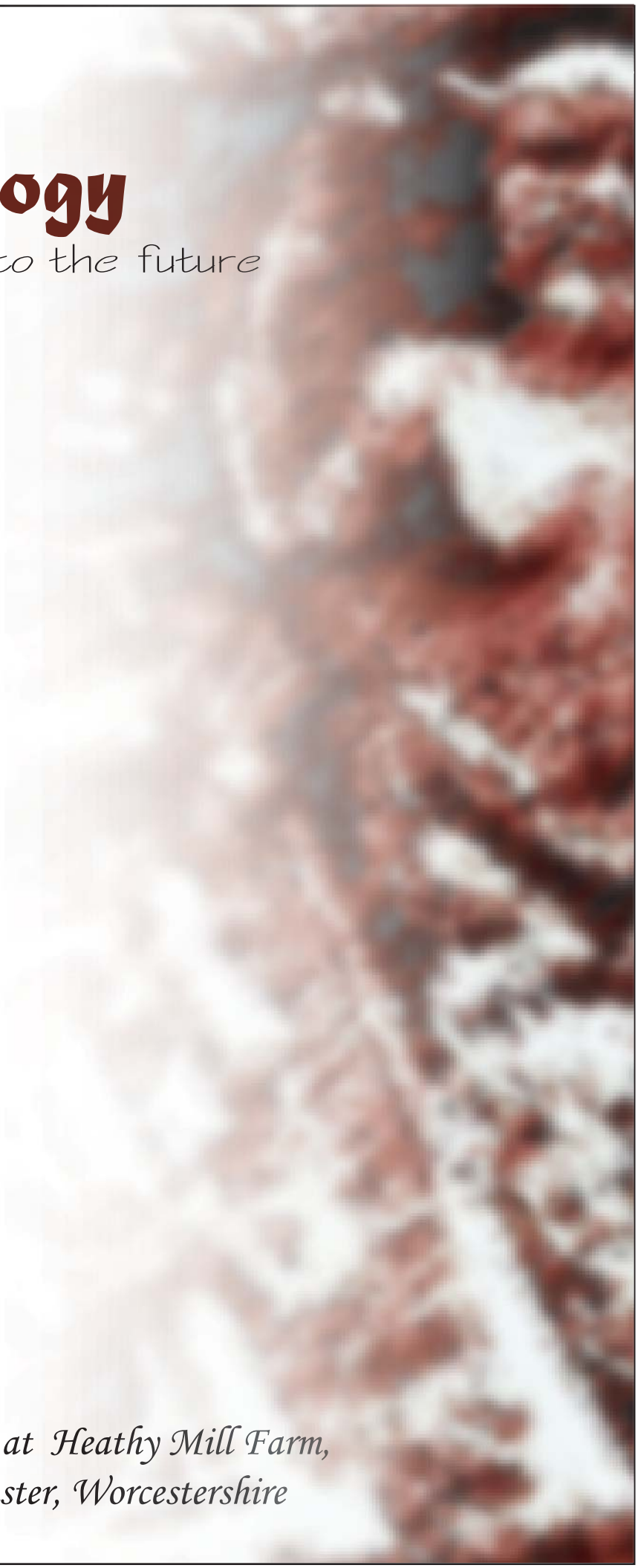
Mercian Archaeology

-taking the past into the future



Historic Building Recording at Heathy Mill Farm, Comberton Road, Kidderminster, Worcestershire

Historic Building Recording at Heathy Mill Farm, Kidderminster, Worcestershire

A report for Mark and Cheryl Blakeway

September 2005

Paul Williams

Project: PJ 146

WSM 34751

Mercian Archaeology *undertake archaeological projects across much of the West Midlands and the Welsh Marches.* We specialise in Historic Building Recording and Analysis. *We also undertake archaeological watching-briefs, evaluation and excavation, desk-based assessment, historic landscape assessment and osteological analysis. We now also carry out historic reconstruction and can produce illustrations for publication, website or interpretative panels.*

We work with clients to ensure that archaeological considerations are resolved in reasonable time and at competitive rates. Our services are aimed at:

- **Commercial Developers** who need archaeological provision under current planning legislation
- **Agricultural Managers and Farmers** who may require archaeological input under grant funded project designs
- **Architects and Architectural Practices** who seek to alter or demolish listed or locally important historic buildings
- **Public Utilities** who seek to lay new services in archaeologically sensitive areas
- **Government and Local Government Bodies** who may wish to subcontract our services
- **Individuals** who may wish to carry out small-scale development and require the services of an archaeologist according to their local planning department

Mercian Archaeology
Flat 1 Malvern House
7 Malvern Road
Worcester WR2 4LE

Paul Williams
Tel: 01905 420087

E-mail: paulwilliams@mercianarchaeology.co.uk

Fax: 01905 420087

www.mercianarchaeology.co.uk

1. Project Background

1.1. Location of the Site

Heathy Mill Farm (NGR SO 84847541) lies on the south-eastern peripheries of Kidderminster off the A448 Comberton Road, which links the town with Bromsgrove some 7 kilometres to the south-east (Figure 1). The farm is bordered to the east by the 20th century housing estates of Spennells and Comberton, which have spread outwards on the back of the 19th century industrial expansion of Kiddeminster, which was founded on the 18th century and later carpet and textile industry and further fuelled by the coming of the canals in the 1770's and the railway some 80 years later.

Significantly, the farm lies in the wide flat valley of the River Stour and its tributaries and the use of water for both producing waterpower and for irrigation purposes, has been a noteworthy factor in the development of the local landscape.

1.2. Development Details

A planning application was made to Wyre Forest District Council by Central Building Design of Kidderminster, on behalf of Mr Mark Blakeway of Heathy Mill Farm, for conversion of existing farm buildings to provide domestic accommodation and associated infrastructure (reference WF/0329/2005). The planning process determined that the proposed development was likely to affect a building locally listed on the Worcestershire County Historic Environment Record (WSM 08163). As a result, the Planning Archaeologist, Worcestershire County Council, placed a 'Programme of Building Recording' planning condition on the application, for which a brief of work was written (WHEAS 2005).

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. The brief of works states that the proposed development will *'affect a building of intrinsic archaeological and historic interest'* (WHEAS 2005).

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 building prior to its 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 1999).
- The buildings were recorded to at least Level 1 as defined by the Royal Commission for Historic Monuments of England (RCHME 1996).
- The project conforms to a brief prepared by the Planning Advisory Section, Worcestershire Historic Environment and Archaeology Section, Worcestershire County Council (WHEAS 2004) and for which a project proposal and detailed specification was produced (Mercian Archaeology 2005).
- 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) and the following sources were specifically consulted and were of use:

Cartographic Sources

Source	Reference Number
Tithe Map and Apportionment of Hurcott and Comberton (1838)	WRO BA 1572, AP s760/395
Plan of the Watercourse from Spennels Mill to Heathy Mill (undated but after 1836)	WRO BA 4600,520, 705:550

Plan of Heathy Mill Farm (1861)	Kindly supplied by Mark Blakeway
Ordnance Survey 1st Edition 6". Worcestershire Sheet XV.NE (1885)	
Ordnance Survey 2nd Edition 25". Worcestershire Sheet XIV.4 (1902)	

Other Primary Sources of Use

Source	Reference Number
19th century plan	WRO BA 4600/520, 705:550
Sales notice of auction (1918)	WRO 10470, 899:310

Other Primary Sources Consulted (of little use)

Source	Reference Number
Map of mills on the River Stour	WRO BA 1540, 989.9.16
Plan said to be late 18th century	WRO BA 12944/2
Documents relating to Heathy Mill Farm (not accessible until 2017)	WRO BA 9306/94, 705:1010
Masefield Drawings (Volume 1)	WRO BA 3494
Land Tax assessment, Kidderminster Foreign (1831)	WRO BA 823/35 (vii)

Secondary sources used are referenced within the report.

2.4. The Fieldwork Methodology

The building recording was undertaken on 30th August 2005 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.

3. The Documentary Research

3.1. Background

Kidderminster is situated in an ideal location for the development of the thriving cloth / textiles trade that has brought the town worldwide renown. Harnessing the power of the River Stour and its many tributaries in the Stour Valley provided the energy required to power many watermills since at least Domesday. The watercourses have also served to irrigate the meadows, providing rich grazing for sheep; so the elements of a successful textile industry were readily in place. The earliest specific records relating to the trade indicate that by the late 13th century a dyer and a fulling mill were established in the town (VCH III, 163).

By around 1600 Kidderminster had a thriving wool and linen industry, which manufactured wall-hangings (the pre-cursor to the carpet) and bed furniture. The town continued to thrive after the civil wars of the mid 17th century, partly as a scheme to make the River Stour navigable had been implemented. However, the popularity of the Kidderminster wool based goods, often referred to as 'Kidderminster stuff', declined and the textile industry of the town was only kept alive due to the diversification of the clothiers (Buteux *et al* 1996).

The Kidderminster carpet industry really began in earnest in the early 18th century and a silk and worsted industry developed as a subsidiary (Buteux *et al* 1996). The industry was booming by the mid-18th century and the town began to spread outwards, with new houses and suburbs. The introduction of an Act of Parliament in 1772 was passed in response to a general downturn in the economy, in which debt had become endemic. The act made it easier for factory and mill owners of the cloth industry to recover their debts (Gilbert 2004, 50-1).

Heathy Mill stands on the edge of the modern suburbs of Kidderminster and undoubtedly, the present mill building owes its existence to its proximity with the town. The place name 'Heathy' first appears in a document of 1275, where it is recorded that Thomas Attwood granted a messuage and land at Heathy to Robert Attwood (VCH III, 171). It appears that Lord Bergaveney held the manor of Heathy as a sub-manor of Kidderminster in the mid-16th century. The manor was later split into three, following three family lines. In 1627, William Romney sold his portion of the manor to Edward Broad of Dunclent, who sold the manors of Heathy and Dunclent to Lord Thomas Foley in 1655 (Gilbert 2004, 51).

A Heath (Heth) Mill is recorded in the Parish of Chaddesley Corbett in 1544 (VCH III, 39). It seems unlikely that this mill was a pre-cursor to the current building at Heathy Farm, which stands around a kilometre from the Chaddesley Corbett parish boundary, although it is often the case that surviving mill buildings are located on the site of, or close to earlier mill

structures, as the infrastructure to harness and release water-power was often still in place and useable, with little alteration or maintenance.

The earliest documentary evidence for the mill at Heathy Farm is the Tithe Apportionment and Tithe Map of 1838. 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 relevant extract of the map produced for Kidderminster Foreign parish shows the mill with incoming watercourse or head race to the north, millpond and tail race taking the outflow away to the south (Figure 2).

The function of the mill and the evidence for the proprietary is scant. According to the details contained within the Worcestershire Historic Environment Record, the mill was used as a textile mill in the early 19th century with a probable change of use to a corn-mill before 1845 (WSM 08163). Notes on the mill written by H.E.S.Simmons in 1945 are more enlightening. The mill was said to have been a spinning mill for worsted and yarn from 1820 until 1841 when it was converted to a corn mill (Simmons quoted in Gwilliam 1980). The tithe apportionment of 1838 indicates that the mill was used as a corn mill at this time and it was occupied by James Tolley (possibly Godfrey?-writing obscure), executor of the late Saul Godfrey. Godfrey and Sons worked the mill around 1840 (Gwilliam 1980). By 1855 the farmhouse was occupied and the mill run by Richard Brewster (Billings Directory and Gazetteer 1855) and Brewster was still incumbent in 1873, when he is listed in Littlebury's Directory as a 'miller'. It would appear that Richard Brewster died sometime during the next decade or so as his wife is listed as the incumbent in Kelly's Directory of 1896. Kelly's Directory of 1911 makes no reference to a miller, but E.H.Smith is listed as dairy farmer, with Edward Baker as the farm bailiff at Heathy Farm. It is known from the present owner that Arthur Blakeway purchased the farm at auction in 1918 and took possession of the buildings from tenants in 1920 (pers comm. Mark Blakeway). Arthur Blakeway is listed as a farmer in Kelly's Directory in 1932. The mill appears to have been used as a mill until the mid 1950's, although power supply was by electric motor from 1936 after the gears and shafting were removed from the waterwheel (Simmons quoted in Gwilliam 1980).

There has always been competition for the water resource between mills and irrigation systems, with many documented legal battles between mill owners and farmers regarding the diversion of watercourses. It is clear from the documentary sources that Lord Foley was an advocate of watering his meadows via a network of ditches and sluice gates, thus where mills were reliant on water from the same watercourse, the elements of conflict were in place. William Pitt wrote in 1813, '*A number of useless corn mills is a great hindrance to improvement of the watering of the land*' (Pitt 1813, 206-13), clearly the agricultural point of view, although the association and good relations between the two would have been important to the overall economy. An irrigation system was implemented on the Foley estate at Dunclent and Heathy probably as early as the late 17th century, although Pitt attributes the improvements to the early 18th century, stating that an irrigation system took water from the Wannerton Brook to farms at Dunclent, Hurcott, Wannerton and Heathy. This potential conflict of resource and the solution can be noted from the auction details for the Broome and Hurcott estates of 1918 (WRO BA 10470, 899:310), which indicates that Heathy Mill was allocated water from course 2 of the system, only every other day.

3.2. Cartographic Evidence

The Tithe Apportionment Map for Kidderminster Foreign was produced in 1838 (Figure 2). The map shows the mill building in a smaller floor-plan than and the small building depicted to the west of the mill was 'T' shaped rather than rectangular as it appears today (the scaling and accuracy of this map appears to be slightly dubious). The plan of 1861 shows the mill in the same configuration (Figure 3). The succeeding maps of 1885 and 1902 (Figures 4 and 5) show the mill to have been extended and in a similar configuration as today. Two artificial watercourses, fed the millpond one to the north, which is culverted under the farm track and the other on the western side. The overflow from the pool appears to have been from a weir and sluice gates to the south-west.

3. The Historic Building Recording

External

The subject building as it stands today is a four storey building (including attic space) constructed of brick in sandy-lime mortar coursed in a Flemish bond. There is clear and visible extension to the building upward and outwards on the western side, the third storey having been added and the wheel chamber area on the west enclosed within the building at the same time. From the front (southern elevation) the additions are clear, with slightly orangey brick used in the new build, although there is no indication of an extra storey to the rear. The extension can also be noted internally from the shadow profile of a lower roofline on the eastern gable of the attached farmhouse and butt joints in the dividing walls. This is further discussed below.

The roof is pitched with a hand-made clay tile cover and the gable end is embellished with stepped brickwork. The pitch is slightly higher than the farmhouse at the western end, onto which the mill butts (Plate 1).

The mill building is built into the natural slope to the south, with only the first and second floors plus attic visible above ground on the south. The northern elevation of the second floor is without windows. There is a band of distinctive orange brick running across this elevation, giving the impression that the wall had been raised from this level in another phase, however, this is not the case and it appears that a batch of orange brick was used during the building of the elevation (Plate 2). At ground level on this side (1st floor), there are four window apertures below rough arched brickwork lintels. Two of the apertures have been modified for modern purposes, the easternmost has been adapted to be used as a chute for grain tipping from wagons reversed up to the opening.

At the time of the survey the area adjacent to the northern elevation had been reduced by just over a metre, exposing the brick bund wall of the millpond and the grey puddle clay base. The work had also exposed the water inlet arch and a 50 centimetre thick retaining wall against the elevation (Plate 3). A sluice gate, sometimes referred to as a penstock, would have controlled the flow of water into the channel below the arch, this has now gone.

The southern elevation of the ground and first floors have door, loading door and window apertures beneath rough brick arched lintels and the second floor has a series of blind

windows, one of which is open with a fitted two-light casement. It is not known if this is an original feature, or it has been opened up to allow light to the second floor at a later date. It was common for the upper floor of a corn mill to be used for storage of unprocessed crop and it was usually kept dark if the grain was not stored in enclosed bins. This was to prevent rodent and bird populations taking hold in the space (www.ukagriculture.com). At ground floor level, the original entrance door aperture is obscured behind a 20th century sliding access door and an adjacent window has been blocked. The aperture on the eastern side adjacent to the wheel chamber bay is noticeably lower than the others at the same level, (Plate 4) this is adjacent to where the pit wheel would have been located (see section 5.3 and Figure 6) and the window would have allowed light into the space so that the wheel could be maintained. The butt joint between the newer build, which enclosed the waterwheel, can clearly be seen and the newer build is also noticeable from sill level of the blind windows on the upper floor.

There is a definite butt joint between the mill and the attached farmhouse suggesting that one is later than the other. The evidence that indicates that the mill is later than the farmhouse is: the chimney breast of the farmhouse is partly external to the building, had the farmhouse been built onto the mill, the chimney breast would have been made internal and the eastern elevation made flat; the bricks used in the farmhouse are thinner at around 2 ¾" as opposed to the 3" bricks used in the mill construction. Generally, the thinner bricks are earlier (see discussion below); a window in the eastern elevation has been blocked as it was no longer required when the mill was built around it.

Internal

Attic Floor

The roof cover is supported by two tiers of trenched purlins raised on full building height partition walls and a central truss. The twin queen struts are raised on a dropped tiebeam with an interrupted tiebeam above (Plate 5). The truss is strengthened by a pair of passing braces on either side, which do not extend past the strainer beam (collar). An 'improvised' frame of re-used timber makes use of the truss and purlins and houses the wheel of a sack hoist mechanism, which would have worked via pulleys worked off water power (Plate 6).

The purlins at both ends of the building are re-used timbers from an earlier structure(s). At least two were bridging or axial beams and have sockets cut in to take the floor joists (Plate 7). The beams are reduced at the ends, an unusual feature and the purpose for this is not known.

The apex of the earlier roof to the original smaller mill building can be seen in shadow against the external chimneybreast of the farmhouse on the western side (Plate 8). The roof lights may be contemporary with the build, but are more likely date from the early 20th century; they are shown on the photograph of 1918 (Plate 20). The eastern end bay also has evidence of 20th century use and modification, with aluminium hopper heads having been inserted into cut slots in the floor. These were used during the post 1950 life of the building as a granary. There is an aperture in the gable end, which more likely relates to a function of loading, rather than for light, although there is no evidence of a lucam on the elevation (overhanging hoist porch).

Second Floor

The evidence at second floor level indicates that the building has been widened as well as heightened by a story. It also demonstrates that these modifications were carried out at the same time, Plate 9 shows the shadow of the former roofline at this level and also the later brickwork of the extension butted onto the northern side. This is not visible externally as the

northern elevation all dates from this period, as does the eastern end bay, which encloses the waterwheel, which was external prior to this.

First Floor

A chimneybreast that serves the fireplace at ground floor level at the western end (see below) can be seen butted onto the chimneybreast of the adjoining farmhouse (Plate 10). This does not extend to the second floor and so must be punched through the wall to share one of the flues in the farmhouse chimney. This is further evidence that the mill is later than the farmhouse. Also at the western end there is a blocked in window below a rough brickwork retaining arch and a doorway (Plate 11). This indicates that the window was originally an external window to the farmhouse, which was bricked up when the mill was extended across the aperture. The doorway is below a timber lintel and must have been punched through the farmhouse wall after the extension of the mill. This door provided the only direct access between the two separate structures.

The floor boarding at this end has been replaced during the 20th century, probably as the ingress of water from above rotted the earlier boards. The remainder of the area is in good repair and appears original. There are steps up and down adjacent to the southern elevation and the loading door and windows are still open, giving light to the floor (Plate 12).

At the eastern end, there is a blocked window, which would have looked out over the waterwheel prior to the extension of the building and an aperture, which suggests a doorway, although as there is not a floor at this level on the opposite side is more likely an opening that served a maintenance purpose (Plate 13).

Ground Floor

The western end bay of the lower floor was used as part of a ‘cottage’ in recent times. The chimney described above (first floor) carries down to a brick fireplace and hearth. There is a small Belfast style sink in front of the window in the southern elevation. The space still had wallpaper and wood panelling, highlighting its recent use (Plate 14). Parts of the lower levels of the adjacent farmhouse walls, visible in this space, are built from large ashlar sandstone blocks (Plate 15). These must have been re-used from an earlier building, as there is brick below and above this level and the white limey mortar of the build appears to be of one phase. It is not unusual, especially in farm or industrial buildings, that handy and readily available materials from earlier buildings would be used.

It is understood that further sandstone blockwork was encountered during work to insert a damp-proof membrane below the floor of the mill. A foundation course of sandstone was noted on the line of the earlier northern elevation of the mill, although this apparently was not evidenced in the western bay, leading the owner of the building to suggest that this may have been the remains of an even earlier phase of mill that was detached from, or more likely predated the farmhouse (pers comm. Mark Blakeway), this is further discussed below.

The eastern end of the ground floor shows evidence of much alteration and disturbance, some relating to modern use of the space as a granary (Plate 15). Notably, the bridging beam at the far end of the space has been cut and some of the joists removed to allow a modern grain chute to be constructed inside; this has now gone. The beam has been supported by a brick pier, which is part of a modern dividing wall, which has also been partially demolished. There are two posts socketed into the remainder of the beam, each with a large rectangular rebate (plate

16). These are part of the remains of the 'hurst frame', which would have supported the gearing after the main waterwheel.

The walls of the lower floor are one brick width thicker than those above.

The Wheelhouse

Originally the waterwheel was external, but it was enclosed when the mill was enlarged. The wheel chamber was partially emptied at the time of the survey and to the depth that it was visible, was constructed of brick with a brick arched outlet (Plate 17), which is culverted under the yard and back to the watercourse to the south. The space above the wheel chamber at second floor and attic level has been utilised with the floors extended over the space. Cement render hides the water inlet, in which a timber launder (water chute) would have sat at the inner side of the penstock. Modern cement render and also hides detail on the inner (western) wall of the wheelhouse. There was originally an access through the eastern gable end of the building, the majority of the external face of which is now covered by the raised bank that provides the driveway to the lower levels to the south (Plate 18). This doorway would originally have provided access into a link building between the main mill and the detached building on the east, which has lately been used as a stable (Plate 19).

4. Phasing of the Buildings and Dating

Discussion of the Fabric and Dating Evidence

Accurate dating of farm and industrial buildings is often problematic as dateable architectural features are often changed, modified or re-used. This is usually more pronounced within commercial or agricultural buildings than in domestic architecture. It may also be that architectural fashion takes longer to manifest itself within the fabric of buildings reserved for animals or produce. Consequently, any evidence for close dating is problematic without substantiating documentary evidence. In such instance, the dating and phasing of the buildings has to be subjective. Where brick farm buildings are dated to within a quarter of a century without substantiating documentary evidence, a certain amount of conjecture will almost certainly have been used. 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. However, this typology cannot be relied upon in agricultural buildings, as materials were frequently re-used, or stockpiled materials use later.

The cartography *appears* to indicate that by 1838 the mill stood in its smaller form, i.e not yet extended to the north, east and upwards. However, close comparison of the 1838 tithe map and the 25" 2nd edition Ordnance Survey map shows anomalies that can only be put down to a certain degree of inaccuracy in the tithe plan, for example, the tail-race from the mill appears too far to the west on the tithe plan and the shape of the early mill seems squarer than it should

actually be. The 1861 farm plan clearly shows the mill as narrower than today. The 1885 6" 1st edition Ordnance Survey map shows the mill in its present configuration, with the exception that there appears to be a link building between the mill and the building lately used as a stable (Plate 19), which stands on the west; this also appears on the larger scale 2nd edition Ordnance Survey map of 1902, although now it is gone and the access drive has been routed through this area.

The documentary evidence sheds some light on phasing and dates of construction, alteration and demolition. The photograph, dated to before 1919 (Plate 20), shows the extended and heightened mill. The link building between the mill and the present stable had by now gone. Detail of the mill shows two dovecotes on the wall at the eastern end. The watercolour painting of the mill and farmhouse (Plate 21) sheds a little more light with regard to dating. The house is shown before the porch was added to the frontage and as the porch appears on the 1902 map, the depiction can be dated to before this. The painting shows a typical large panelled Georgian style door and overall evidence from the fabric of the house suggests it is transitional (Regency) in style and may be dated to approximately 1790-1800. The frontage is 'grander' than the rear, with larger window apertures and a pair of gabled dormers to the attic. This indicates that the mill dates from between circa 1800 and 1838 and is more likely to date from around 1810-1820, as the style of window and lintel matches those used to the rear of the farmhouse. A deed of 21 years in length dating from 1820, for the spinning of yarn at the mill (Simmons quoted in Gwilliam 1980), suggests that 1820 is an acceptable date for the first turning of the waterwheel.

The fabric evidence clearly indicates two phases of (upstanding) building at the mill and coupled with the background research we can say with a fair degree of certainty that the following phasing is applicable: -

(18th century and earlier)

The building contains re-used timbers from an earlier structure, namely the purlins, which are re-used bridging beams and the main access door lintel, which is a rail from a timber frame building, the groove on the upper surface indicating it was panelled in wattle and daub. There is also evidence within the western gable wall of the farmhouse (now inside the mill) for re-use of sandstone ashlar blocks. There are remaining timber framed agricultural buildings to the west, now converted to provide domestic accommodation, demonstrating that the site was in use, at least as a farm, during the 17th century.

The below ground evidence also indicated the use of sandstone in a foundation course on the east-west axis of the rear wall of the earliest phase of the upstanding mill building, which may predate the existing building as apparently the foundation did not run the complete length of the wall (pers comm. Mark Blakeway). However, associations between the current farmhouse, mill and possible earlier building on the site cannot be determined from this evidence alone. It has been noted elsewhere during recent projects that differing materials from the main build have been used in foundation coursing. It was often common to use a different material at lower levels of a building, a recent watching brief at the late 18th century Button Factory in Bromsgrove noted the extensive use of sandstone foundations below the brick built structure (Mercian Archaeology 2005b) and a further recent building recording at Dorhall Farm, Chaddesley Corbett, around 5 kilometres away, also had re-used ashlar sandstone blocks within the brick fabric (Mercian Archaeology 2005c). Another prime example is that many of

the brick buildings of the Ironbridge Gorge in Shropshire, use industrial slag waste as foundation material.

The situation of the farmhouse on a slope above the watercourse and the short period of time between the construction of the farmhouse and the mill, suggests that the mill may well have been at 'idea' stage when the farmhouse was built.

Phase 1: The Farmhouse (circa 1800)

Sometime around 1800 the present farmhouse was built on the site in a Regency style, with greater embellishment to the frontage (southern elevation).

Phase 2: The Watermill (circa 1820)

Probably around 2 decades later, a mill structure was butted up against the wall of the farmhouse and the associated infrastructure put in place, i.e. leats, millpond, sluice gates and hatches, weir and outflow. The mill had an external waterwheel and was two storied (and probably attic storage space).

Phase 3: Extension of The Watermill (circa 1861-1885)

Sometime during the period between 1861 and 1885 the mill was extended to the east, enclosing the waterwheel, to the north and upwards adding another floor. It is likely that an inner skin was added to the ground floor at this time to strengthen the foundations for the added weight of the upper floor.

Based on the evidence collected we are able to suggest the phases and dates for the buildings at Heathy Mill Farm as shown in Figure 7

5. Watermills: A Brief Overview

5.1. Background

Water mills were functioning in northern Greece by the 1st century BC, although precise origins are obscure. The spread of watermill technology is attributed to the Roman Empire (Hodges1970, 192). There is evidence for the use of watermills in Britain during the Romano-British period, although the form and purpose is still obscure (Dark and Dark 1997, 131). It is not until the late Anglo-Saxon period that we have evidence for the widespread use of the watermill in the British Landscape. Recent work by Worcestershire County Council Archaeology Service at Wellington Quarry in Herefordshire, uncovered evidence of a timber constructed watermill and another has been excavated at Tamworth (Steane 1984, 169). The medieval period saw the mill drawn into the feudal system, with manorial mills employed in the service of the lord of the manor, with part of the operation for the miller. This meant that the mills were widespread and generally small-scale. It wasn't until the 16th century that milling really became a mercantile activity, rather than subsistence and duty. This manifested itself in an increase in expenditure on infrastructure and expansion of space used for milling. This was made possible by a general increase in population, better corn yields, better wheeled transport, the rise in the bakery trade and the release of feudal duties and restrictions in

milling. The majority of surviving watermills date from the 18th and 19th centuries. (Bedlington, undated). Mills were not only used to grind corn to produce flour, but also had many other and often more than one function, for example: fulling (felting fibres of woollen cloth), process of animal feed (milling, crushing, rolling, kibbling, pulping), iron working (hammering, working bellows etc), paper-making, sawing timber, on farms for threshing, sheep shearing, milking etc, pumping water, running looms and spinning machines, in fact, the harnessing of waterpower could be used for almost any mechanical process.

5.2. Types of Watermill in Brief

There are two basic types of watermill, the vertical, where the waterwheel turns vertically and the horizontal, where a jet of water at low level turned a rotor. We are only really concerned with the vertical mill, as this was the basis of the mill at Heathy Mill Farm. The wheel of a vertical watermill could be turned by water flow against the bottom of the wheel (undershot), top of the wheel (overshot), or part way down (breastshot) and variants of, including pitch back, high-breast and low-breast. Only overshot turns the wheel forward.

To turn the wheel water has to be delivered at the right height and allowed to drain away so as not to impair the movement of the wheel. In an undershot wheel the process is relatively simple, in that the water maybe simply channelled to produce a rapid flow onto the paddles of the wheel and allowed to flow away in the same course. This meant that mills could be sited alongside, over or even floating on an existing watercourse. At Heathy Farm, the waterwheel was overshot, working in reverse with two in-line penstocks supplying water over the wheel (Simmonds quoted in Gwilliam 1980). The wheel is said to have been 13 feet 6 inches in diameter (Simmons quoted in Gwilliam) and ‘around 20 feet in diameter’ (Gwilliam 1980), indicating a slight anomaly in the evidence. Raising the water to the height of the penstocks was achieved at Heathty Farm by channelling water along leats from a point upstream on the watercourse, which was at a higher point than the top of the waterwheel, into a holding pool, or millpond. Control of the water levels was by reducing or allowing the overflow from the pounded back water via a sluice gate. When the mill was not in use the sluice gates to the outlet would be opened enough to retain the water at the same level and prevent flooding. When the mill was in use the sluice gates at the inlet, would be raised allowing the required flow onto the wheel. To assist and achieve the levels, mills were often built into banks or slopes, as is the case at Heathy.

5.3. How the Watermill Worked

The waterwheel is relatively easy to rotate and does not take a great deal of water pressure to begin the process. The sluice gate at the penstocks would be raised and the water begins to flow over the paddles of the wheel forcing it into motion. Power from the revolving wheel is transferred to auxillary wheels via axles and shafts. The pitwheel, a large balancing wheel is connected to the axle off the waterwheel. The pitwheel engages the wallower, which rotates a central vertical shaft to turn the spur wheel and crown wheels above. The spur wheel and stone gear would turn the runner stone above the bedstone creating the grinding action. The crown wheel would power the sack hoist via a windlass and the elevator and auger via a secondary shaft (see Figure 6). The set-up at Heathy was probably similar to this during its working life as a corn mill, although the lack of remaining machinery makes it difficult to make

comparison. The machinery in the earlier textile mill would have been similar, with shafts and belts working the spinning machines (Reynolds 1970, 122).

6. Discussion: Heathy Mill in Context

The mill and existing farmhouse both date from the early 19th century, with later extension and appear to be part of a planned redevelopment of the site at this time. The mill was originally a textile mill, which was later converted to a corn mill (Pagett 1993, Field record, WSM 08163). The construction of the mill was likely to have been an entrepreneurial response to a growing requirement for industrial infrastructure to meet the demand for textile products from the Kidderminster area. The mill may have replaced an earlier mill on the site, although there was no definitive evidence noted for this during the fieldwork.

It was common for mills converted for use in processing corn to be of three stories, with an upper gallery for grain storage and input, a middle storey for drying and processing and a lower floor for output. This did not appear to have happened at Heathy until over 25 years after the change of use from textile manufacture to corn grinding. The date of change is interesting as it was at a time when there still would have been a great demand for woollen cloth in the Kidderminster carpet industry. But it was also at a time when farming was getting back on its feet after a period of agricultural depression after the end of the Napoleonic Wars in 1815, by when the monetary impact of imported corn had brought down the price of grain resulting in lower profits and its knock-on effect (Wade-Martins 1991, 60). The Corn Law of 1815 went someway to alleviating this situation, in the main because the landed gentry and estate owners, who had Parliamentary influence, were in danger of losing their accustomed lifestyle. The social and economic background for the introduction of the Corn Law is beyond the scope of this project, but basically those with landed interests in Parliament used their political power to hold corn prices at an arteficial level by preventing the import of wheat unless the price of British grain rose in comparison. By 1840, however, the growing population of England had placed a new demand on home grown produce, resulting agricultural and industrial in diversification to supply the market.

The association and sometimes conflict between land irrigation and the use of water to turn waterwheels has been referred to above. Irrigation and watermills employed the same basic hydraulic principals, in that water could be raised to a level the same as the point from which it was taken. Therefore, it is sometimes difficult to interpret leats and channels as being for one or the other, or both. Lord Foleys' irrigation system at his Dunclent and Heathy holdings had three watercourses from which water was taken to irrigate his meadows (WRO BA 10470, 899:310). Legal wrangling regarding the use of water for irrigation as opposed to turning a waterwheel invariably refer to the 'taking of water from a watercourse', which deprived others who use the same watercourse for their own purposes. It would therefore be speculative to date the construction of a mill to coincide with the construction of an irrigation scheme or vice versa and it is clear that whilst it is the case that Heathy Farm that irrigation and milling shared the water from the Wannerton Brook, it cannot be stated that any earlier mill was built because of the existing irrigation channels and therefore dated to that time, although use of existing resources is always an option on farms.

Unfortunately, the documentary evidence for the site is limited and so a certain amount of conjecture has to be used to analyse the development and use of the site.

7. Conclusion

The results of the historic building recording at Heathy Mill Farm determined that the earliest surviving upstanding fabric of the mill structure dates from around 1820, when a two storey, probably plus attic construction was butted onto the existing farmhouse to the west. The mill was used as a textile mill for some 21 years and although there was no definitive evidence, there may have been an earlier textile mill on or within the vicinity of the present structure. The mill was converted to a cornmill around 1840, probably to meet the demands of a rapidly growing population for bakery products. Sometime after 1861 the mill was extensively re-modelled and extended, with another storey added, the waterwheel enclosed and expansion on the northern side. The mill appears to have been in use as a corn mill until around 1950, with electric power replacing wate- power in the 1930's. The documentary evidence for the mill is scant and a certain degree of speculation and assumption has had to be used in the overall analysis of the site.

8. Acknowledgements

The author would like to thank Mark Blakeway for his enthusiasm and invaluable observations during the fieldwork. Thanks are also due to Steve Greybanks of Central Building Design for the supply of the plans and elevations, which have been used as the basis for Figures 7-10 and to Mike Glyde, Planning Archaeologist, Worcestershire County Council, and the staff of Worcester Records Office.

REFERENCES

Bedlington, J (undated) *Course Notes for Certificate of Higher Education Vernacular Architecture, Mills and Milling Component*, Unpublished

Buteux, V, Hurst, D, Morriss, R, Pearson, E and Stamper, P (1996) *Archaeological Assessment of Kidderminster, Hereford and Worcester*, Worcestershire Archaeological Service Internal Report **320**

Gilbert, N (2004) *History of Kidderminster*, Phillimore

Gwilliam, H.W (1980) *Forges, Furnaces and Mills on the River Stour*

Hoskins, W.G (1972) *Local History in England*, Longman

Dark, K and Dark, P (1997) *The Landscape of Roman Britain*, Sutton Publishing Limited

Institute of Field Archaeologists (1999) *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures*

Hodge, H (1970) *Technology in the Ancient World*, Book Club Associates

Mercian Archaeology (2005) *Proposal and Specification for an Archaeological Project at Heathy Mill Farm, Kidderminster, Worcestershire*

Mercian Archaeology (2005b) *Archaeological Watching Brief at The Button Factory, Willow Road, Bromsgrove, Worcestershire*, Unpublished Internal Report, **PJ 131**

Mercian Archaeology (2005c) *An Archaeological Building Recording at Dorhall Farm, Chaddesley Corbett, Worcestershire*, Unpublished Internal Report **PJ 142**.

Page, W (ed) (1913) *Victoria County History: Worcestershire*, ***Volume III***

Pitt, W (1813) *General View of the Agriculture of the County of Worcester*

Steane, J..M (1984) *The Archaeology of Medieval England and Wales*, Book Club Associates

Reynolds, J (1970) *Windmills and Watermills*, Hugh Evelyn, London

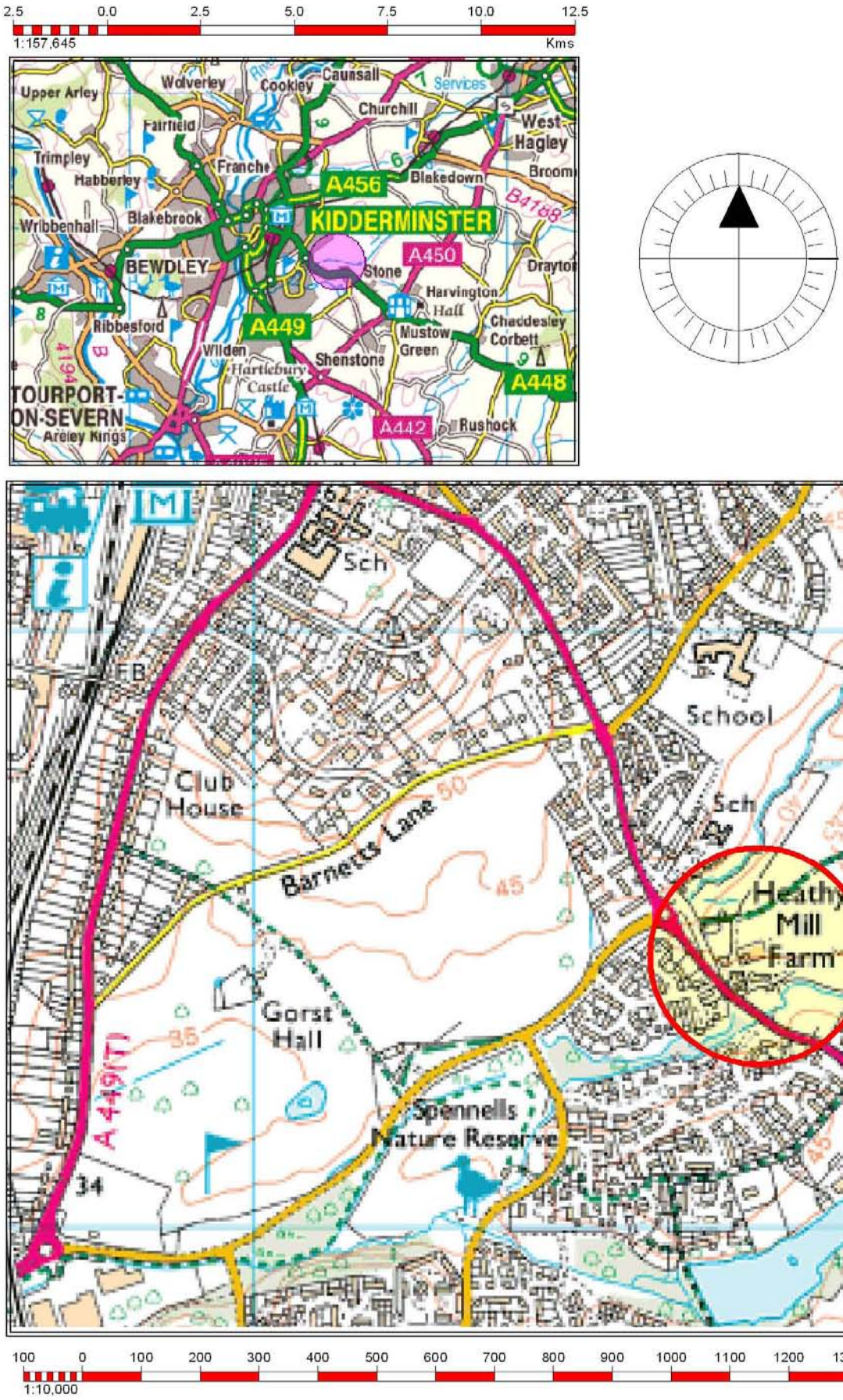
RCHME (1996) *Recording Historic Buildings: A Descriptive Specification 3rd Edition*

Wade Martins, S (1991) *Historic Farm Buildings*, Batsford, London

Williams P (2003) *Mercian Archaeology Service Manual*
Worcestershire

Worcestershire Historic Environment and Archaeology Service (WHEAS 2005) *Brief for an Historic Building Recording at Heathy Mill Farm, Kidderminster, Worcestershire*

Figure 1: Location of the Site

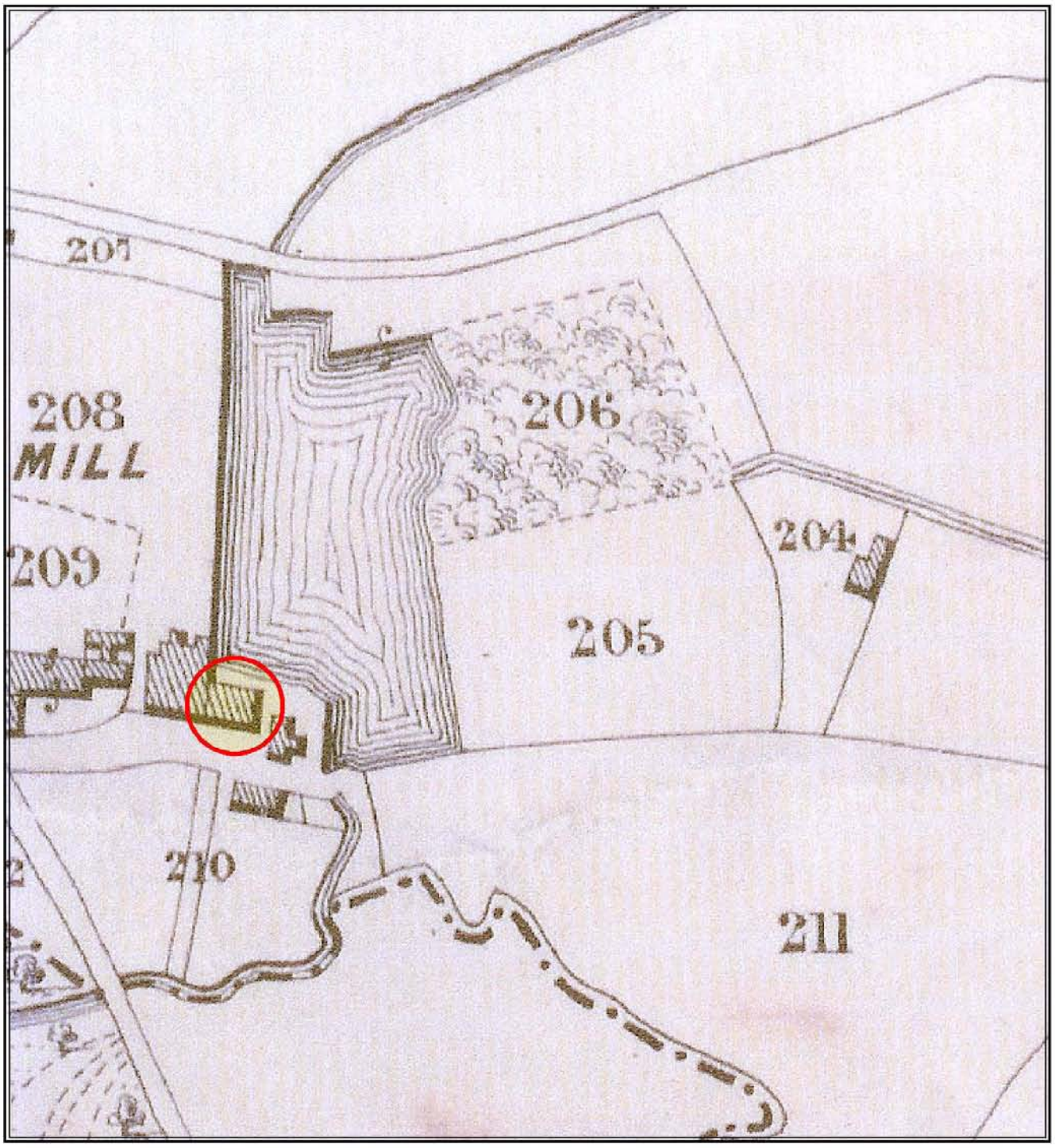


Location of the Site at Heathy Mill Farm

Mercian Archaeology

taking the past into the future

Figure 2: Extract from the Tithe Apportionment Map of Kidderminster Foreign (1838)



The mid-19th century tithe map shows the mill before its extension, although the map appears to have some inaccuracies.

Mercian Archaeology

taking the past into the future

Figure 3: Extract from a Plan of Heathy Farm (1861)

The map of Heathy Farm dating from 1861 shows the mill still in its smaller form.

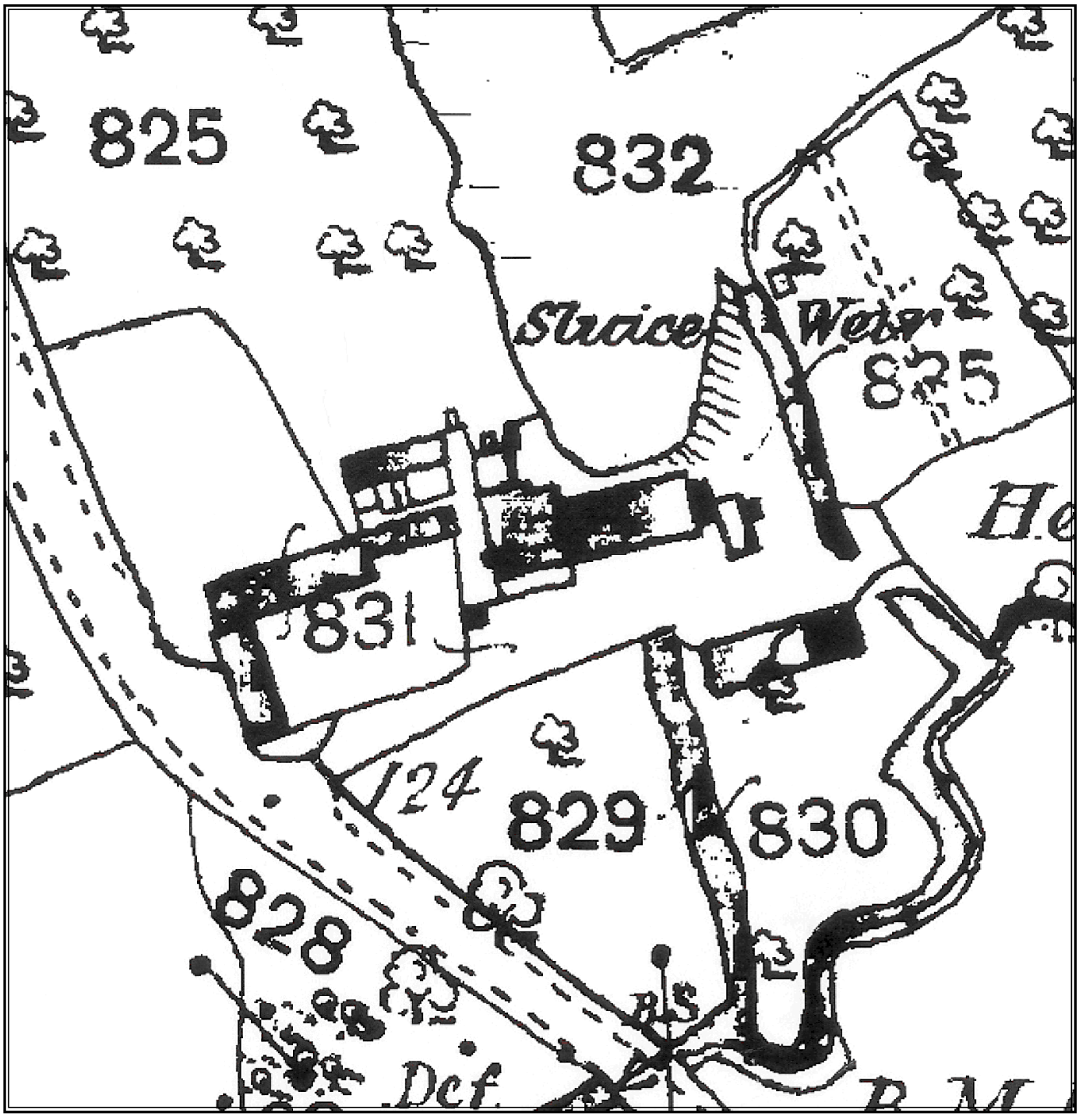
Image kindly supplied by Mark Blakeway

Scale unknown

Mercian Archaeology

taking the past into the future

Figure 4: 1st Edition Ordnance Survey (1885)

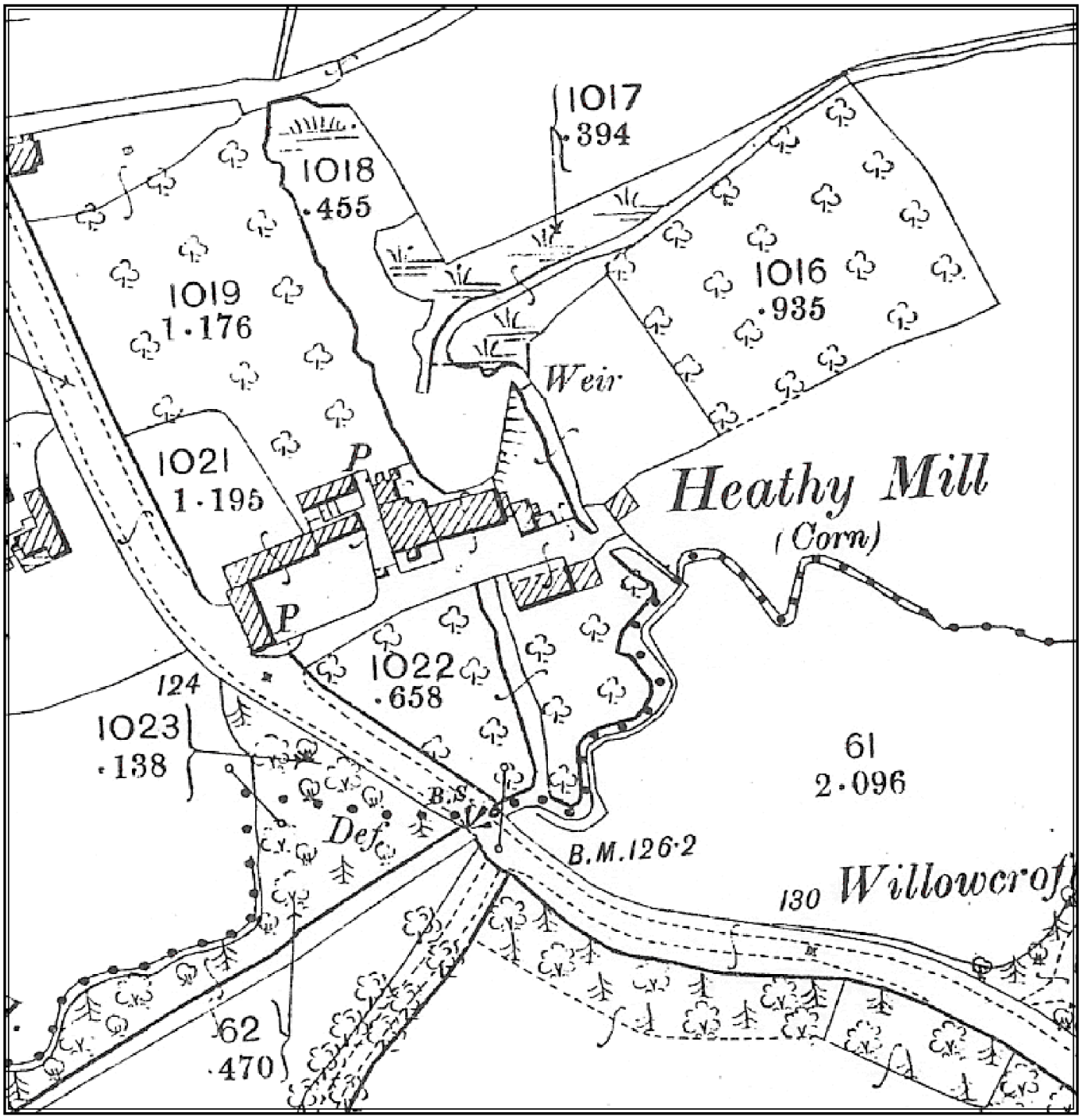


10 0 10 20 30 40 50 60 70 80 90 100
1:750 metres

The 1st edition Ordnance Survey map shows the mill in its expanded form.

Mercian Archaeology
taking the past into the future

Figure 5: 2nd Edition Ordnance Survey (1902)



25 0 25 50 75 100 125 150 175

1:1,326 metres

The 2nd edition Ordnance Survey map shows greater detail than the smaller scale 1st edition.

Mercian Archaeology

taking the past into the future

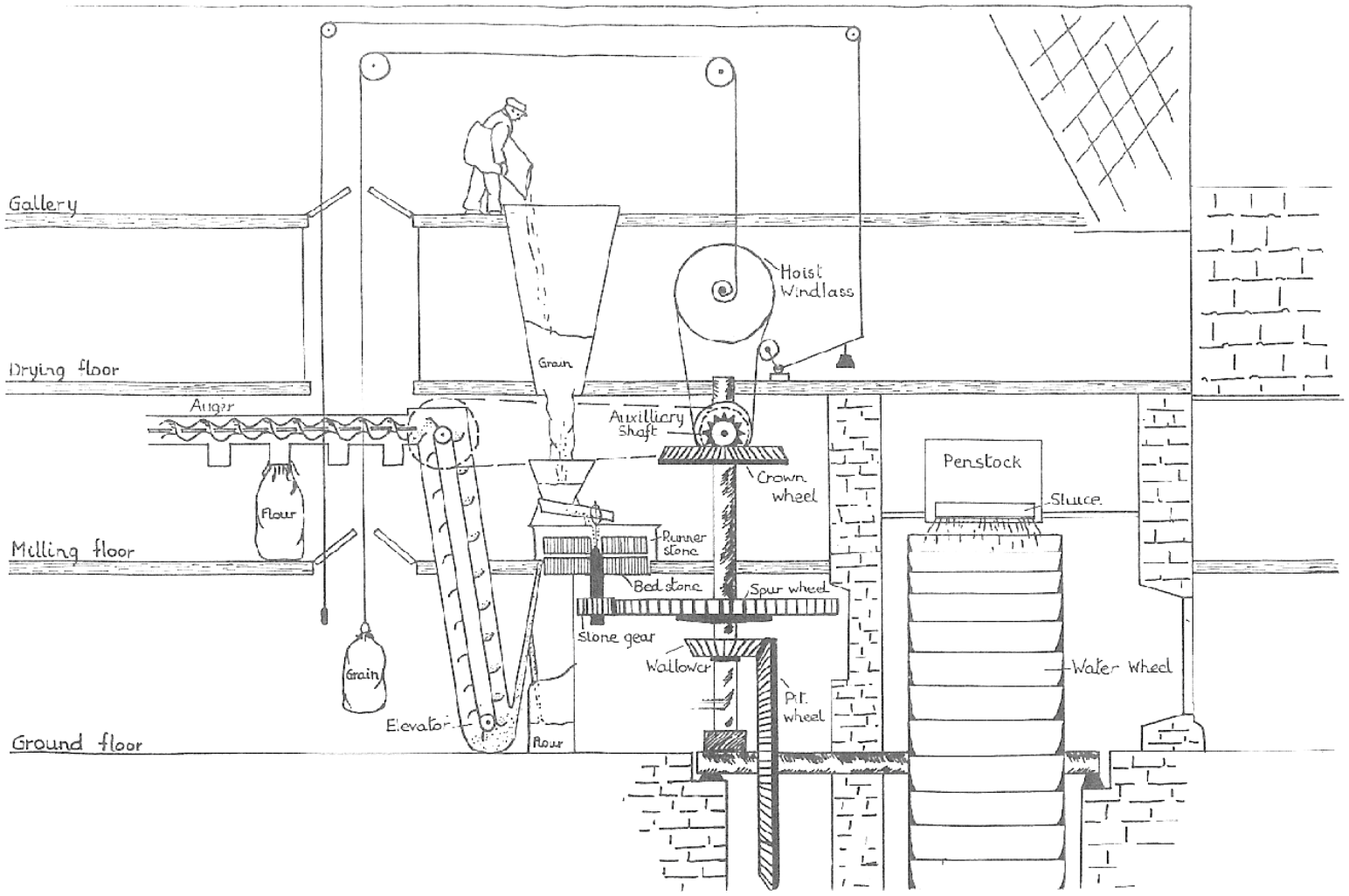
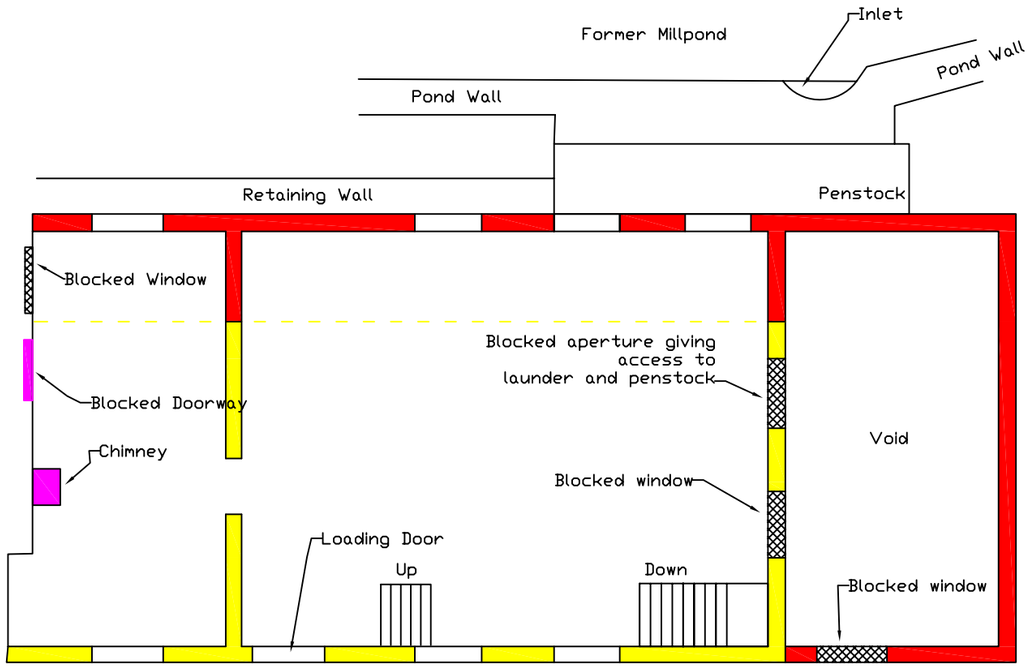
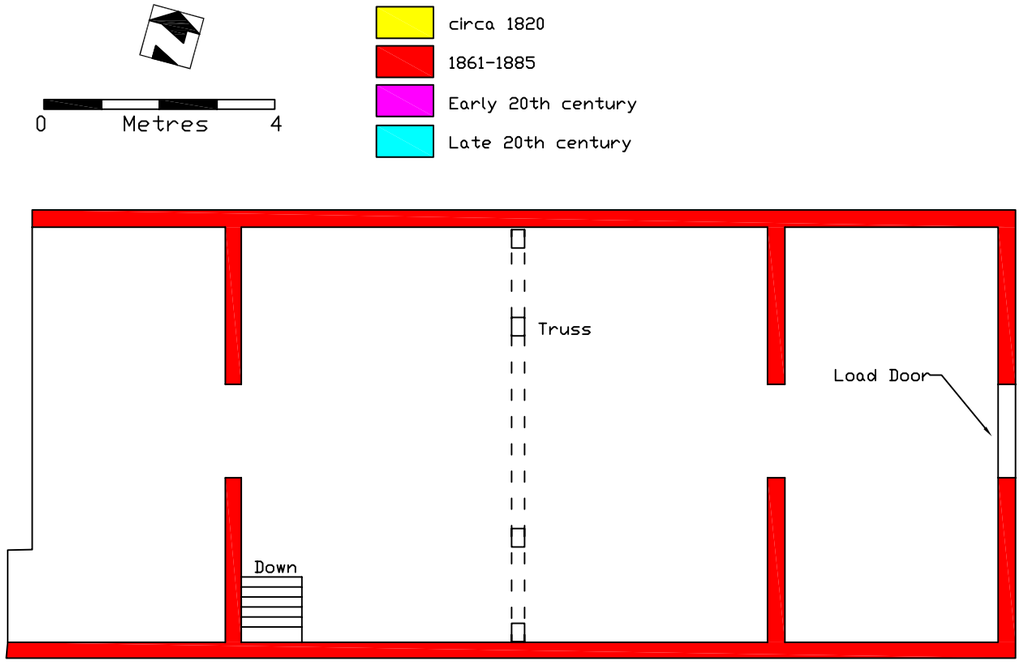


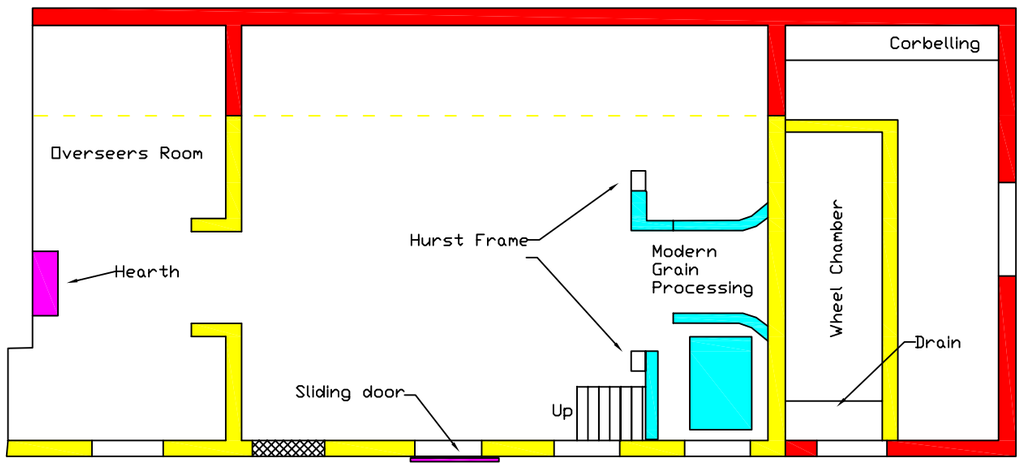
Figure 6: Typical Watermill Set-up and Process (after Hornsbury Mill, Chard, Somerset, Information Leaflet)



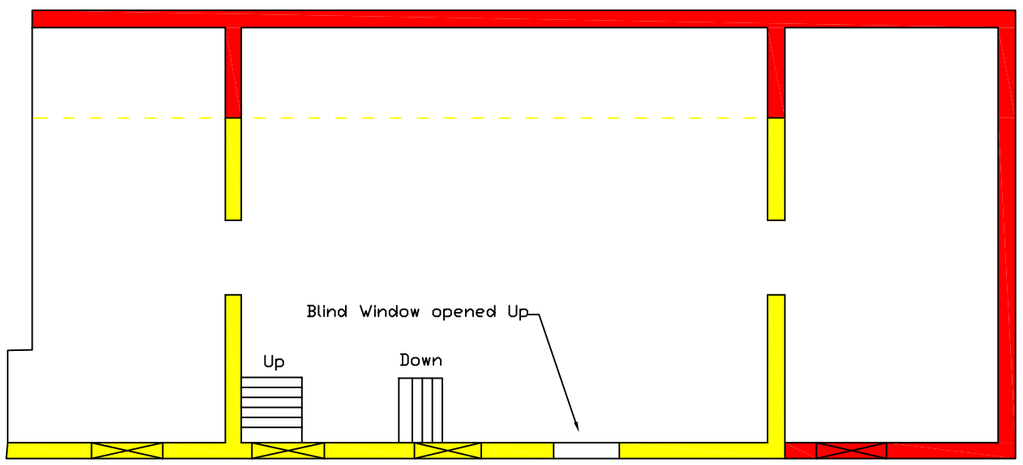
First Floor



Attic Floor



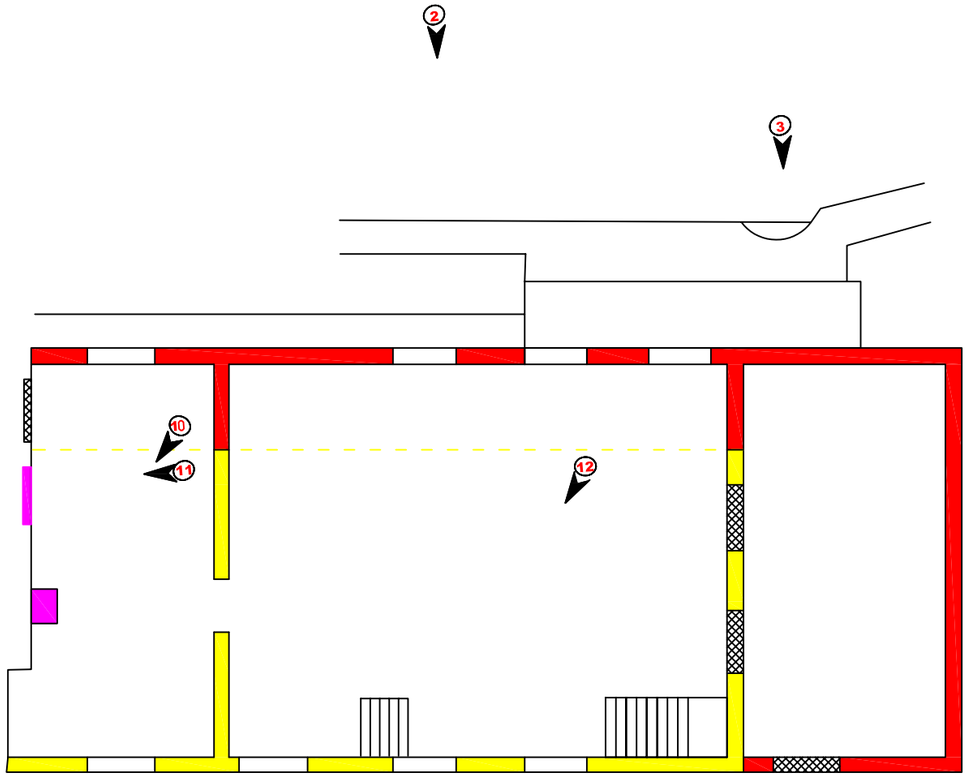
Ground Floor



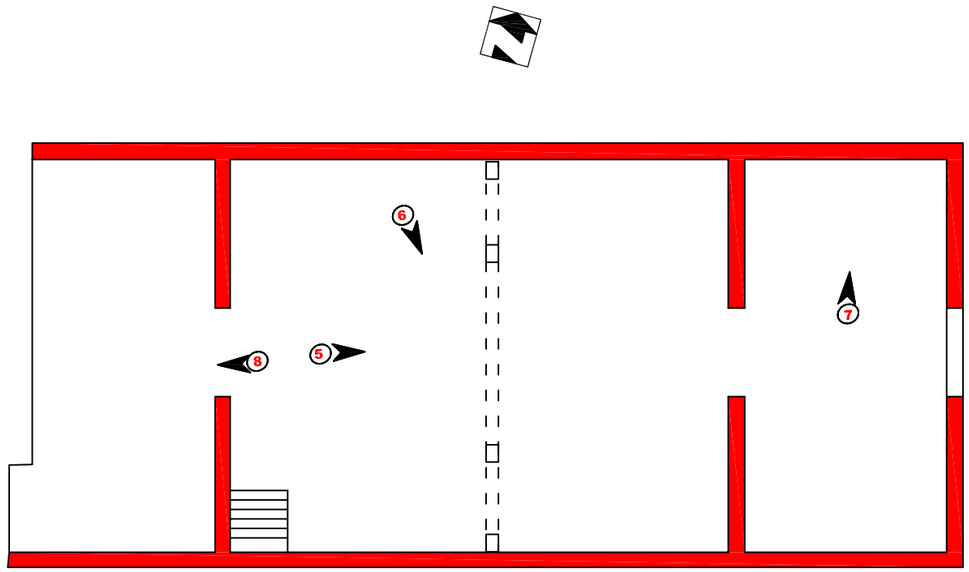
Second Floor

Figure 7: Phase Plan of Heathy Mill

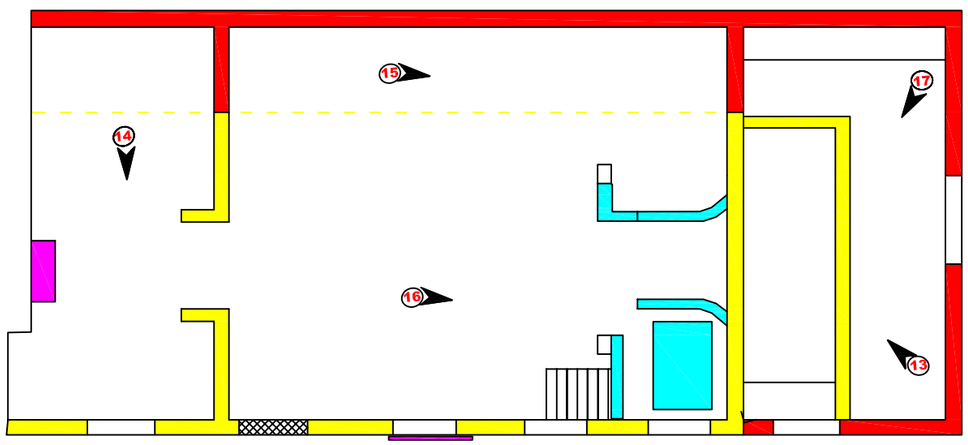
Figure 8: Elevation Detail



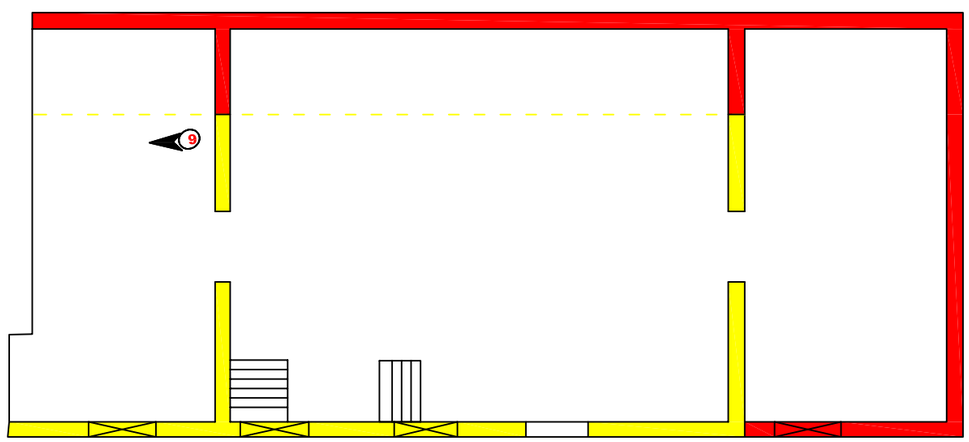
First Floor



Attic Floor



Ground Floor



Second Floor

Figure 9: Direction of Photographs in Report

Plates

Plate 1

Heathy Mill and farmhouse viewed to the north

Plate 2

View to the south from the former millpond area

Plates

Plate 3

The inlet (penstock) to the rear of the wheel chamber (scale 1 metre)

Plate 4

The low aperture marking the position of the pit-wheel, the waterwheel sat in the end bay behind the 2-metre scale

Plates

Plate 5

The central truss in the attic floor of the mill (scale 1 metre)

Plate 6

The sack hoist wheel

Plates

Plate 7

Re-used purlins, note the reduced timber at the ends

Plate 8

Roofline of the earlier phase of the mill on the gable end of the farmhouse (scale 1 metre)

Plates

Plate 9

Butt joint of the mill extension to the north and former roofline at 2nd floor level (scale 1 metre)

Plate 10

Western end bay of floor 1 (scale 2 metres)

Plates

Plate 11

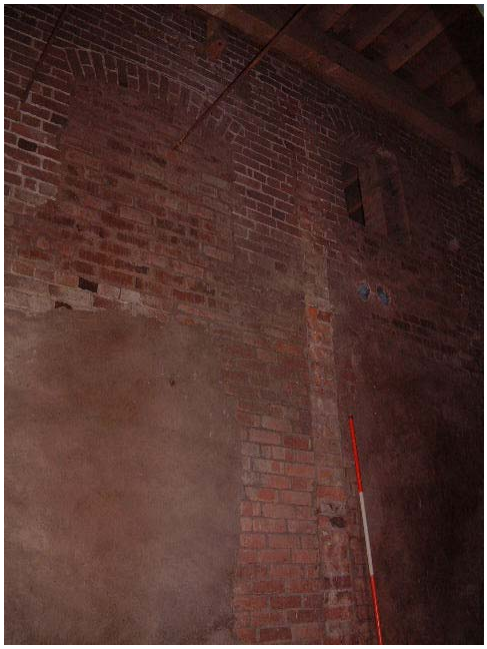
Blocked former window to farmhouse and blocked doorway between farmhouse and mill (scale 2 metres)

Plate 12

First floor showing steps up and down and loading door (scale 2 metres)

Plates

Plate 13



Blocked apertures at first floor level above wheel chamber. Wall scar is a modern feature (scale 2 metres)

Plate 14

Room lately used as part of cottage in western end bay at ground floor. Possibly, this was an earlier overseers office (scale 2 metres)

Plates

Plate 15

Alterations in the eastern bay for modern grain processing infrastructure (scale 2 metres)

Plate 16

Timbers of the former 'hurst-frame' at the eastern end of the ground floor (scale 2 metres)

Plates

Plate 17

The partially excavated wheel chamber looking south towards the drain

Plate 18

Former door into link building (now gone), which was between the mill and the building lately used as a stable (scale 2 metres)

Plates

Plate 19

The stable block at the eastern end of the mill (scale 2 metres)

Plate 20

The mill and farmhouse viewed to the north from a photo dating to around 1918 (Photograph kindly supplied by Mark Blakeway)

Plates

Plate 21

The weir overflow from the millpond in a photograph taken around 1918

Plate 22

The millpond viewed from the mill from a photo dating to around 1918 (Both photographs kindly supplied by Mark Blakeway)