

**Archaeological Building Recording at  
Consall Flint Mill  
Ipstones  
Staffordshire  
NGR SK 00460 48398**

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## **Summary**

Cramp Sutherland Archaeological Services carried out a programme of archaeological building recording at Consall Flint Mill, Ipstones, Staffordshire (NGR SK 00460 48398) between the 7<sup>th</sup> and 13<sup>th</sup> December 2011. The mill complex was established as a slitting mill for nearby Consall Forge in 1683, but by 1778 had been converted for flint grinding. New buildings were erected in the 1830s and the mill had achieved its current basic plan by 1845. In the late 19<sup>th</sup>-century the mill began to grind colours for pottery glazes and continued to do so until 1982.

The project recorded two buildings housing settling arks, and six calcining kilns, all purpose-built for the flint mill, probably during the 1840s. These structures had been relatively little altered and surviving features included a corbelled channel by which flint slurry was carried to the arks and plug-plank slots by which excess water was drained from them. Some understanding of how both arks and kilns functioned individually was achieved, and in broad terms at least, how they related to the production process as a whole.



## **1.0 Introduction**

**1.1** Proposals have been submitted to Staffordshire Moorlands District Council for the development of buildings at Consall Flint Mill, Ipstones, Staffordshire (NGR SK 00460 48398) (Fig. 1). The proposed development involved the conversion of a range of ancillary buildings, which extend alongside the Caldon Canal to the north of the former mill, into holiday cottages. The proposal also included some repair work to an adjacent row of kilns. Staffordshire Moorlands District Council, acting on the advice of the County Archaeological officer (CAO), required that a scheme of archaeological work be a condition of planning consent. A programme of archaeological building recording prior to development was deemed an appropriate level of mitigation. Cramp Sutherland Archaeological Services (CSARC) was subsequently commissioned by Alan J Bateman, acting on behalf of Martin Pankhurst, to undertake the project.

## **2.0 Scope and aims of the project**

**2.1** The recording programme was to be undertaken in accordance with a brief produced by the CAO (Dean 2011). The brief required that the building recording should be carried out at Level 3 standard of the English Heritage guidelines *Understanding Historic Buildings: A guide to good recording practice* (2006), and the Institute for Archaeologists' (IfA) *Standards and Guidance for the Archaeological Investigation and Recording of Standing Buildings and Structures* (revised October 2008). All stages of the project were to be completed in compliance with requirements laid down in the English Heritage publication *Management of Archaeological Projects* (2<sup>nd</sup> Edition).

**2.2** The primary purpose of the project was to produce a photographic, drawn and written record of the buildings and kilns, and to identify elements that may illustrate the development and changing functions of the site, including evidence for manufacturing processes and power sources. This was to be achieved through visual inspection and written description, a measured survey and a photographic survey. The project was also intended to inform the sympathetic development of the buildings and conservation of the kilns.

## **3.0 Historical background**

**3.1** Consall Flint Mill is located in the Churnet Valley between Cheddleton and Froghall in the

parish of Ipstones, one of the principal areas in which raw materials for the north Staffordshire pottery industry were ground by water power during the 18<sup>th</sup> and 19<sup>th</sup> centuries. Grinding mills were established in the Churnet Valley from the early to mid 18<sup>th</sup>-century, but the completion of the Caldon branch of the Trent and Mersey Canal in 1777 greatly improved transport links with the local pottery manufacturers. These links were further reinforced with the arrival of the Churnet Valley branch of the North Staffordshire railway in 1849 (Copeland 1972, 13).

**3.2** The Consall Flint Mill site is first referred to in relation to Consall Forge, situated about one mile up-stream. Consall Forge was one of several iron working sites owned by the Foley family in the 1680s. A slitting mill (used to cut metal sheets into thin strips) for the forge was built in 1863 on the site of the current flint mill, due to lack of sufficient building space at the forge site (Thomson 1974, 40). A large stone building, later to become incorporated into the flint mill, housed the slitting mill (Staffordshire County Council and Staffordshire Moorlands District Council 1993. 6).

**3.3** The slitting mill was being leased for use as a flint mill by 1778. A 1795 lease for the 'newly erected Consall Flint Mill' describes how part of the ironworks were taken down and a 'flint mill and new buildings' were erected (Staffordshire County Council and Staffordshire Moorlands District Council 1993. 83). New buildings were also erected by then owner, John Leigh of Consall Hall, lord of the manor, in the 1830s, and by 1845 the mill had achieved its current basic plan (Sherlock 1976, 170).

**3.4** The mill wheels at Consall were turned by water from the canal, which receives the main flow of the river Churnet about a half mile up-stream (Sherlock 1976, 170). There were three high breast wheels, each approximately 28 feet (5.53m) in diameter. Each wheel drove four grinding pans, two over and two under driven. A turbine was added in 1851 to drive four further pans (Job 1989, 25). The mill was converted for use in colour grinding with the installation of cylinder (or ball) mills in the late 19<sup>th</sup>-century (Sherlock 1985). The cylinder mills were still in use for grinding glazes for the pottery industry up until 1982 (Staffordshire County Council and Staffordshire Moorlands District Council 1993. 54).

**3.5** Records show that the mill was occupied by a William Bowers in 1850 (Post Office Directory 1850, 237). By 1864 it was in the joint ownership of Gustavus Thomas Smith and Charles Ferguson Smith, the latter of Consall Hall, but was leased to a George Goodwin (SRO D3272/5/12/1). George, a flint grinder, and his son John, a flint & stone merchant, remained at the mill until at least 1896 (Kelly 1896, 199 & 458). By the early 20<sup>th</sup>-century, however, an advertisement of that era (Fig. 6) indicates that the mill was operated by W. & A. Podmore, manufacturers and millers of materials for the pottery, glass, enamel, iron and brick industries, with headquarters at the Caledonia Works in Shelton, Stoke-on-Trent. Podmore's were trading as W. Podmore & Sons Ltd. by 1947 and by that time operated seven mill works in Staffordshire, including two in Consall (Pottery Gazette & Glass Trade Review 1947). The firm still owned Consall Mill in the 1960s (Leek Post & Times 2010).

## **4.0 Methodology**

**4.1** The building survey was carried out between the 7<sup>th</sup> and the 13<sup>th</sup> December 2011. It comprised a photographic record including the context of the buildings, external views, internal views and significant details. Photographs were taken on 35mm monochrome print and with a digital camera, using 2.0m and 1.0m scale bars as appropriate. A measured survey was made using 30.0m and 5.0m hand tapes and a Leica Disto D2. Field notes were made of all structural elements with particular attention paid to those that provided evidence of alterations and additions. The archive is stored by CSARC pending transfer to The Potteries Museum & Art Gallery, Stoke-on-Trent (museum accession number **2012.LH.52**, site code **CFM11**).

**4.2** During survey, each room/structure was assigned a unique reference number (001+ for the rooms and 1+ for the kilns). These numbers are used in the descriptions below and are reproduced on the plans provided in Figures 9, 11 and 12.

## **5.0 Description and analysis of the buildings**

**5.1** The buildings which make up Consall Flint Mill occupy a narrow plot of land between the Caldon canal to the north and the North Staffordshire railway to the south (Figs. 2 & 3). The River Churnet runs immediately to the south of the railway. Two buildings were subject of this survey, one larger (Building 1) and one smaller (Building 2), both situated

alongside the canal on a roughly east-west alignment (Plate 1). These buildings were used as settling arks, where water was drained off the ground flint slurry until the desired consistency was achieved (Copeland 1972, 26 & Dean 2011, 1). The main mill building, subject of two previous building recording programmes (Nicholls 2010 & Sutherland 2007), is located just to the south of these. A row of six kilns on a north-south alignment is located to the east end of the main mill building.

## **5.2 Building 1 (Figs. 8 & 9)**

### ***Exterior***

**5.2.1** Building 1 was a long, single storey building constructed with red bricks in an English garden-wall bond and with a pitched roof covered with blue/grey clay plain-tiles. The building curved slightly to follow the line of the canal and the south-east corner was chamfered (Plate 2). The foot of the south wall was at a lower depth than that of the north wall, there being a low level channel or gulley which extended along much of the south side of the building (Figs. 8 & 9). The ground level dropped away to the same level as the gulley towards the west end of the building. The higher ground level at the east end of the building was retained by the gulley wall, and access over the gulley to the building was achieved by means of concrete bridges opposite each doorway. A straight joint was evident on the north and south elevations, approximately half way along, suggesting that Building 1 was constructed in two separate phases. The difference in construction between the two phases of the building was most evident in the lower half of the south wall. In the west half of the building this was battered, with recesses at intervals which contained tall narrow slots with shouldered heads (Plates 3). Each slot contained a metal plate with circular holes in it (visible on the interior only), identified as plug-planks, the means by which water was drained from the settling arks. The east half of the building (Plate 4) was constructed with three sloped buttresses against the lower part of the south wall. Narrow slots containing plug planks were also evident on this half of the building, in this case with pink sandstone lintels.

**5.2.2** The doors and windows throughout Building 1 had brick segmental-arched heads.

Those windows in the north elevation and that in the east elevation had pink sandstone sills and were recessed within slightly larger openings of the same form. The windows in the north elevation had sandstone hinge-blocks built into the west side of the outer openings, towards the top of each, indicating that they had been closed with shutters on

the exterior (Plate 5). The former presence of shutters, and the wear to the stone sills, suggested that the canal side windows were used primarily in moving materials between the building and canal boats. Any original doors or window frames had been removed; the former were fitted with temporary ply-wood substitutes and the latter were boarded over. An area of repaired brickwork on the east elevation of the building (Plate 6), evident as lighter coloured bricks, was suggestive of an opening that had been blocked. This was confirmed with reference to a c. 1960-65 photograph of the building (Staffordshire Past Track), which shows a double doorway in this location. The door and window seen in the east elevation at the time of survey must, therefore, be later insertions. It is also worth noting that at the time the c. 1960-65 photograph of the mill was taken, the easternmost window on the north elevation was blocked and the window next to it had been converted to a door.

**5.2.3** The gulley that extended alongside the south elevation of Building 1 was presumably designed to carry away the excess water drained from the settling arks *via* the plug-planks. The gulley was contained by a 0.23m thick red-brick wall, which also served as a retaining wall (see **5.2.1**). The wall stood to a maximum height of 1.60m but was reduced to only two or three courses in height at its west end. A semi-circular brick structure with a diameter of roughly 1.67m was visible projecting out from under the south side of the wall, opposite the second plug-plank slot from the west end of the building. Whether this structure formed part of an earlier gulley or belonged to an entirely different structure was unclear. The gulley, like the building itself, was constructed in two distinct sections. Alongside the west half of the building the gulley was 0.95m wide and had a concrete base that sloped down slightly from west to east, towards a drain at its east end (Plate 7). The south side of this section of gulley was lined with a soldier course of blue bricks. The section of gulley alongside the east half of the building (Plate 8) was 1.20m wide, narrowing to 0.55m at its east end, and had a brick base. The base incorporated three sumps, which had drains set into the south side of each. The outer two sumps were located directly below plug-plank slots and the middle sump was located between a pair of plug-plank slots.

### ***Interior***

**5.2.4** Building 1 was divided into four separate units, each with its own access (Fig. 9). The

largest of these contained four rooms (001 - 004) and was entered *via* a door in the west end of the building (Plate 9). An aperture of the same form and dimensions was located immediately to the south side of this door, and it too may have been used as a doorway. The rooms were open to the rafters, which were supported on east-west aligned steel I-beams. The floors of Rooms 001-004 were all approximately 1.60m below the level of the threshold (Fig. 10), effectively creating tanks or arks in which the ground flint slurry could be settled. The walls of each ark were stepped out, presumably in consequence of the semi-subterranean nature of the structure as well as the weight of the flint slurry that it contained. A brick built channel, carried on corbelled brickwork built out from the south wall, extended the length of all four rooms, passing through 0.50m wide apertures with timber lintels in the dividing walls between the rooms. Pieces of a u-shaped ceramic lining to the channel, which contained the residue of a whitish material (possibly flint slurry) were evident in Rooms 002 and 004. This channel may have been the means by which the flint slurry was carried to the arks, with two possible external in-lets: the first a blocked aperture in the west wall of Room 001 and the second in the south wall of Room 003. A wooden hatch, which may have let the flint slurry out of the channel and into the arks, was located in the north side of the channel in Room 003 (Plate 10). The timber, however, looked a recent addition, possibly replacing an original feature of the same design. Elsewhere the north side of the channel did not remain to sufficient height to determine whether or not such hatches were originally present in the other rooms. Each room/ark had a plug-plank slot located below the channel (Plate 11) with the blue-brick floor sloped down towards it. Access between the rooms was possible *via* a central concrete walkway, which extended east-west between doorways with segmental-arched heads (Figs 9 & 10, Plate 12). A metal handrail to the walkway survived in Room 003 only; its removal in the other rooms had resulted in slots to each side of the doorways. The walkway crossed Room 001 and Rooms 003 and 004. A blocked door central to the east wall of Room 004 indicated that access to Room 005 (within the second unit of Building 1) was originally possible. The walkway did not, however, extend across Room 002. Instead, it stopped at the threshold of the doorways at either end of the room.

**5.2.5** Room 002 differed somewhat from the other rooms/arcs in that its south-west corner was partitioned off with 0.23m wide brick walls (Figs. 9 & 10, Plate 13). A small rectangular area of the floor next to the north wall of the partition was sunk to a depth of approximately 0.20m. A row of three slots in the north wall of the partition and a

corresponding row in the supporting brickwork of the channel, hinted at the former presence of machinery or some other super-structure that had spanned the partition. Room 002 also showed evidence of having at some point had a floor inserted at roughly the same level as the threshold. Three opposing slots were seen in the east and west walls which may have taken floor joists (Fig. 10) and three brick piers aligned north-south down the middle of the room may also have been designed to carry a floor.

**5.2.6** The second unit in Building 1 comprised three rooms (005 -007) and was accessed *via* a door in the south side of Room 007 (the easternmost of the three). The rooms were accessed off one another and like Rooms 001-004 had stepped out walls, and in Rooms 005 and 006 at least, brick channels, suggesting that these rooms too had originally functioned as settling arks. A 0.50m wide section of sloped brickwork against the south wall of Room 007 probably represented an alteration to the channel. The floors (concrete) were, however, approximately 0.60-0.80m higher in level than those in the rooms to the west and probably constituted a later alteration to the building, made in an attempt to provide a more functional space once the arks had fallen into disuse. In consequence of the change in floor level the original door between Rooms 006 and 007 had been blocked, the threshold being at a height of 1.00m above the floor, and a new doorway inserted. The original doorway between Room 006 and Room 005 had, however, been modified to take into account the higher floor level.

**5.2.7** Structural evidence of the two phases of construction seen on the exterior elevations (5.2.1) was also evident within this part of the building. The apertures through which the channel extended from room to room (bricked up in these rooms) had been partially inserted through similar openings with pink sandstone lintels (Plate 14), which may have served the same purpose. These openings were located just to the south side of the later apertures and were only present in the eastern half of the building, in all but the west wall of Room 005. The scar of a lower and narrower gable (Plate 15), evident on both sides of the wall between Rooms 005 and 006 (corresponding in location with the straight joint seen on the north and south elevations) suggested that all or part of the building had been enlarged.

**5.2.8** Recent alterations were also evident in Rooms 006-007, a first floor having been

inserted into each space. This was constructed with hard board over timber joists, which were supported on steel I-beams. At the time of survey the construction of the first floor space was only partially completed and no permanent access to it existed.

**5.2.9** The eastern two units in Building 1 (Fig. 9) each contained a single room (Rooms 008 and 009). Room 008 was accessed through a door in the south elevation and Room 009 through the inserted door in the east elevation (see **5.2.2**). As in Rooms 001-004 at the west end of the building, both these rooms were tanked, with floors some 1.50m below the thresholds and stepped out walls. Brick channels did not remain in these rooms, but the stepped out section of the south wall in each was of sufficient width to have carried such a channel. Plug-plank slots were evident within the south wall of each room/ark and a blocked aperture with a sandstone lintel was seen in the wall between Rooms 007 and 008. A blocked doorway with a timber lintel, which was located towards the south end of the wall between Room 008 and 008, showed that access between the two had formerly been possible. A centrally located door between Rooms 007 and 008 had also been blocked.

## **5.3 Building 2 (Fig. 11)**

### ***Exterior***

**5.3.1** Building 2 was a small single-storey structure located to the west end of Building 1 (Figs. 2 & 3, Plate 16). The west end of Building 2 was built against the wheel-pit at the rear of the main mill building, towards its west end. Building 2 was constructed with red bricks on a stone base. The bricks were arranged in a Flemish stretcher bond. The roof was pitched and clad with blue-grey clay plain tiles. Like Building 1 the south wall extended to a greater depth than the north wall. A plug-plank slot with a stone lintel was located in the lower half of the south wall, towards the west end of the building (Fig. 11). There was, however, no evidence for a gulley to take excess water from the plug-plank. The window and door at the east end of Building 2, had segmental-arched heads, in-keeping with those seen in Building 1. The windows in the north and south elevations, however, had straight stone lintels. Those in the north elevation were recessed slightly and each had a pair of hinge blocks on the west side, indicative of the former presence of shutters (Plate 17).



**Interior**

**5.3.2** The interior of Building 2 comprised two rooms/arks (010 and 011) with the characteristic sunken floors and stepped out walls (Fig. 11). Access to the building was possible *via* the door in the east elevation, which entered into Room 010. A wide opening with a steel lintel, possibly an enlargement of an original doorway, had been made between the two rooms (Plate 18). The building did not feature a walkway and the threshold levels had not been altered meaning access between the two spaces was somewhat awkward. The inner skin of brickwork in both rooms had been substantially re-built with areas of light-grey, dark-grey and red bricks, but whether the different colours signified different phases of construction, or the use of readily available materials was unclear. Both rooms featured blue brick floors that sloped down from north and south towards the middle of the building. A metal plug-plank remained within the slot in the south wall of Room 011.

**5.3.3** The rooms in Building 2 were both open to the rafters, revealing that the roof structure had been replaced with new timbers supported on steel I-beams. The exception to this was a pair of Queen-post timber trusses, which had been adapted to carry the I-beams. The trusses were located to the dividing wall side of the windows in each room and spanned the building north-south. Each truss (Fig. 11, Plate 19) comprised a tie-beam, the end of which rested on the side walls of the building. A pair of vertical posts with a collar-beam between them, were positioned towards the middle of the tie-beam. A pair of inclined timbers extended between the tie-beam and the posts on each side of the truss. These would essentially have functioned as principal rafters and pairs of slots that would have carried the purlins were evident on each. The tops of the posts were slanted in order to accommodate the common rafters that would have rested on the purlins. The whole structure was jointed together and fixed with wooden pegs.

**5.4 The Kilns** (Fig. 12)

**5.4.1** A row of six north-south aligned kilns were located to the south of Building 1, and to the west of the main mill building (Fig. 2). These appeared as a series of circular holes/wells of approximately 2.00m deep with a diameter of approximately 2.20m at the top but narrowing towards the bottom (Plates 20 & 21). The kilns were in a poor state of repair with much damage to the brickwork caused by their exposure to the elements as well as the incursion of vegetation. The top of Kiln 1, at the north end of the row, had been

bricked up and was indistinguishable from the brick paving that surrounded the other kilns. No evidence of any superstructure, forming a hovel or otherwise surrounding the kilns, was visible. The draw-mouths were located at the base of the kilns on their west side with a consequent drop in ground level on that side. A flight of stone steps at the south end of the row allowed access between the two levels (Plate 22). The face of the draw-mouths rose to form a wall at the higher level, preventing falls. The draw mouths had semi-circular arched openings, which had been bricked up except in Kilns 1 and 5 (Plate 23). The arches in Kilns 1 and 5 formed the entrance to a recess with concave walls, which had a small aperture at the back opening into the base of the kiln well. That in Kiln 1 had a metal lintel and was bricked up. That in Kiln 5, with a segmental-arched head, remained open (Plate 24).

## **6.0 Discussion**

**6.1** The surveyed buildings at Consall Flint Mill were probably constructed at some point between 1841 and 1848. The buildings do not appear to be indicated on a sale plan (SRO D554/27/3) of the mill dating to 1841 (although this is not particularly detailed), but are clearly evident on a plan of the property produced in 1848 (SRO D1176/A/3/97). Both Buildings 1 and 2 functioned as settling arks and are labelled as such on an 1862 map of the mill (SRO D1176/A//3/101). The western half of Building 1, however, appears on these early maps, as a narrower range than was seen at the time of survey. The rebuilding or alteration of the western half of the building may explain the straight joint seen roughly half way along the north and south elevations, as well as the differences in construction to either side of this joint. Reference to the 1888 ordnance survey (OS) map indicates that the western half of Building 1 remained unaltered until at least this date (Fig. 4). By 1900, however, the OS map of that date shows the building as a rectangular block (Fig. 5), indicating that the western half had been re-built. The re-building of the western half of Building 1, which may explain the scar of a lower and narrower gable in the wall between rooms 005 and 006 where the two halves of the building meet (see 5.2.7), also seems to have required some alteration to the eastern half of the building. The small apertures with sandstone lintels in the walls between the eastern rooms (005 and 006, 006 and 007, 007 and 008) were bricked-up, and a channel constructed that probably extended the full length of the building. Further building work had taken place by 1925 when the OS map of that date reveals that a building has been constructed on the south side of Building 1, in-

filling the gap between it and the main mill building (Fig. 6). No evidence of this in-fill building was, however, seen during survey.

**6.2** Reference to the available series of historic maps suggests that Building 2 has been little altered over time. The stone base to the building does, however, raise the possibility that it was built on the footings of an earlier building. Certainly the 17<sup>th</sup>-century slitting mill building is known to have been stone (Staffordshire County Council and Staffordshire Moorlands District Council 1993, 6) and parts of this were probably incorporated into the western end of the main mill building (Nicholls 2010, 9 & Sutherland 2007, 4).

**6.3** The kilns are also depicted for the first time on the 1848 map of Consall mill (SRO D1176/A/3/97). These are shown as a row of small circles, indicating that the kilns were not housed within a building. Evidence for hovels is unfortunately ambiguous; despite the lack of structural evidence, the early 20<sup>th</sup>-century advertisement illustration of the mill (Fig. 7) suggests that the kilns did have hovels. It is possible, though, that the illustration of hovels was a piece of artistic license. The kilns at the nearby Cheddleton Flint Mill, for instance, did not have hovels, the natural draught being sufficient to keep the fires alight (Copeland 1972, 31).

**6.4** The mill at Consall was primarily used for grinding flint for the pottery industry from the late 18<sup>th</sup>-century onwards. The addition of ground flint to the pottery fabric served to whiten the body and to reduce the risk of warping (Copeland 1972, 5). The process first involved calcining the flint so that it was easier to grind. The kilns recorded at Consall were almost certainly used for this purpose. They would have been filled with alternate layers of coal and flint, then burnt at a temperature of roughly 900°C. Once cooled the calcined flints were removed from the bottom of the kilns *via* the draw-mouths. Next the flints were crushed before being ground in water within the grinding pans in the main mill building (Copeland 1972, 15-16). After grinding, the flint slurry was let into wash tubs, followed by the settling arks where the water was drained off through the plug-planks until the required consistency was reached (Copeland 1972, 26).

**6.5** The means by which the ground flint slurry was carried from the main mill building to the arks is not clear. The channel which extended along the south wall of Building 1 probably let the flint slurry into the arks through such hatches as were seen in Room 003. Two

blocked openings which may have connected this channel with some means of conveying the flint slurry between buildings were seen in the west wall of Room 001 and in the south wall of Room 002, but nothing corresponding to this was seen in the main mill building.

- 6.6** The concrete walkway at the west end of the building (Rooms 001, 003 and 004) allowed access between each room meaning the settling process could be monitored. The presence of doorways between all the rooms in both Buildings 1 and 2, many blocked by the time of survey, suggests that similar walkways once existed elsewhere. Such walkways may have been of a more ephemeral timber construction, which would leave less of a mark on the building following their removal. It is also possible that the remaining concrete walkway may have, itself, replaced an earlier structure.
- 6.7** When sufficient water had been drained from the ground flint, the material was either pumped into a slip drying kiln, where it was dried before being cut into blocks for ease of transportation, or it was pumped directly into barrels in slop form. There was reportedly a pair of slip drying kilns at the mill (Sherlock 1976, 170), but these are not indicated on any of the historic maps referred to and their location is not apparent amongst the extant buildings on site. Slop flint was certainly produced at Consall; an 1841 sale brochure expresses the output of the mill in terms of tubs of slop. At that time Consall Mill, along with the Lower Consall Mill just down river, produced 300 to 350 tubs of slop per week between them (SRO D554/27/3).
- 6.8** In the late 19<sup>th</sup>-century Consall Mill was altered for the production of glaze colours for the pottery industry and eventually ceased production in the 1980s. Whether the settling arks and kilns fell into disuse with the change in production or with its end is unclear. In either case, however, the adaptation of these structures was relatively small. The very specific form of these buildings, designed with only one purpose in mind, probably meant that their alteration was not thought worthwhile. The kilns could not be modified to serve any other function and the draw mouths were bricked-up. The arks may have continued in use as stores and the floor level in three of the rooms (005-007) was eventually altered with separate access to this part of the building made. The insertion of the door into room 008, only possible once the channel extending along the south wall was no longer operational, may also date to this phase. More recent alterations have included

considerable re-building in Building 2 and the insertion of a first floor over Rooms 005 and 006 in Building 1.

## **7.0 Conclusions**

**7.1** Consall Flint Mill was established as a slitting mill for nearby Consall Forge in 1683. Its conversion to a flint mill c. 1778 can be seen in the context of the burgeoning Staffordshire pottery industry alongside improvements in transport infrastructure. Once the Caldon Canal was opened in 1777, allowing cheaper and easier transportation of flint (Copeland 1972, 5), a change in use to capitalise on the growth of the nearby pottery industry would have made good sense. The convenience of the mill's location was highlighted in the 1841 sale brochure, which stated that 'flint and other materials are landed at the mouth of the mills and the pottery slop discharged from the pans and refiners directly into the boats' (SRO D554/27/3). The nearby canal also served as the water source driving the mill wheels.

**7.2** The settling arks and calcining kilns were both purpose built for the new flint grinding operation, probably at some point in the 1840s. The enlargement of Building 1 may have been carried out as a result of an increase in production or possibly a change in technology. Otherwise relatively few alterations had been made to these structures and the building recording programme was successfully able to determine how they had originally functioned. The relationship of the arks and kilns to the rest of the mill complex was, however, harder to ascertain. More significant alterations had been made to the main mill building and the structure linking this to the arks had been demolished altogether, leaving little trace.

## **8.0 Acknowledgements**

**8.1** This report was written and illustrated by Zoe Sutherland for CSARC. Fieldwork was carried out by Zoe Sutherland and Richard Cramp. Valuable assistance was provided by Alan Bateman. Thanks are also due to Stephen Dean, Principal Archaeologist for Staffordshire County Council.

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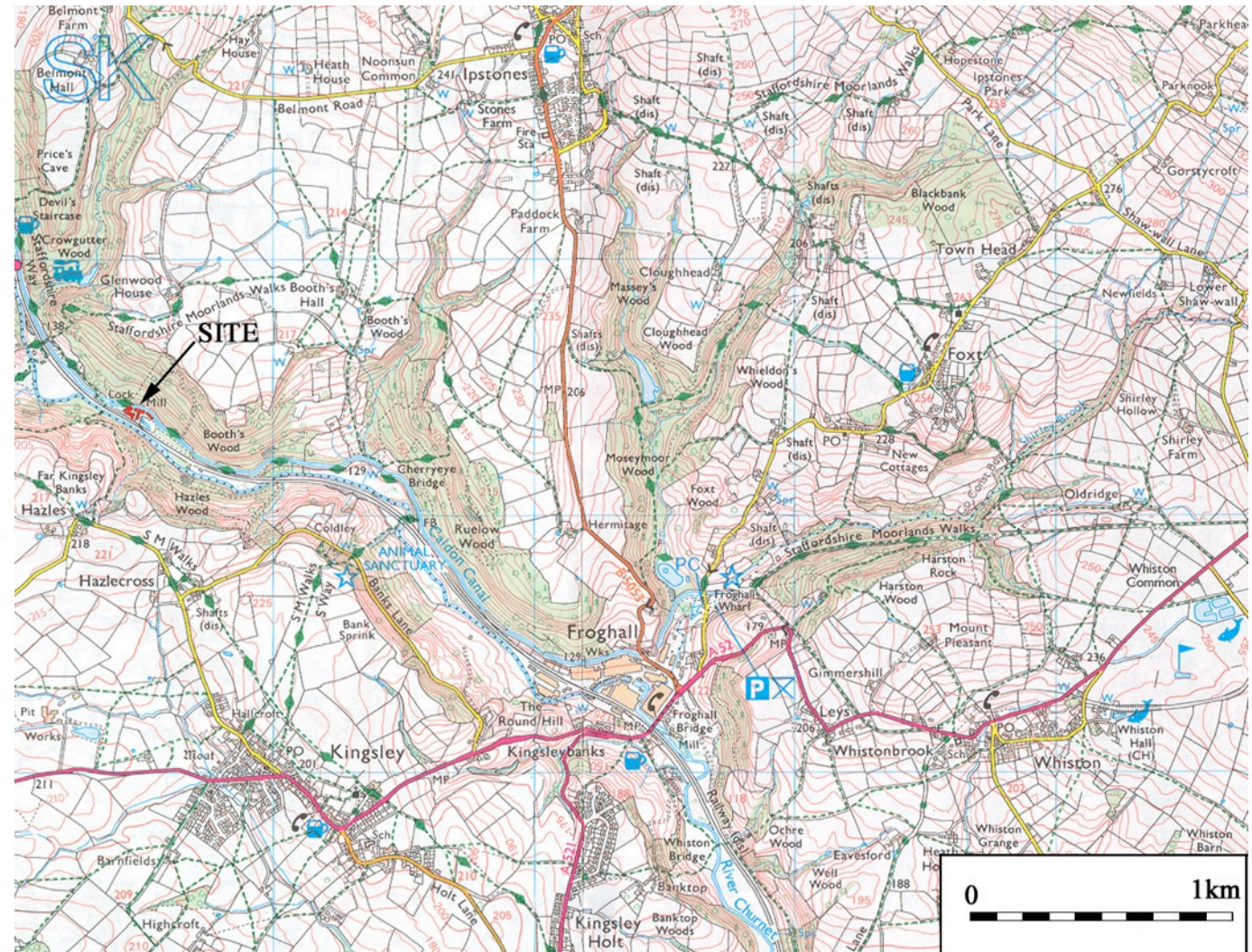




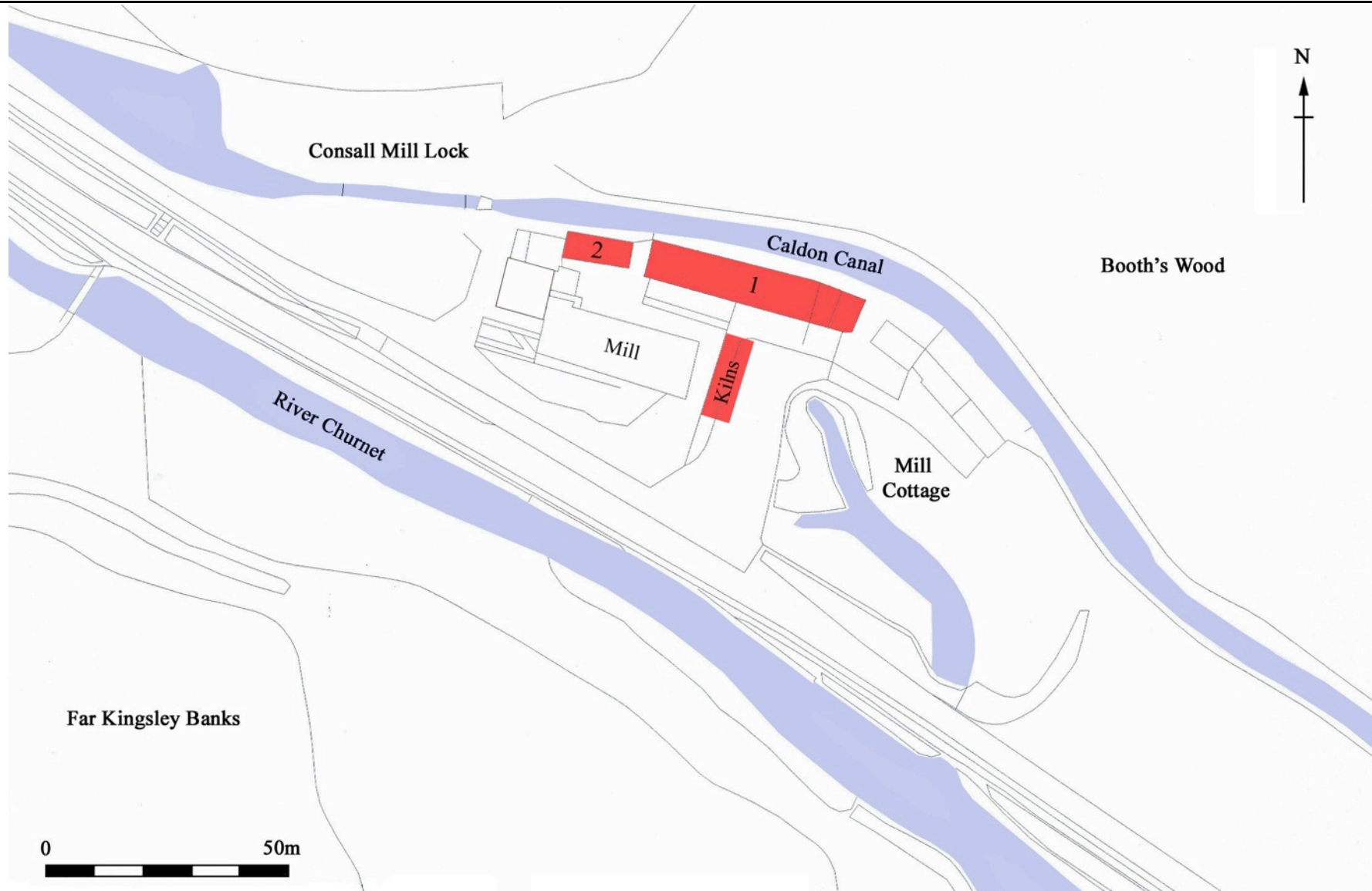
STAFFORDSHIRE

**FIG. 1**

Site location

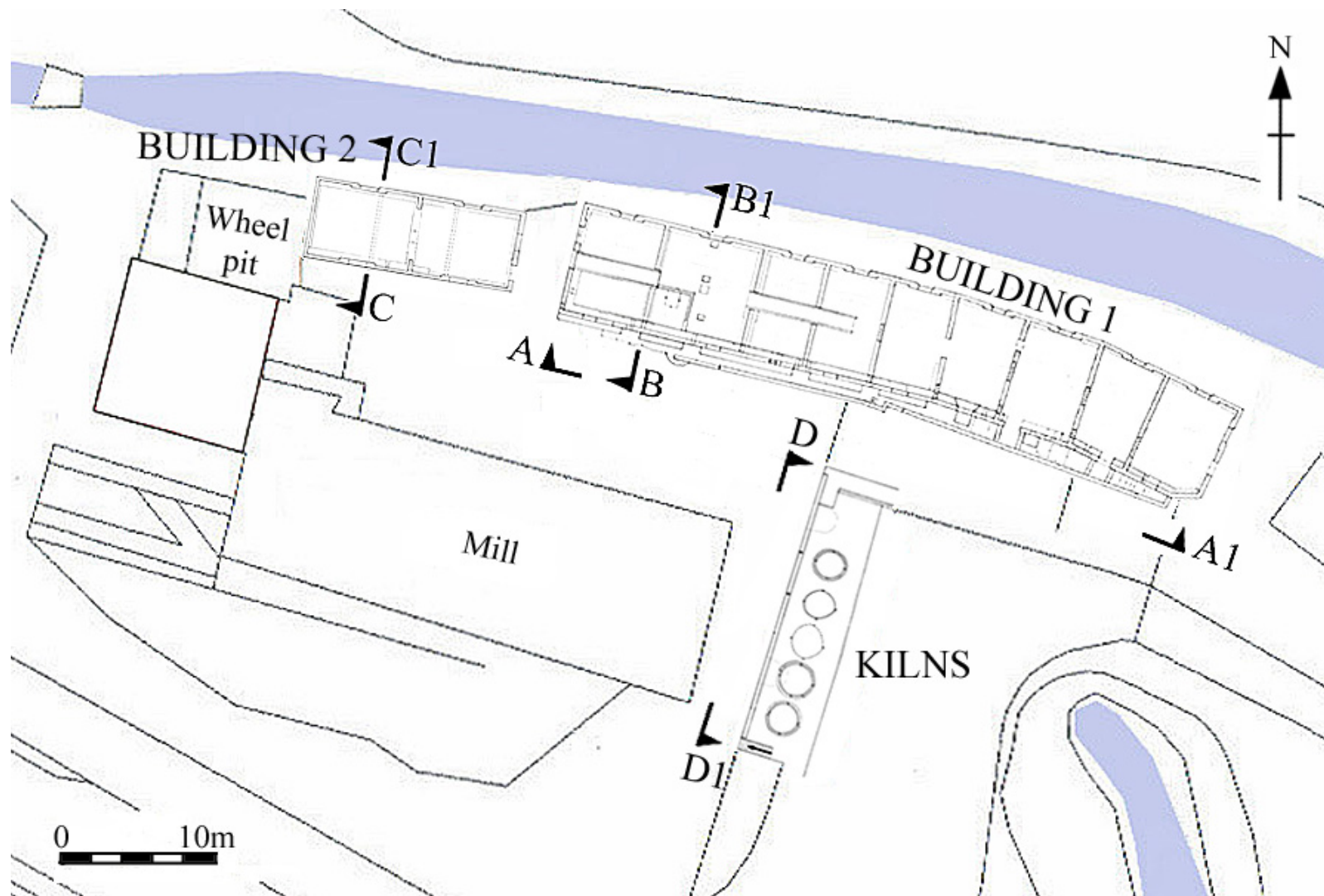






**FIG. 2**

Plan of the mill complex showing the surveyed buildings highlighted in red.



**FIG. 3**

Plan of the surveyed buildings with the locations of elevations and cross-sections indicated.



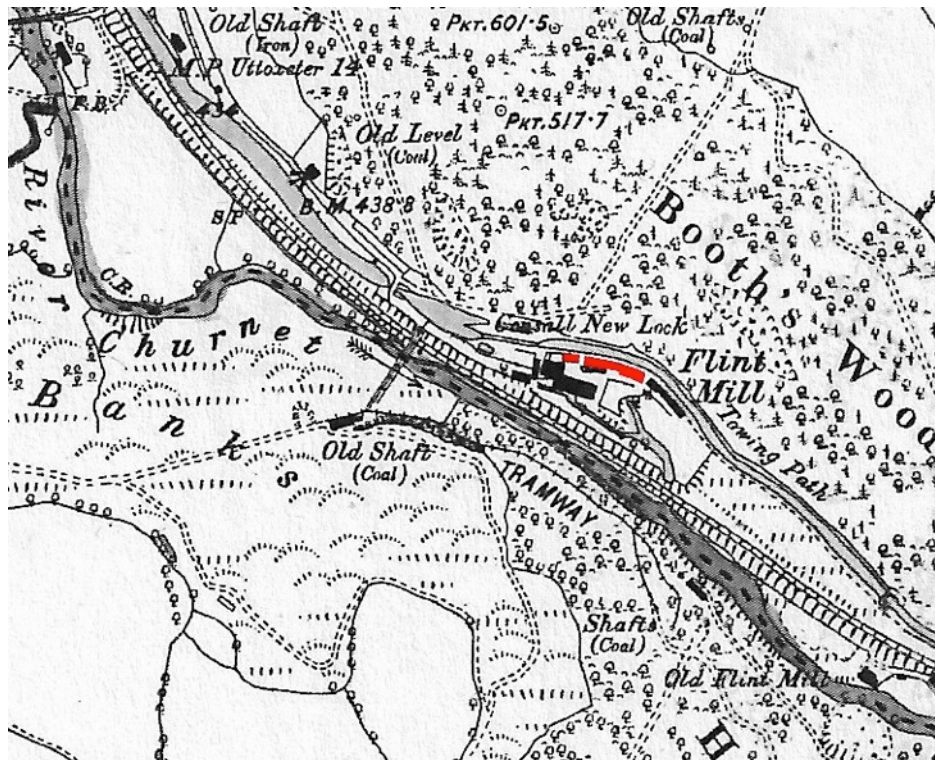


FIG. 4

Extract from the 1888 OS map showing Consall Flint Mill  
with Buildings 1 and 2 indicated in red.

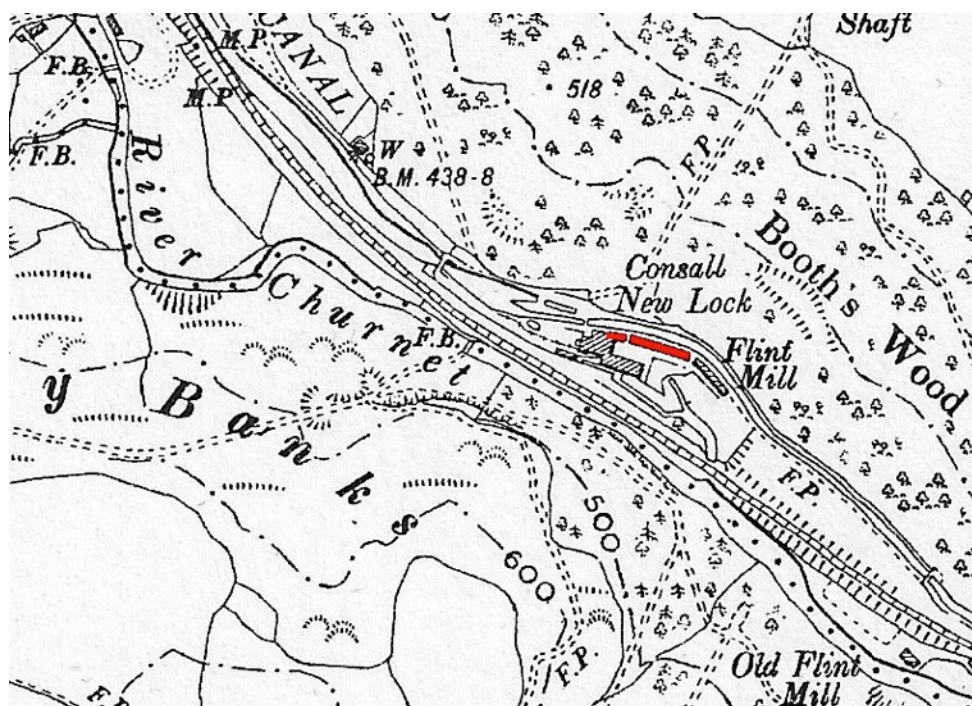
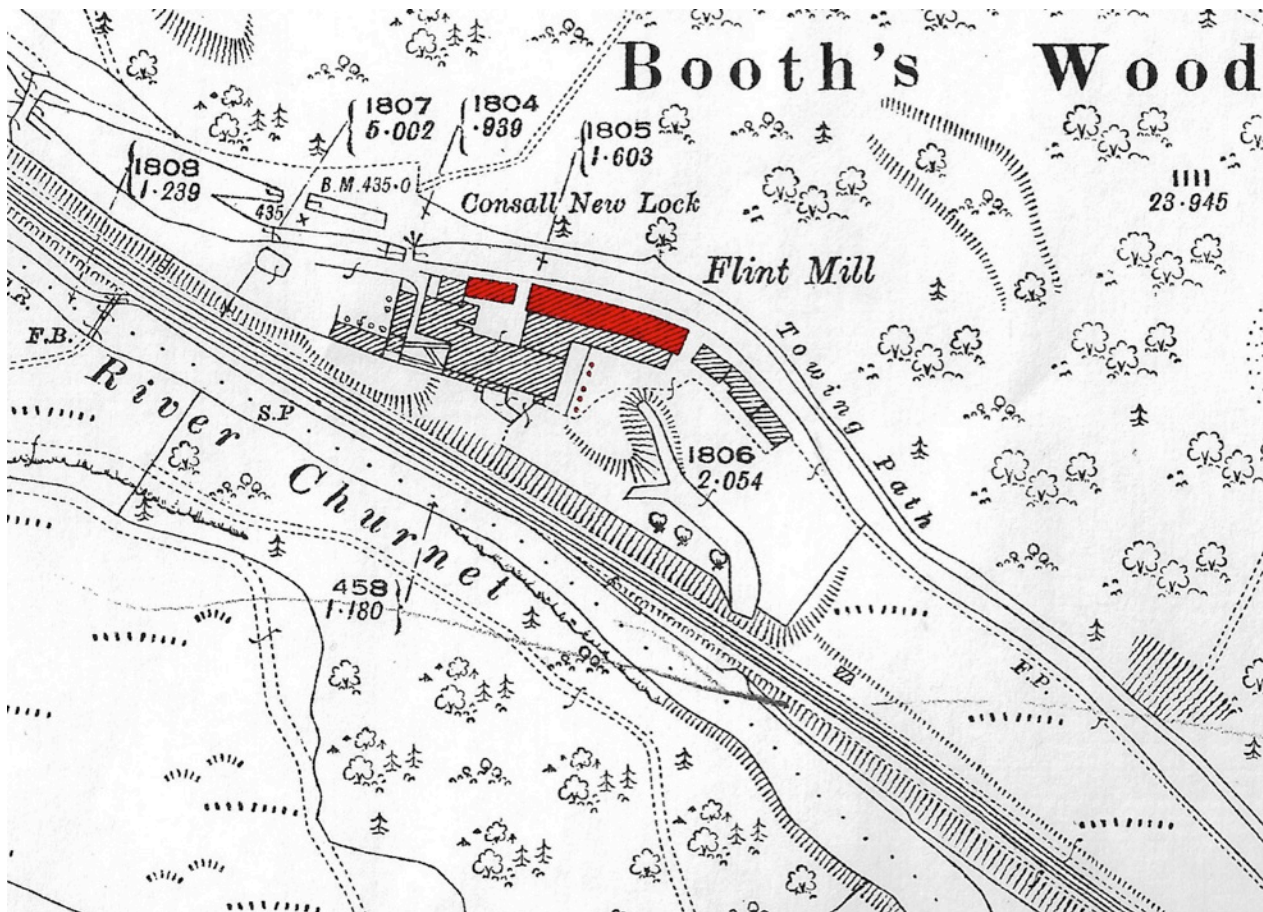


FIG. 5

Extract from the 1900 OS map showing Consall Flint Mill with  
Buildings 1 and 2 indicated in red.



**FIG. 6**

Extract from the 1925 OS map showing Consall Flint Mill with Buildings 1 and 2, and the kilns, indicated in red.



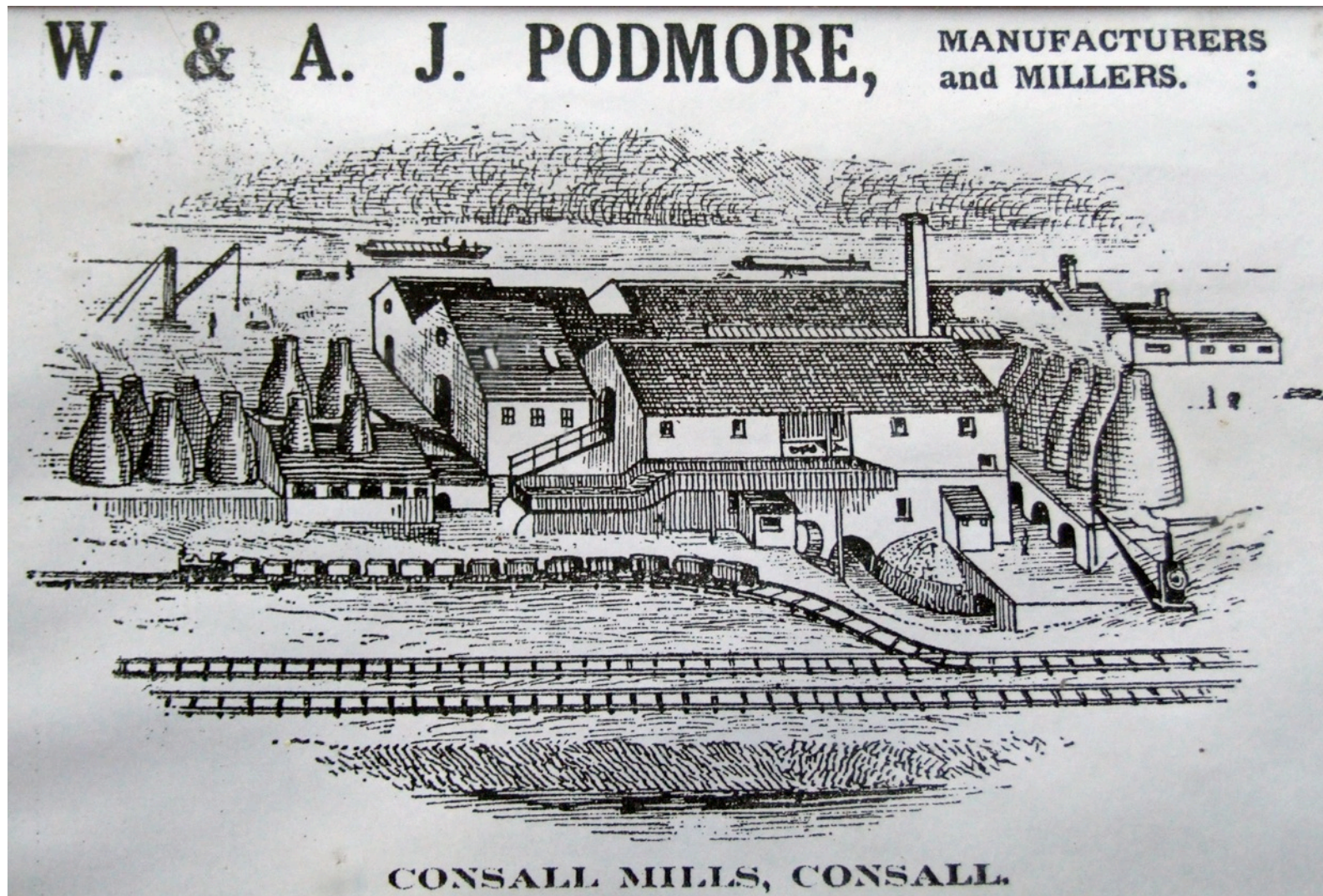
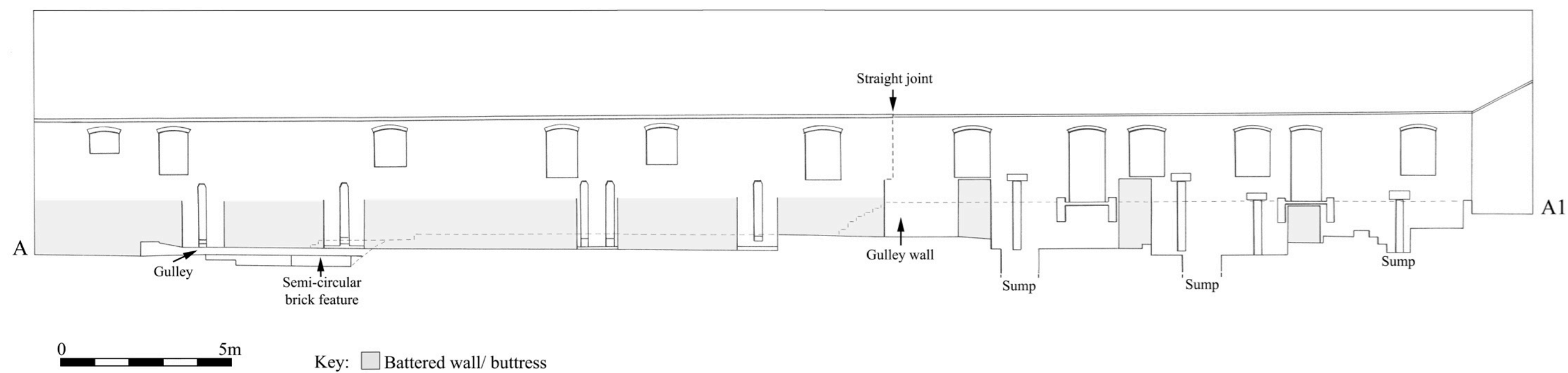


FIG. 7

Early 20<sup>th</sup> – century advertising print of Consall Flint Mill.

**FIG. 8**

South elevation of Building 1

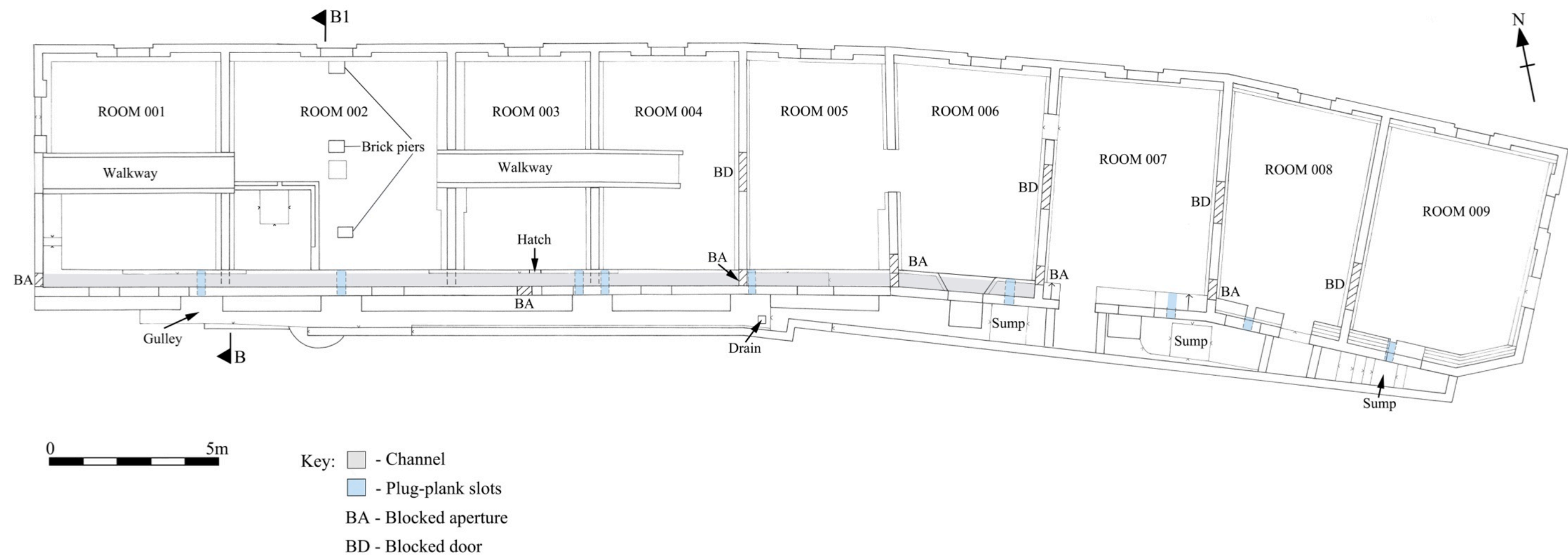
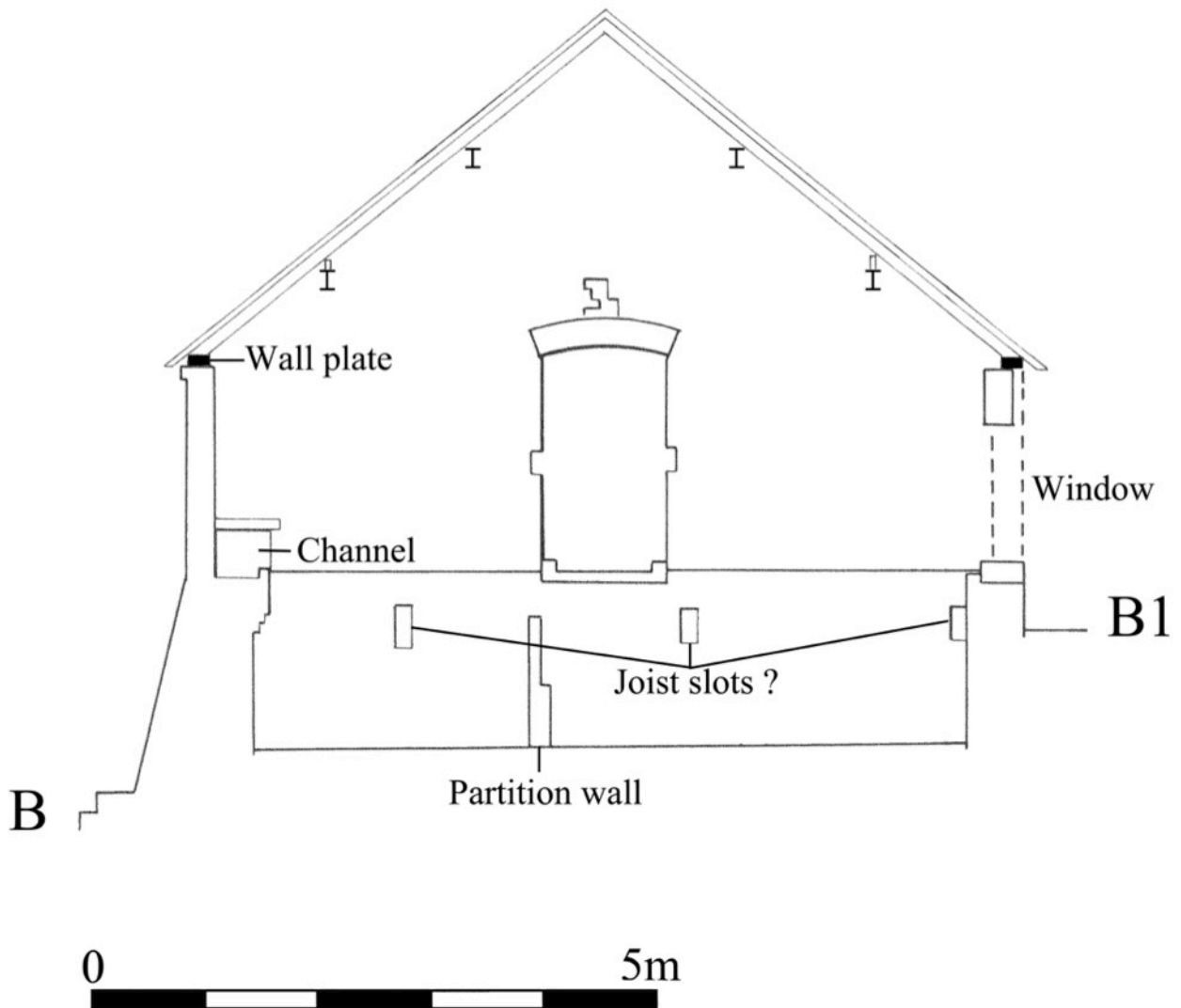


FIG. 9

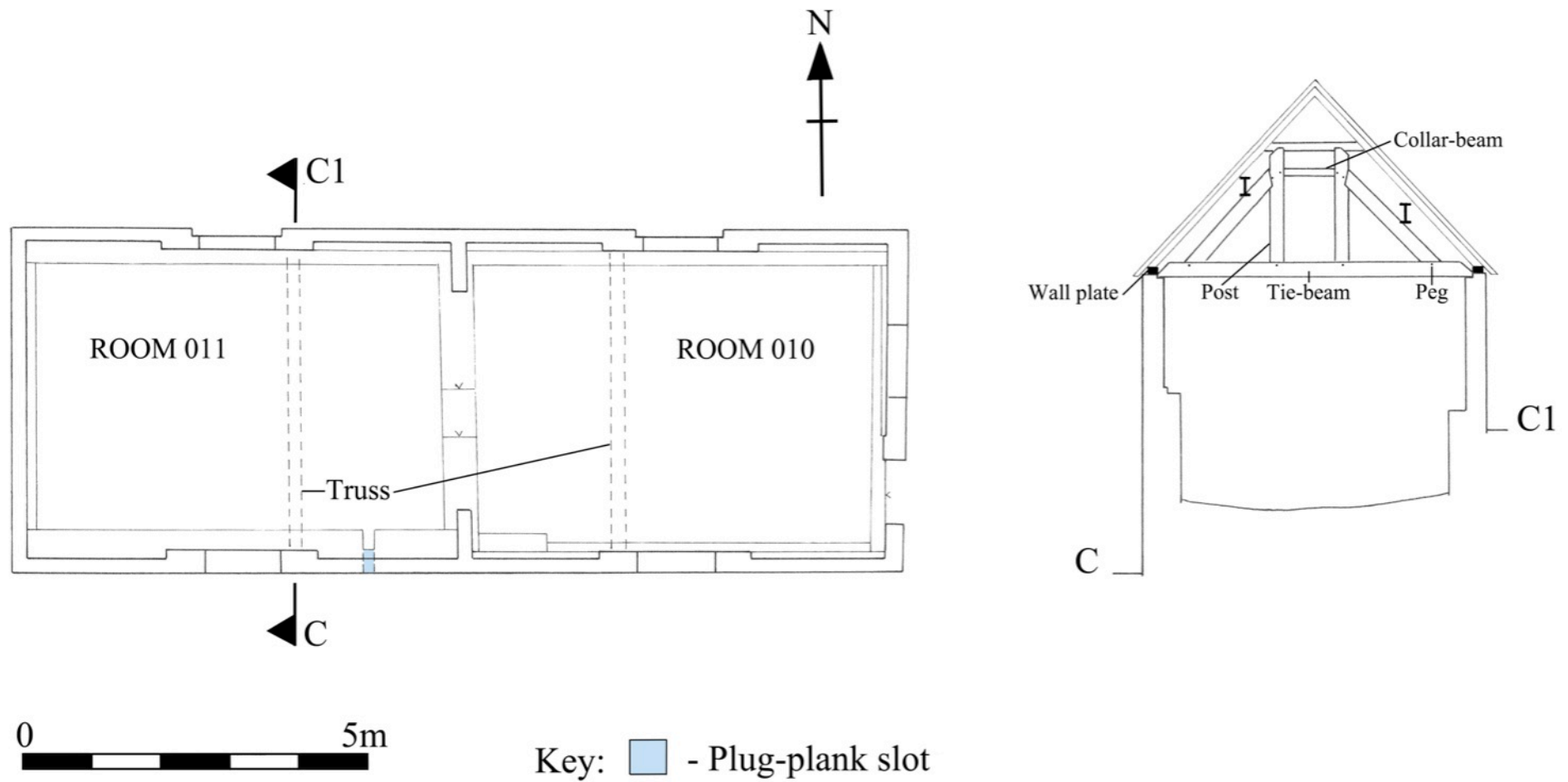
Plan of Building 1



**FIG. 10**

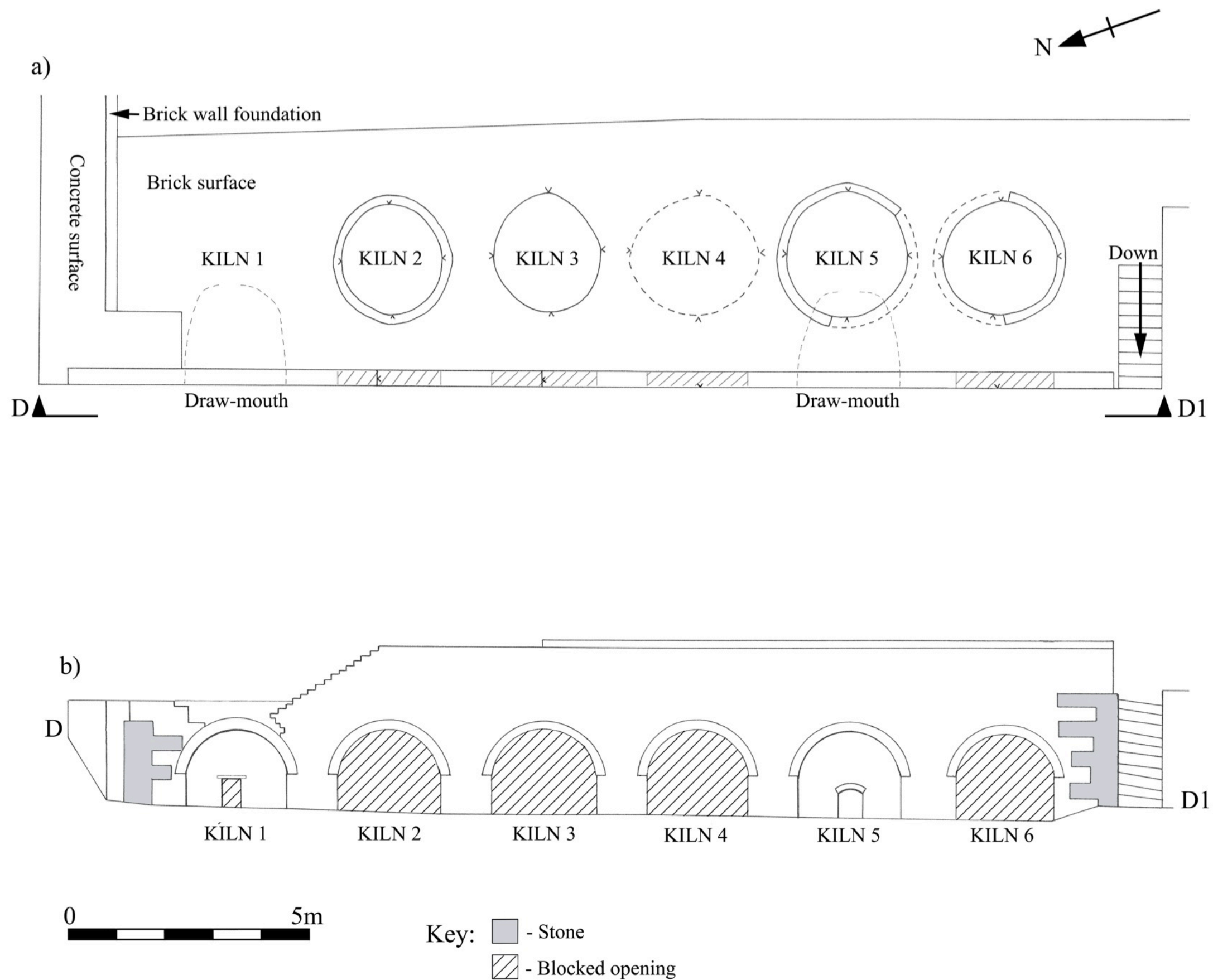
East-facing section through Room 002 in Building 1





**FIG. 11**

Plan of Building 2 and east-facing section through Room 011



**FIG. 12**  
a) Plan of the kilns and b) west elevation of the kilns



**PLATE 1**

Buildings 1 and 2, looking south-east



**PLATE 2**

The south elevation of Building 1





**PLATE 3**

The west end of Building 1's south elevation



**PLATE 4**

The east end of Building 1's south elevation





**PLATE 5**

One of the recessed windows in the north elevation of Building 1



**PLATE 6**

The east elevation of Building 1



**PLATE 7**

The western half of the gulley



**PLATE 8**

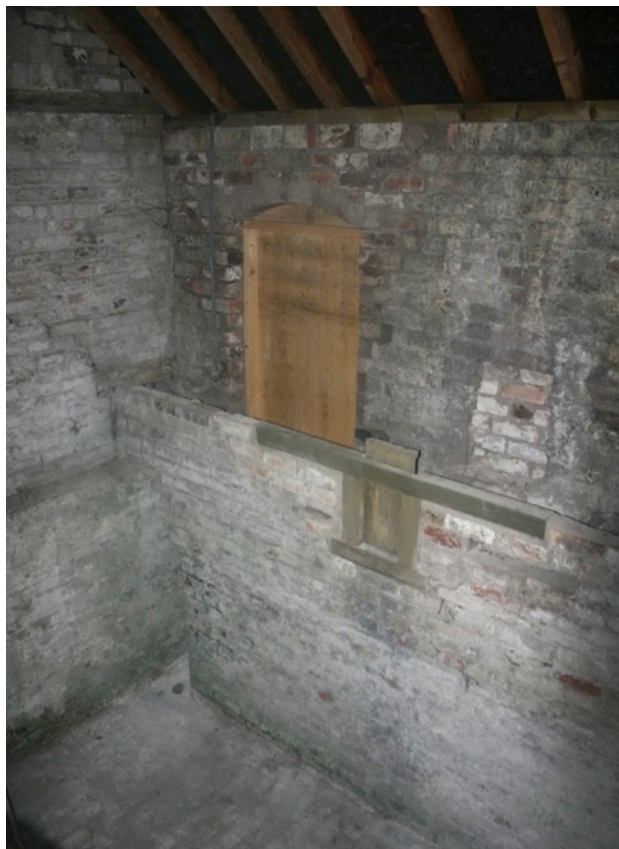
The eastern half of the gulley





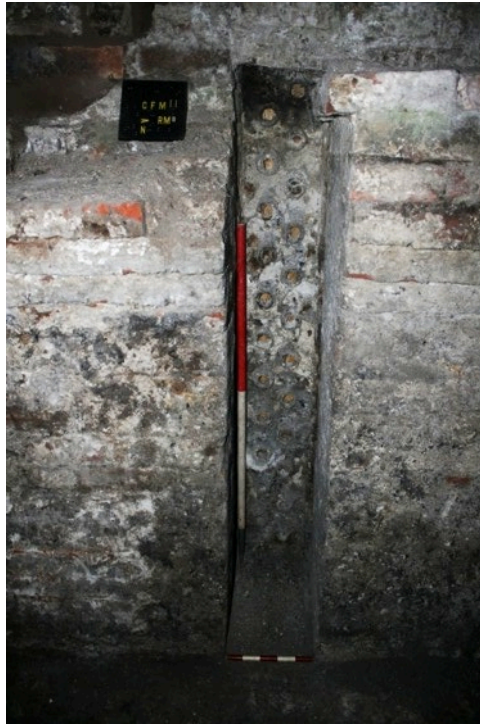
**PLATE 9**

The west elevation of Building 1



**PLATE 10**

The channel and hatch in Room 003



**PLATE 11**

Plug-plank



**PLATE 12**

The walkway in Room 001, looking south-east





**PLATE 13**

The south-west corner of Room 002, looking north-west



**PLATE 14**

The east wall of Room 006 showing the small blocked aperture with the sandstone lintel



**PLATE 15**

Scar in the west wall of Room 006



**PLATE 16**

Building 2, looking north-west





**PLATE 17**

Recessed window in the north elevation of Building 2



**PLATE 18**

Room 010 looking west



**PLATE 19**

The truss in Room 011



**PLATE 20**

The kilns, looking north





**PLATE 21**

Kiln 2, looking west



**PLATE 22**

The steps at the south end of the kilns





**PLATE 23**

Kiln 1 and 2 draw-mouths, looking west



**PLATE 24**

Detail of Kiln 5 draw-mouth