

An Archaeological Excavation at Stanley Bank, St Helens, Merseyside

NGR SJ 538 972

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Non-Technical Summary

This report describes the results of an archaeological excavation on land at Stanley Bank, St Helens, Merseyside. The project was run by National Museums Liverpool Field Archaeology Unit, in partnership with St Helens Borough Council, as part of a Community Archaeological Project funded by the Heritage Lottery Fund. The project took place over weekends during August 2008.

The aim of the excavation was to assess the survival, nature, extent and preservation of any below ground remains associated with a late 18th century iron slitting mill. The mill was used to manufacture iron rod from iron bar which was being produced at Carr Mill Dams to the north. Documentary and cartographic evidence suggest that the slitting mill was constructed in the late 18th century and was converted to a corn mill in the early to mid-19th century. The mill area had been previously excavated in 1982-3 although documentation relating to this work is scant. It is known that one wheel pit was located and excavated, though it was common for slitting mills to have two water wheels. One of the aims of the project was to locate the second wheel pit associated with the slitting mill.

The excavation in 2008 followed trial trenching of the site in 2006 and 2007 which found that much of the mill remained undisturbed by the excavation of the 1980s. It appears that this was largely confined to the removal of demolition debris to expose extant walls and floors and to the excavation of one wheel pit. The walls and floors exposed in the 1980s in fact lie over a c. 0.3-0.5 m thick deposit of clay which covers most of the site. This in turn lies over brick foundations likely to relate to an earlier structure. It is also clear from some of the trenches that some areas of the site were not disturbed at all by the earlier excavation. The trial trenching also found walls thought to relate to the second wheel pit and a floor surface of compacted ferrous material.

The fieldwork conducted in 2008 consisted of an open area excavation and was intended primarily to confirm the identification of the second wheel pit. It was also intended to reassess, where possible, the results of the 1980s excavation in the light of results obtained in 2006-7.

It was found that the walls located in 2007 were indeed part of a second wheel pit located south of that excavated in 1983 and it was possible to prove that the southern wheel pit was filled in during or prior to the mills conversion from slitting to corn between 1800 and 1824. Evidence was also obtained for a possible setting for a pit wheel to the north. The latter was partly excavated and appears to contain remains of some of the mill gear. The wheel pit retain scars from the water wheel allowing its size to be estimated.

A comparison of the structure of the two wheel pits suggests that the northern wheel pit was partly rebuilt during conversion to a corn mill.

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An Archaeological Excavation at 'Stanley Bank Mill', Stanley Bank, St Helens, Merseyside.

1. Background

This report relates to an archaeological evaluation of land at Stanley Bank, St Helens, Merseyside (NGR SJ 538 972). The project was undertaken with the Stanley Bank Triangle Project Steering Group acting on behalf of St Helens Council, Mersey Basin Campaign, (Formerly Groundwork Trust for St Helens), St Helens Historical Research Society and Merseyside Industrial Heritage Society and was funded by the Heritage Lottery Fund.

The site is located within the 'Stanley Bank Triangle' part of the Sankey Valley Park, c. 3 km to the north-east of the centre of St Helens (Fig. 1). The Stanley Bank area was one of the core areas of the industrial revolution in St. Helens and although currently set within a largely rural landscape, the area contains significant remains relating to its industrial past including the upper reaches of the Sankey Navigation, iron slitting mill (later converted to a corn mill and possibly also the site of a copper works) and wagon ways used to transport coal from workings on the eastern half of the site to the Sankey Navigation. A separate report will be produced on the full documentary and cartographic history of the site, which is being researched by local amateur historians.

The slitting mill site was partly excavated in 1982-3 as part of a Manpower Services Commission funded Community Programme (D. Knowles, pers. comm.), though only a partial record of the excavation survives. This excavation was aimed at exposing the mill site and as part of these works the northern wheel pit was excavated in 1982. However, analogy with contemporary slitting mills such as that at Lymm, Cheshire suggested the presence of a second wheel pit on the opposite side of the building and many aspects of the building's development remained unclear.

Other than the stubs of walls the mill building does not survive above ground, except for the mill dam wall, which survives in part. However substantial sections appear to have been rebuilt in the 1980s. Much of the area has been vandalised repeatedly and the site was heavily overgrown with vegetation prior to the 2008 excavation.

An earlier evaluation excavation of 'Copper House Row' and associated out-buildings c. 200 m to the South-East of the slitting mill (Adams & Ahmad 2005 and Adams et al 2006) found that little survived of these structures below ground, though substantial quantities of ceramic and building material were present.

The excavation in August 2008 which is described in this report followed trial trenching of the slitting mill site in 2006 and 2007 (Adams et al 2007) which found that much of the site remained undisturbed by the excavation of the 1980s. It appears that this was largely confined to the removal of demolition debris to expose extant walls and floors and to the excavation of a single wheel pit. The trial trenching conducted in 2007 suggested that the walls and floors exposed in the 1980s in fact lie over a c. 0.3-0.5 m thick deposit of clay which covers most of the site. This in turn lies over brick foundations likely to relate to an earlier structure. It is also clear from some of the trenches that some areas of the site were not disturbed at all by the earlier excavation. The trial trenching also found walls thought to relate to the second wheel pit and a floor surface of compacted ferrous material to its south.

The 2008 excavation aimed to assess the survival of the iron slitting mill below ground level in areas that had not been previously excavated in the early 1980s and to assess the likely nature of deposits excavated in the earlier excavation. In addition the excavation sought to confirm the location of the second wheel pit located in 2007.

2. General Historical Background.

Although coal mining had been undertaken in the wider area since at least the 17th century, the industrial development of the Stanley Bank area really began with the northwards extension of the Blackbrook branch of the Sankey Navigation in c. 1770 (Barker & Harris 1993, 20). Previously the site would have been a largely agricultural landscape occupied by small dispersed settlements and individual farmsteads. The opening of the canal allowed the coal mined in the area to be more easily transported to markets in Liverpool and the Cheshire salt industry.

The Stanley Copper works was established by Thomas Patten in 1772 on land 'adjacent to the Gerrard Coal wharf, though contemporary documents provide little other detail of the location (Barker & Harris 1993, 46; Foster 2004, 255). Gregson's Fragments (1817, 187) provides a few details of the copper works, apparently 30 tons per week were cast into brass and copper ingots weighing seven ounces each for the East India trade, though works had ceased by 1813-14. By 1785 the copper works was under the ownership of a new consortium headed by Thomas Williams with Michael Hughes as manager, though Alexander Chorley was responsible for the site's day to day running (Groundwork Trust 1986). Corley died in 1803 and management of the copper works was taken over by William Morgan.

The Stanley Iron Slitting Mill was established in 1773 by partnership consisting of Alexander Chorley, Thomas Leech, John Postlethwaite and John Rigby to slit iron from the furnaces at Carr Mill to the north (Barker & Harris, 1993), though Foster (2004, 255) dates the establishment of the iron slitting mill to the early 1780s. Alexander Chorley was a Warrington based Quaker businessman (Foster 2004, 255) though little else is known of his background. However, his association with the Society of Friends suggests that he must have known Thomas Titley, owner of the Lymm slitting mill who was also a member of Warrington Meeting, and may therefore have been aware of the layout and running of that mill.

The slitting mill does not appear to have been successful and in 1784 the mill was offered for sale. Rigby died in 1785 and in the same year Chorley was made manager of the copper works. Although Chorley was bankrupt in 1785 he must have been able to satisfy his creditors as he was not expelled from the Society of Friends (Foster 2004, 255).

In 1800 Stanley Mill was acquired by John Weston (Liverpool Merchant), William Blocklebank (Liverpool Merchant) and James Harriman (Liverpool Iron Slitter). The lease gives a description of mill and mentions shops, warehouses, wheels and other items of equipment implying a substantial operation (Groundwork Trust 1986)

The subsequent history of the slitting mill site is unclear, but sometime between 1800 and 1824 it was converted to corn mill which was closed between 1900 and 1911 and then demolished.

2. Methodology

In general the strategy defined in the Project Design was adhered to. A single open area (XVII) measuring approximately 30 x 30 m was excavated and numbered in a sequence consecutive with that used in previous seasons (Fig. 2, Plates 1 and 2). Excavation was largely confined to the removal by machine of modern deposits which had accumulated since the 1980s and cleaning to aid interpretation. Selected areas were excavated more intensively to aid understanding and to obtain dating evidence as required. However, frequent heavy rain meant that some aspects of the project were curtailed.

3. Results

The excavated deposits are described from north to south. Although a broad stratigraphic sequence has been established, this is incomplete and relies upon partial excavation, the interpretation of map evidence and the reinterpretation of evidence from the 1982-3 excavation. A suggested dating scheme is given in (Fig. 2). Structure numbers have been assigned where possible, running in a sequence from north to south.

The area to the north of the flooded wheel pit was excavated to a set of floor levels associated with two structures, both part of the 19th century corn mill. Structure 1 (Fig. 3, Plate 3) was defined by the dam wall, east-west aligned brick wall 203, north-south aligned brick wall 137 and the northern wall of the wheel pit. The latter was not exposed during this phase of excavation but is visible on photographs taken in 1982-3. At this point it is constructed in a mix of coursed (gritstone?) rubble and brick (Plates 4 and 5), though to the west there is evidence that it was constructed in ashlar (see below). The entrance to this structure was via a door way set into the northern end of wall 137 and defined by two sandstone blocks 136 with recesses cut to receive timber jambs. Wall 203 showed evidence of extensive repointing and may have been totally rebuilt, there being a slight discrepancy between the alignment of the wall and its foundations.

The internal floor 133 was in flagstone, though this only survived in patches up to c. 1 m². Although survival was very patch, there was some evidence of two layers of flagstones, probably a result of relaying either in 1982-3 or subsequently. The floor sealed a complex of brick drains (e.g. 134, 135) though these were only examined in plan. They were set into 132, a compacted layer of dark brown gritty silty sands containing frequent fragments of brick, coal and clay. Fragments of iron slag were also present suggesting that it post-dated the construction of the slitting mill.

Immediately west of Structure 1 was an L-shaped area of brick and flagstone paving (140, 144, 145) Fig. 3, Plate 1) which to be original elements of the mill rather than reconstructions, the character of the paving being subtly different from that within Structure 1. The available historic mapping suggests that this area was external to the mill (Fig. 4). They were set over 139 which was very similar in character to 132.

Structure 2 was situated in the north-western corner of the excavated area and was defined by north south aligned brick wall 142 and east-west aligned brick wall 143 (Fig. 3, Plate 1). The internal floor did not survive in this area.

The northern wheel pit excavated in the 1980s was not investigated on this occasion but has been designated Structure 3 to assist interpretation. The plan shown in Fig. 3 is based partly upon photographic evidence from the 1982-3 excavation (e.g. Plates 4, 5, 6) and partly upon the layout of other water-powered mills. The waterwheel for the slitting mill was probably situated within the linear feature which is now culverted over in brick at its western end (Plate 4) and is now visible as an arm extending west from the pond on this portion of the site. The brick vault which culverts the tail race is probably an addition or partial rebuild dating to the conversion to a corn mill. The justification for this interpretation is that the opening to the tail race to the west is in stone and both walls within the wheel pit at this point are in red sandstone ashlar (Plate 4) in a very similar style to that used in the southern wheel pit. The outlet to the tail race in the southern wheel pit is arched in stone and it would seem unlikely that different materials would be used in the original construction. There is a change in materials at some point along the northern wall to coursed (gritstone?) rubble at the eastern end, though unfortunately the junction between the two elements is obscured on the available photographic evidence. The extreme eastern end of the north wall is in brick (Plate 5). The reason for these rebuilds is unclear but is likely to be related to the conversion to grinding corn. One possibility is that the slitting mill wheel was set further to the west, this would explain the need to culvert over what was once an open wheel pit, and that on conversion to corn it was moved east closer to the dam. However, there is no obvious evidence on the available

photographs of scarring from the waterwheel, though this was apparently present (D. Knowles, pers. comm.) but its position does not appear to have been recorded.

The breastwork for the wheel at the upstream end (Plates 5 and 6) is in brick and has a slight batter suggesting that the wheel was over shot or pitch back, there being no close fitting curve for the wheel as found in breastshot wheels.

Little detail is available of the construction of the south side of the wheel pit (Plate 6), though the materials used to construct the pit wheel chamber to its south (Plate 7) suggest that the eastern end was constructed in a similar manner to the north. This feature would probably have held the pit wheel on the grounds that there appears to have been no provision for the outflow of water. The western end seems to have been constructed in red sandstone ashlar, though the sole evidence for this is a very underexposed photograph from the 1982-3 archive.

There is no direct evidence for the phasing of Structure 3, though the fact that the southern wheel pit (Structure 4) was sealed by drains inserted for the corn mill and the evidence of reordering Structure 3 to accommodate the corn mill suggests that Structure 4 was abandoned and filled in when the corn mill was constructed whilst Structure 3 remained in use.

Given the evidence that the wheels in both wheelpits were overshot or pitchback, it is unlikely that the gap in the dam wall to the east of Structure 3 relates to the sluice which would have been set much higher up. This feature is much more likely to relate to the breaching of the dam in the 1940s.

To the south of this area a complex of structures was revealed. Perhaps the most significant of these was Structure 4, the southern wheelpit, which to date is the only excavated feature which can be positively associated with the slitting mill phase (Fig. 5). It was sealed by brick built drains (Plate 8) relating to the corn mill which prove that it was filled in upon once iron slitting ceased on the site between 1800 and 1824, though no finds evidence was recovered from the fill (predominantly clay) to confirm this.

The southern and northern walls (168 & 154) of the wheel pit were constructed in red sandstone ashlar (Plates 9 & 10) with the upper 2-3 courses of 154 in hand-made red brick. It is likely that the brick courses represent rebuilding during conversion to a corn mill as they do not appear sufficiently substantially to support the wheel being only two bricks thick.

Two sections were excavated across the infill at the western end, though both were stopped when the top of the water table was reached at a depth of c. 1.2 m. The first section exposed scarring from the waterwheel on the southern wall (Plate 9) and a set of incised geometric marks on the northern wall (Plate 10) interpreted as masons marks. Similar marks are present on the lower sandstone courses of the dam wall and in the northern wheelpit (Plate 11, this is identical to the right-hand mark in Plate 10). Projecting the arc of the wheel scars on the southern wall suggests that the base of the wheelpit is c. 1.5 -1.75 m below present ground level. An opposing scar was located at the eastern end of wall 154 and its location suggests that the wheel was c. 4-5 m or 13-16 feet in diameter. The curvature of the scars also shows that the waterwheel axle must have been set at c. 0.5-1 m above present ground level.

The western wall (186) was constructed in coursed gritstone rubble bonded with lime mortar and was bonded to the side walls (Plate 12) suggesting it was part of the same phase of construction. At 1.05 m thick it was substantially thicker than walls 154 and 168, though the reason for this is not clear. The top of the arch to the headrace was exposed at the base of the section, though this could no be further exposed because of flooding (Plate 13). The upper courses of eastern wall 162 of the wheel pit were constructed in brick, though these were probably rebuilding similar to that seen on the northern wall, a section excavated in the northern corner revealed red sandstone masonry underneath (Plate 14).

Immediately north of Structure 4 was a sandstone flagged floor 148 laid over a layer of area of soft-mid brown sand 149. This is documented as having being laid in the 1980s and relaid in 1996 (A. Sayer, BCTV, pers. comm.). The floor was bounded to its west by a brick and sandstone wall 147 and to its north by brick wall 189 to define a small square area, Structure 5. It is not clear whether wall 147 was part of the slitting mill or a new wall constructed as part of the corn mill. Although it continued the line of the west wall of the southern wheel pit, the use of brick suggests that the upper section at least is later.

The floors in Structure 5 sealed a complex suite of deposits excavated in section. Thin (c. 0.02-0.04 m thick) layers of white mortar and sand (182 and 192) probably related to relaying of the flagstones in the 1980s. These sealed a deposit of soft, mid-dark brown sands 196 which were excavated to a depth of at least 0.2 m when excavation was terminated. Set within the sands was a complex of iron objects embedded in decayed and partly mineralised wood (Plate 15). These were only partly exposed and were covered at the end of the excavation. However, they may be part of the gearing mechanism for the slitting mill, possibly a lantern gear.

Unfortunately these deposits were located in the last two days of the excavation and given the complex nature of the iron objects within them it was decided to leave the majority *in situ*, lifting only those sections of metalwork which could not be safely back supported by backfilling. Consequently it was not possible to establish the depth or extent of 196, though the presence of possible items of gearing suggests that it fills a setting for a pit wheel associated with Structure 4.

The area between the wheel pit and the dam was occupied by Structure 6 which was defined by the dam wall and brick walls 155 (an eastward continuation of the north wall of Structure 4) and walls 164, 165 and 162 to the east (Fig. 6). Wall 163 appeared to be a later sub-division. A sandstone block (165) in wall 164 probably marked the location of a door. The floors (156, 163) in this area were predominantly in flagstone with small patches in brick (158) and all showed evidence of having being relaid in the 1980s. These floors sealed features such as 159, the brick base of a buttress possibly relating to the dam wall. Other cut features such as 195 were no more than 0.1 m deep but may be the truncated remains of earlier features. None of the walls relating to Structure 6 need pre-date the corn mill phase, though the possibility that they seal features relating to the slitting mill cannot be ruled out.

Structure 7 was a rectangular building defined by brick walls 175, 177, 179 and 181 (Fig. 7, Plate 16). The northern wall 175 has evidence of an entrance at its mid-point. Most of the internal floor surfaces in this area have been removed, a small area of flagging at the south-eastern corner overlay modern material. A stone capped drain 193 ran parallel to wall 175 and was sealed by deposits containing finds relating to the 1982-3 excavation suggesting that it had been briefly exposed and then recovered.

A section through the internal make-up for the floors in this area was excavated against wall 175. This was intended to check whether this section was built upon earlier stone foundations but could not be completed due to heavy rain. The function of this structure is unclear, though sections of floor tile from a malting kiln occur persistently as finds in this area, so it is possible that the kiln was located within this structure.

In addition to the main trench a test-pit measuring c. 2 x 1 m (Trench XVIII, Fig. 8) was excavated to the rear of a small v-shaped revetted embankment set into the north-eastern face of the mill dam. The aim was to identify evidence for the function of this feature, though the only deposits present were compacted clay deposited as part of the dam structure to a depth of c. 1m. The function of this feature remains unclear, though it does not appear to be related to a buried pipe.

Since the main phase of excavation was completed further limited fieldwork has been undertaken to the west in an attempt to confirm the location of outlet for the tail race from the southern wheel

pit to the east of the path. This has principally taken the form of clearance of undergrowth and topsoil from the area south of the arch for the northern tail race. To date all that has been exposed is the upper courses of the continuation of the wall. This appears to be constructed in the same manner as the western wall of Structure 4.

4. Finds report

Finds from this season have been processed but have yet to be reported on. However, most were from disturbed contexts representing material accumulated since the excavation in the 1980s. In general the material was very similar in character to that reported on in Adams, Pevely & Ahmad (2007). No material earlier than the 18th century was recovered and the assemblage consists principally of 19th/20th century ceramics and clay tobacco pipe fragments.

The only exception to this was a set of iron objects from the fill of the possible setting for the pit wheel. These have been provisionally identified as part of a lantern gear in wood and iron.

5. Conclusions

The most significant evidence recovered from this season's excavation was confirmation that the sandstone walls located in Trench XIII in 2007 were part of the southern wheel pit. Firm stratigraphic evidence was obtained to show that this wheelpit was filled in during the conversion of the mill from iron slitting to corn grinding in 1800 to 1824. The identification of this feature has also allowed the reinterpretation of the northern wheel pit excavated in 1982-3 which it now appears underwent a significant rebuild during the conversion of the slitting mill to corn milling. This may have involved the shift eastwards of the waterwheel and the construction of a new setting for the pit wheel.

It is now clear that all the sections of the mill which can be positively related to the iron slitter were constructed in red sandstone or coursed gritstone rubble. This suggests that the brick built elements relate to the corn mill and that the original core of the slitting mill was much smaller than earlier interpretations have suggested. Rebuilding on this scale is not particularly surprising, the layout of slitting mills is very different to corn mills, the former are generally single storey structures with machinery powered by two or more waterwheels. Corn mills tend to be constructed over two, usually three storeys, to allow gravity feed and are usually powered by a single wheel.

The deposits of iron waste to the south of the slitting mill slump into the southern wheel pit which suggests that these were redeposited during reorganisation of the site rather than representing *in situ* deposits from the operation of the slitting mill. Evidence was also found for the size and arrangement of the slitting mill waterwheel which would have been c. 4-5 m in diameter and 1.7 m wide with the axle set c. 1m above present ground level. There appears to have been a setting for a pit wheel to its north, though this requires confirmation. Re-examination of the photographic evidence from 1982 suggests that the waterwheels were either overshot or a combination of over shot and pitchback. The latter arrangement would have removed the need for gearing to counter-rotate the rollers. The layout of the wheel pits implies that the working area was between them, though to date no floor surfaces relating to the slitting mill have been found in this area. Those located in the 1980s almost certainly relate to the corn mill and have been relaid on at least one occasion since. It is possible that the original slitting mill floor was removed during conversion to corn milling.

6. Bibliography

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7. Figures



Fig. 2. Plan of excavated area and suggested phasing.



Fig. 3. Plan of north end of excavated area.

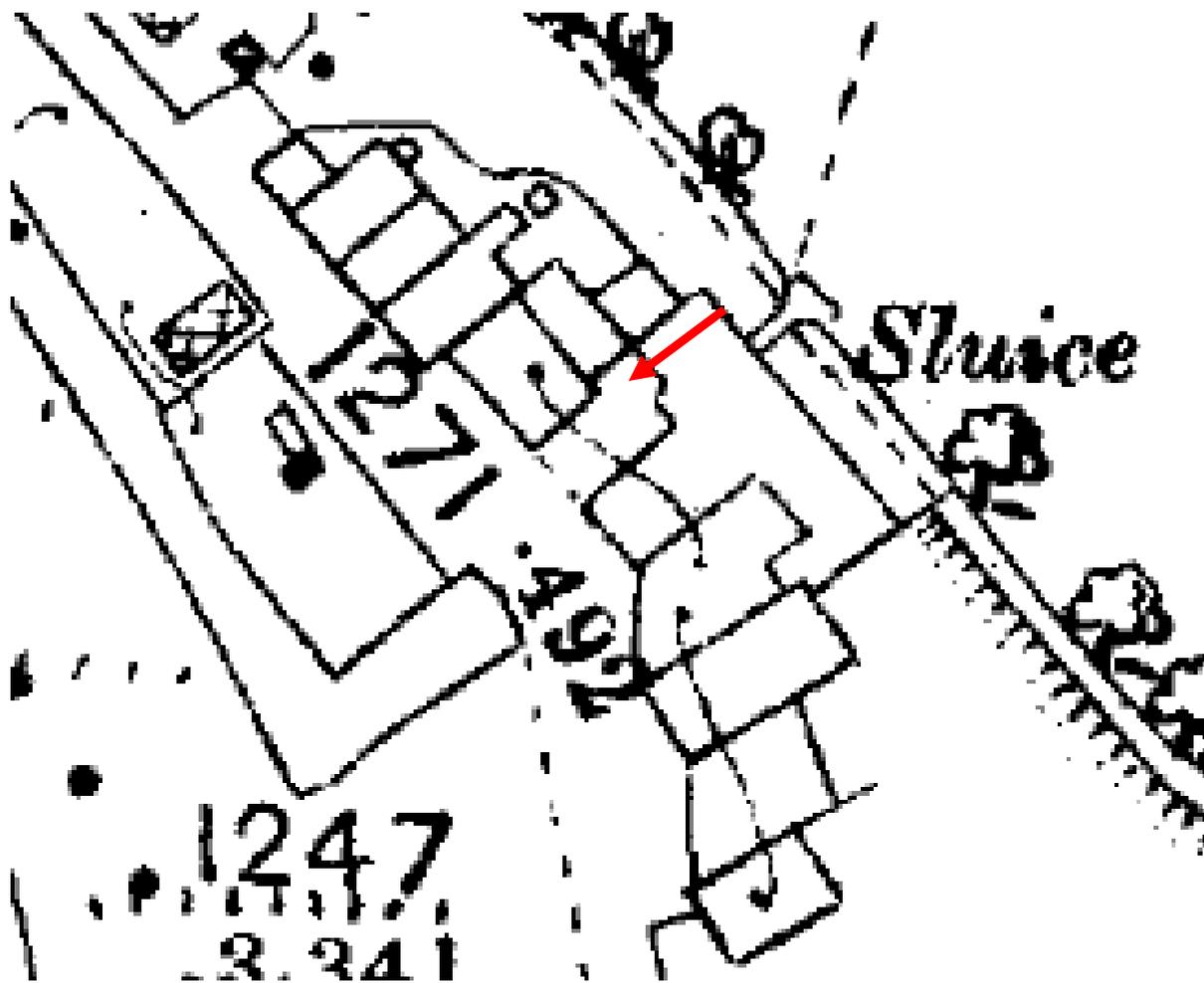


Fig. 4. Part of the 1894 OS 25 inch to 1 mile survey. The arrow is pointing to the open area occupied by 140, 144 and 145.

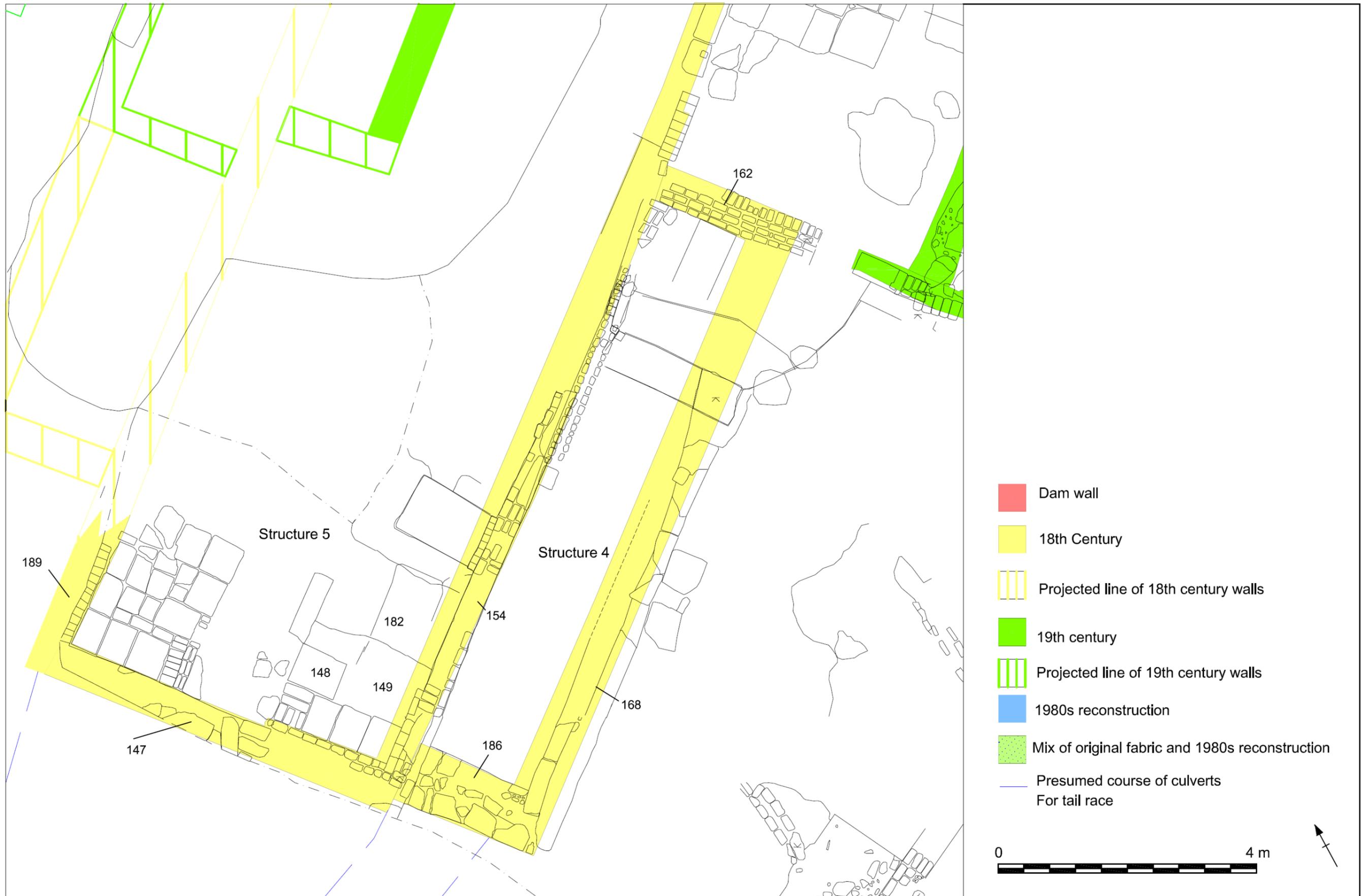


Fig. 5. Plan of central section of excavated area around southern wheel pit.



Fig. 6. Plan of Structure 6.

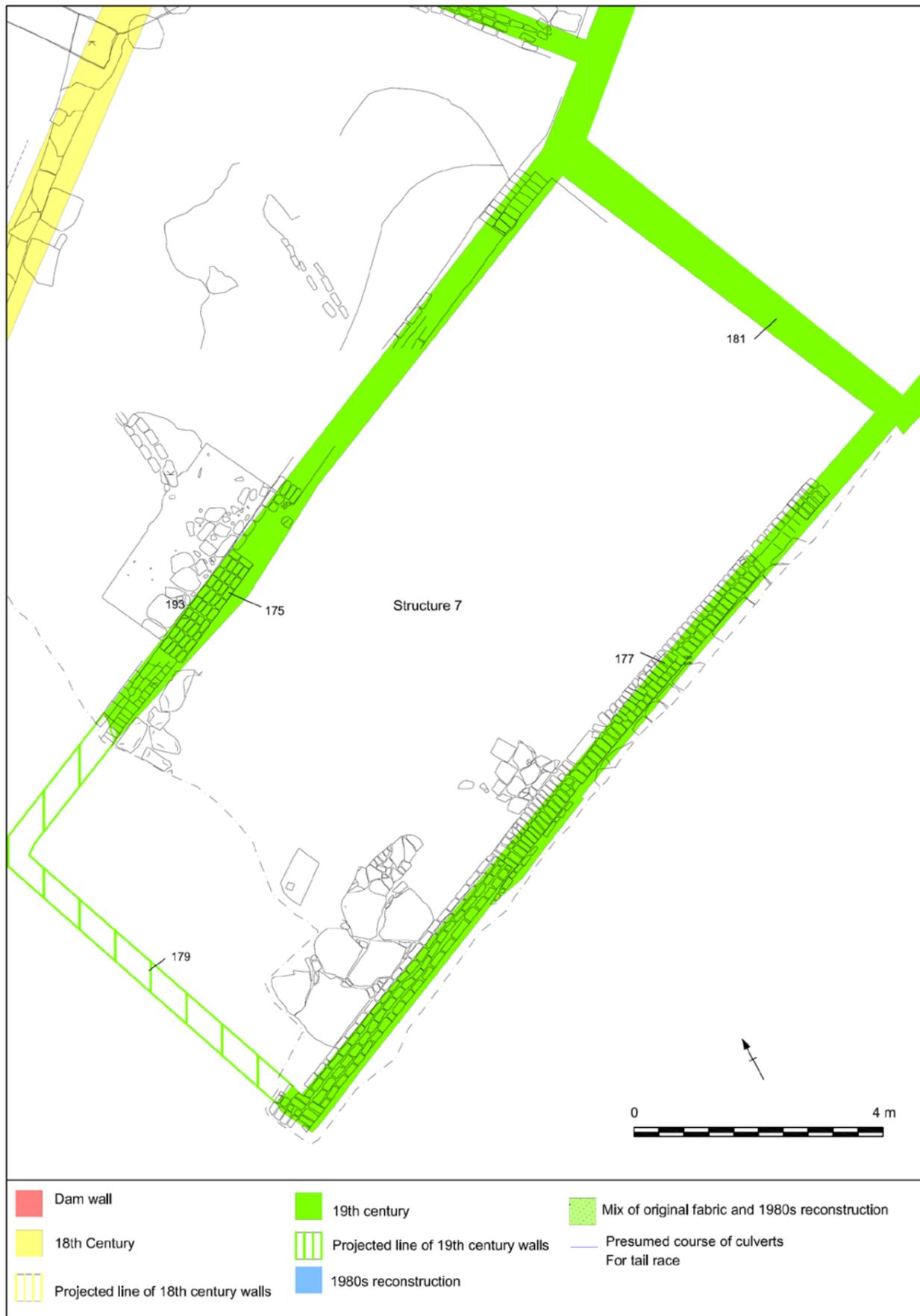


Fig. 7. Plan of southern end of trench.

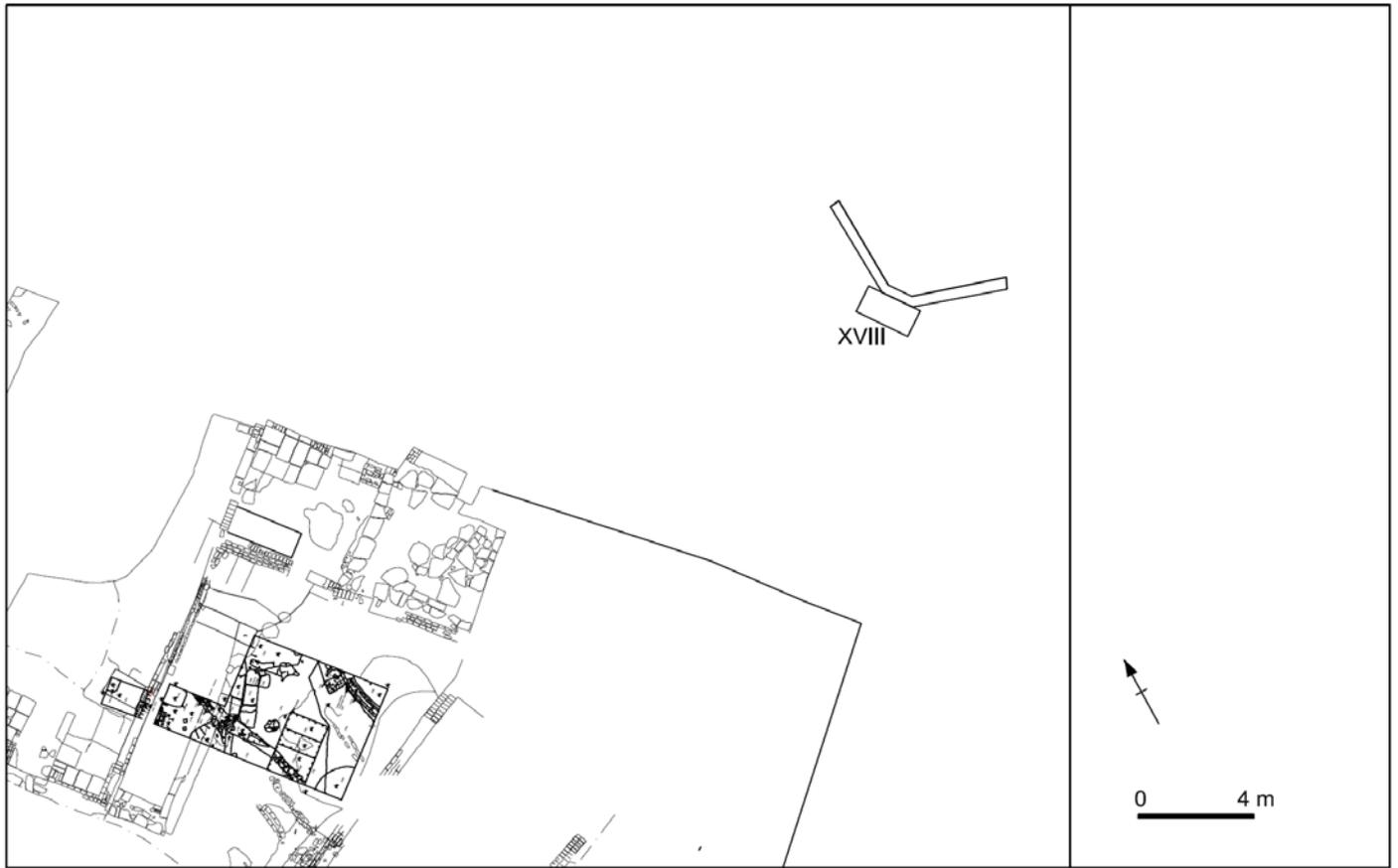


Fig. 8. Location of Trench XVIII.

8. Plates



Plate 1. Area north of northern wheel pit after removal of modern deposits. View looking west from top of dam wall.



Plate 2. Area south of northern wheel pit after removal of modern deposits. View looking south-west from top of dam wall.



Plate 3. Structure 1, view looking east . Door way 136 and wall 137 are in the foreground.



Plate 4. The northern wheel pit under excavation in 1982-3. Ashlar masonry is just visible at the west end of the north wall. The junction with coursed rubble to the east is obscured by *in situ* deposits, but may coincide with the intersection with wall 137 which is just visible behind the yellow bucket. The brick vaulting appears to have extended over the ashlar section. The chamber for the pit wheel is situated in the foreground. Photo D. Knowles.



Plate 5. The northern wheel pit under excavation in 1982-3. This view shows the apparent junction between coursed rubble and brickwork at the eastern end. The even slope of the breastwork is visible on the right. . Photo D. Knowles.

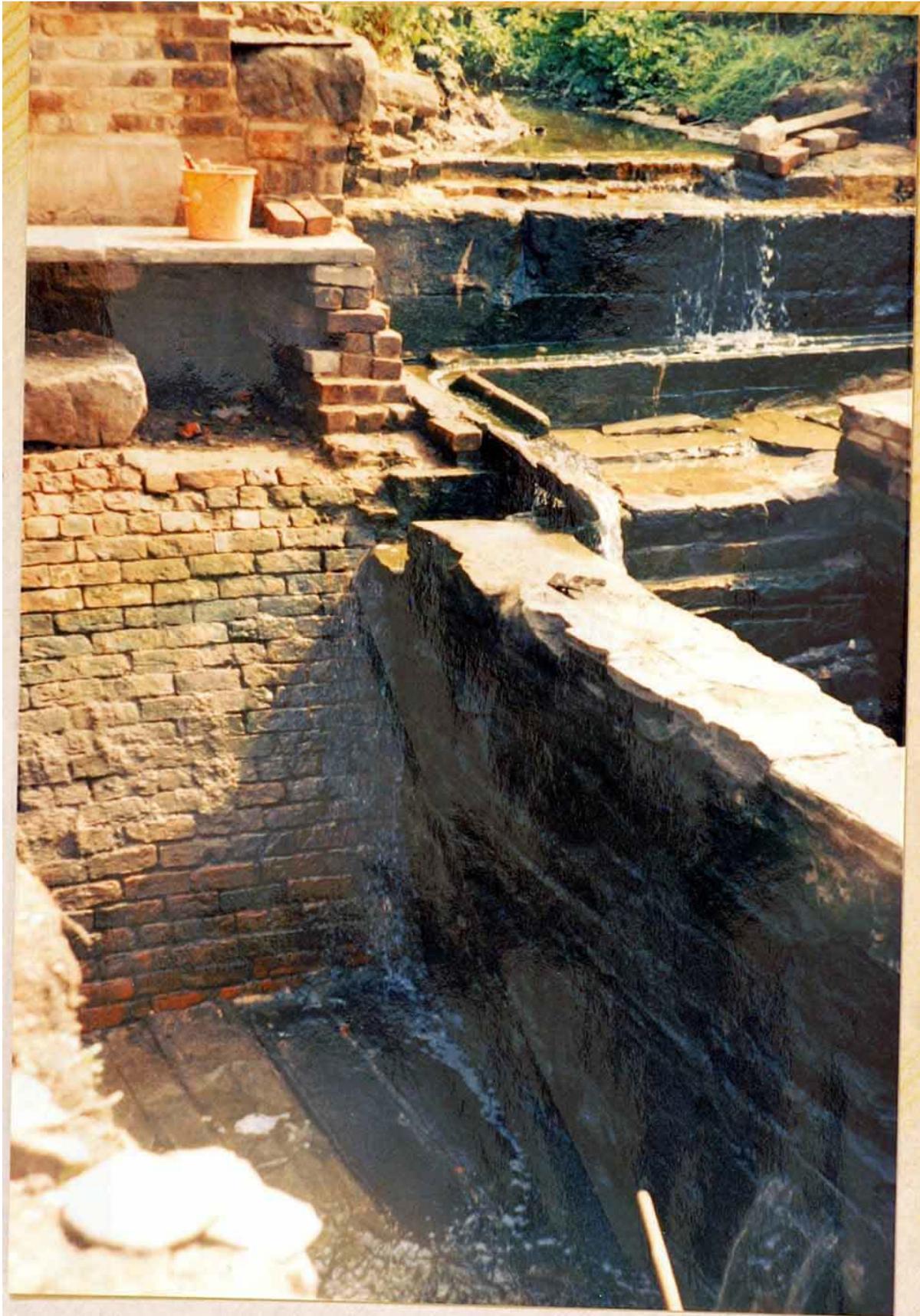


Plate 6. Detail of east end of northern wheel pit (Structure 3) from the north-west. Although the southern wall is in shadow it appears to be constructed in coursed gritstone rubble similar to that used for the north wall. The timber flooring can be seen at the base of the pit. . Photo D. Knowles.



Plate 7. Setting for the pit wheel (Structure 3) from the north-east. This section is entirely in coursed rubble and has no outlet for water. . Photo D. Knowles.



Plate 8. View of southern wheelpit (Structure 4) from the west showing drains for the 19th century corn mill set into the infill.



Plate 9. Southern wall (168) of south wheel pit (Structure 4) showing scars from the waterwheel.



Plate 10. Northern wall (154) of south wheel pit (Structure 4) showing mason's marks and upper courses rebuilt in brick.



Plate 11. Mason's mark recorded on sandstone wall of Structure 3. Photo D. Knowles.



Plate 12. Structure 4, detail of bonding between walls 168 and 186. View looking south.



Plate 13. East facing elevation of wall 186, the top of the arch to the tailrace is visible at the base of the section.



Plate 14. Detail of section excavated against east wall of southern wheel pit showing 19th century brickwork over red sandstone masonry. The incised mark is a mason's mark.



Plate 15. Part of iron and wood lantern gear(?) 197 exposed with sand layer 196. The red sands in the foreground are bedding for flag stones relaid in the early 1990s.



Plate 16. Structure 7, view looking south-east.