

**GRANGE COTTAGE SLUICE, MOOR POND WOODS,
PAPPLEWICK, NOTTINGHAMSHIRE
REPORT ON AN ARCHAEOLOGICAL INVESTIGATION**



For: The Friends of Moor Pond Woods

Prepared by: L. Binns BA, MA

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Trent & Peak Archaeology ©
Unit 1, Holly Lane
Chilwell
Nottingham
NG9 4AB
0115 8967400 (Tel.)
0115 925 9464 (Fax.)
tparchaeology.co.uk
trentpeak@yorkat.co.uk

Trent & Peak Archaeology is a trading name
of York Archaeological Trust
A Registered Charity in England & Wales
(No 509060) and Scotland (No SCO42846)

Registered Office
47 Aldwark, York YO1 7BX



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Trent & Peak Archaeology ©
 Unit 1, Holly Lane
 Chilwell
 Nottingham
 NG9 4AB
 0115 8967400 (Tel.)
 0115 925 9464 (Fax.)
tparchaeology.co.uk
trentpeak@yorkat.co.uk



Summary

- The Friends of Moor Pond Wood, in partnership with Trent and Peak Archaeology, excavated and recorded an exposed sluice and culvert situated at the terminus of a leat, located 60m south of Papplewick Lane, Papplewick, at grid reference SK 54860 50374. The works were carried out between July 2011 and July 2014. The excavations at Grange Cottage Woods are part of a larger Heritage Lottery Fund project to investigate and interpret the archaeology of the entire Moor Pond Wood area.
- The water system for the Robinson Mills was constructed between 1778 and 1830, although there may have been a mill (or mills) on this site before that. Evidence on the 1835 Sanderson map and 1847 Montagu estate map, suggest that there was a holding pond confined within Grange Cottages Wood, which may have acted as storage, and a leat which then transferred water to the mill which is known to have stood to the south of this site.
- Excavations revealed two stone sluice walls, aligned north-south, approximately four metres wide and angled to form a funnel. They were both damaged. A cross wall and arch were revealed to connect the two sides of the sluice together, however only the brick 'springer' courses of the arch remained intact. The western side of the cross wall appears to have been keyed in with the western face of the sluice.
- A brick culvert was revealed below the cross wall rubble, extending 3.05m further to the north. Both ends of the culvert had been badly damaged, possibly to denude the structure so that it could be covered up during landscaping, leaving none of it exposed. It is unknown as to why the culvert was built, however it is suggested that it was either due to the arch collapse necessitating another through flow, or that it was built to narrow the passage to compensate for a decrease in flow. The culvert was packed around with a clay lining.
- A small dry stone wall to the north was revealed, abutting the sluice walls and the clay, this could have been built to channel flow into the culvert.
- A number of finds dating from the late 18th century to the early 20th century were retrieved during the excavation
- It is unknown when the culvert and cross wall were destroyed. Following this the entire structure was buried completely
- In due course, the structure will to be consolidated and made more accessible to the public

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1 Introduction

- 1.1.1 Since 2000, the Friends of Moor Pond Woods have been striving to establish the extent and the complexity of a water system and its associated cotton mills built by the Robinson family in the 1770's. With the help of a Local Heritage Initiative grant scheme, a number of areas have been investigated, recorded and conserved. In this latest phase of community oriented works funded by the Heritage Lottery Fund, the Friends, in association with Trent & Peak Archaeology and a number of volunteers from the wider community, have investigated an area believed to be the terminus of a leat, to establish whether there was any evidence for a sluice in this area.
- 1.1.2 The work took place at intervals over three years between July 2011 and July 2014. A laser scan of the site was completed in February 2015 (Strange-Walker and Townsend, 2015). The project was an opportunity to build capacity within the group by providing training in archaeological field techniques, surveying and recording.
- 1.1.3 The work comprised a single excavation area at the terminus of the leat. The centre of the site is located at NGR SK 54860 50374 (Figures 1 and 2). The level of the site was between 71.3m ordnance datum (OD) to the north and 73m OD to the south, prior to excavation.

2 Project Background

2.1 Research context and previous work

- 2.1.1 In 1999, the Papplewick Parish Council's Millennium Committee decided to develop the Moor Pond Wood area as a 'valuable permanent recreational resource' by focussing on three themes:

'To improve access for all, especially elderly and disabled people;

To protect and improve the wildlife value of the woodland and water features;

To restore and interpret the archaeological features of the site.'

Friends of Moor Pond Woods (2014)

- 2.1.2 Over £100,000 has been raised and used to achieve these three themes in the past 15 years.
- 2.1.3 Trent & Peak Archaeology first became involved with the project in 2001 undertaking a desk based assessment (Sheppard, 2001). This led onto a complete site survey, which identified and recorded remaining features and identified areas for further investigation. It was noted from the survey that a leat ran for approximately 350m to the south of Papplewick Lane 'where it also ends abruptly in a rounded end' (Sheppard 2003).
- 2.1.4 Sheppard (2003) also mentioned that:
- 'a small depression in the bank still indicates where water was channelled through and went down a steep slope... a drop of over 3m'

The leat terminus was highlighted again in 2004 in an appraisal of the potential for future archaeological works on the site (Sheppard 2004) identifying it to be an area warranting further investigation.

- 2.1.5 The main body of excavations on this site took place between July 2011 and July 2014 and was carried out by members of the Friends of Moor Pond Woods, the Leen Valley Conservation Volunteers (LVCV) and members of the wider community under the supervision of Trent & Peak staff.
- 2.1.6 A number of stone and brick structures have now been excavated and conserved in the wider Papplewick site, including a brick-arched drain situated in the centre of a 15m long curving wall at the southwest corner of Moor Pond and a stone sluice in the northwest corner of Moor Pond (Sheppard, 2007)

3 Site Topography and Geology

3.1 Topography

- 3.1.1 Centred at NGR SK 54860 50374, the site lay within the Moor Pond Wood area of Papplewick, immediately west of Moor Road, and immediately south of Papplewick Lane (Figure 2). The leat itself runs south from Papplewick Lane for 60m, where it starts to curve towards the east before terminating. To the west of the leat, the ground level falls away into a gully, at a height of 67.45m OD. The leat bank reaches a high point of 73m OD, before falling away to the east to a height of 69m OD. From here, the topography remains flat to the edge of Moor Road. Further east the leat base has an average elevation of 71.4m OD, and the area immediately south of the terminus lies at 69.4m OD (Figure 3)

3.2 Geology

- 3.2.1 The underlying bedrock is comprised of Edlington formation mudstone and sandstone, and the superficial deposits consist of Leen sand and gravel and alluvial clays and silts. (British Geological Survey 2015)

4 Historical and Archaeological Background

- 4.1.1 Papplewick is recorded as having two water mills and a mill dam in 1540 (Walker 1970, 231) and it is probable that the latter was located above Wark Mill, part of which still remains today to the north of Papplewick Lane (SK 547 505). The area of the former Walk Mill Pond still shows in the fields to the northwest of the Grange Cottage Woods.
- 4.1.2 George Robinson and sons probably took over the lease on the Walk Mill in the 1770s, which can be seen on Chapman's 1774 map of Nottinghamshire (Figure 4). In 1778, a new lease was made between the landowner Montagu and Robinson, allowing the latter to:

‘to make a Cut or Canal from the said Dam or River Leen to and for the use of a large building then erecting ... intended to be used or employed as a Mill for spinning of Cotton, Silk, Flax or Wool.’

This new mill was situated close to the present-day Grange Farm, south west of Grange Cottage Woods, today only its footings remain buried under grassland and gardens. Robinson's second mill, Top Mill, was built in 1782, along with new ponds (Top Upper Dam and Upper Dam), close to the parish boundary with Linby. This building was Robinson's smallest mill and, being castellated, was also known as Castle Mill (Walker and Sheppard 2011). The Middle Mill was also built at this time and had a small pond which was probably fed by water transferred via the leat system from Top Upper Dam. Forge Mill, which had a pond fed by the river Leen, dates from 1787. A second Grange Mill was built in 1790. This became known as New Mill to differentiate it from the existing Old Mill at the Grange. This

mill seems to have used the water from Top Upper Dam. The final mill to be developed, in 1794, was the Forest Mill at Bulwell (Walker, 2015).

- 4.1.3 The 1835 Sanderson map (Figure 5) and 1847 estate map, suggest that there was a holding pond confined within an embanked area in the Grange Cottages Wood section of the Moor Pond Wood Project Area. This pond may have acted as storage and a leat transferring water to the mill is known to have stood to the south of this site (Walker 2015). There is no clear evidence for a sluice and a continuation of water flow from this terminus.
- 4.1.4 What began as a simple water control and storage system in the 1770's appears to have quickly been altered and adjusted as additional demands were placed upon it. The system is estimated to have reached its maximum extent by 1830. It continued to supply water to Top Mill and Forge Mill but it is not known when specific areas of the system fell into disuse (Walker 2015).

5 Methodology

5.1 Aims and objectives

- 5.1.1 The main aims of the works within Grange Cottages Wood were:

To confirm that there was a sluice feature at the terminus of the leat

To establish the construction of the feature allowing comparisons to be made between the stonework of the two Dam Banks sluices that lie approximately 280m to the south

To establish the dimensions of the leat and the direction of water movement through the structure

To provide the local community with opportunities to become involved with the project by offering training in excavation, recording and surveying techniques to volunteers and by interpreting the structures uncovered and making this information accessible to all.

5.2 Methodology

- 5.2.1 The work in Grange Cottages Wood was carried between July 2011 and February 2015 by members of Trent and Peak Archaeology, the Friends of Moor Pond Wood, the Leen Valley Conservation Volunteers (LVCV) and volunteers from the wider community.
- 5.2.2 All work met with requirements and standards set out in Management of Research Projects in the Historic Environment Project Planning Note 3: Archaeological Excavation (MoRPHE PPN3) (English Heritage 2008), and the requirements and standards set by the Chartered Institute for Archaeologists (CIfA) in their Standard and Guidance for archaeological field evaluation (CIfA 2014a) Standard and Guidance for the collection, documentation, conservation and research of archaeological material (CIfA 2014b); Code of Conduct (CIfA 2014c) and Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives (CIfA, 2014d).
- 5.2.3 Trees located on top of the proposed excavation area were felled by the LVCV in a way that met with standard health and safety procedures.
- 5.2.4 The area of interest and the structures uncovered were entirely hand excavated using trowels and shovels. All features and deposits were recorded at an appropriate scale by

measured drawing and photography. Sections of excavated features were recorded at a scale of 1:10 or 1:20 as appropriate. Spot heights were recorded relative to Ordnance Datum.

- 5.2.5 The excavation area was approximately 9m in length north-south and 5m in width east-west long in total, encompassing the inside of the leat terminus, the sluice walls and part of the south facing slope beyond the structure; this was necessary to establish the true function of the brick culvert.
- 5.2.6 Features were located and levelled using either a Leica GSIS/CSIS GPS or EDM.
- 5.2.7 The location of any artefacts recovered in the subsoil or in features was recorded by context. All artefacts were treated in accordance with UKIC guidelines and First Aid for Finds (1998).

6 Results

6.1 Stone Sluice

6.1.1 Removal of the brown grey topsoil (0001) and stone rubble infill (0012) revealed two stone walls, [0003] and [0004], at the terminal end of the leat (Figure 6). Both walls were north-south aligned, and 23 courses of dressed grey Mansfield stone were exposed, with the potential for more courses below the pink clay (0005) that abutted both walls. The stones ranged in size from 80mm to 120mm in thickness and were bonded with a thin layer of cream white mortar. The walls both fanned out so that the space in between the two walls widened towards the top courses, however the walls are not symmetrical in their shape. There is no evidence that the two faces of the sluice continued beyond cross wall [0019] (Plate 1).

6.1.2 *Eastern Wall [0003]*

The eastern face of the sluice was observed over a north-south length of approximately 4m and an exposed height of 2.25m. The wall had been badly damaged above the tenth exposed course at the northern and southern extents where only 2.7m of the stonework remained (Plate 2). The damage to the north revealed that the stonework was cut, or reset into the bank of the leat. The damage to the south has been repaired with the application of a pink yellow clay (0005). The lower wall courses observed at the northern extent of the structure, show evidence of a return to the east suggesting here a step back into the leat bank (Plate 3). The profile of eastern wall was steeper than that of western [0004]. The lower courses were almost vertical. The face stepped back further at the north end of the structure than at the south, creating a funnel effect.

6.1.3 *Western Wall [0004]*

The western face of the sluice was 3.9 m in observed north-south length and 2.05m in exposed height. The northern extent of the stonework fanned out more considerably than the eastern face. There was the suggestion that the northern of wall [0004] returned to the west, however this is uncertain and may represent a continuation of a smaller east to west aligned wall [0010] of which only a small amount remained (Plate 4). The western face seems to have been tied into cross wall [0019] at its southern end. Five roughly hewn foundation courses of [0019], which are below a possible springer course for an arch [0023], continued along the alignment of the western face at a lower level. Courses further located higher up on the structure suggest that the western face was keyed in to the cross wall (Plate 5).

6.1.4 *Sluice entrance [0009] and [0010]*

Two low stone walls, were uncovered at the northern end of the sluice. Both walls were east-west aligned and were located within the central part of the structure, reducing the sluice aperture from approximately 2.5m to 90cm. The western wall [0010] had 7 remaining courses of dressed grey Mansfield stone, ranging from 70mm to 130mm in thickness. The eastern wall had 4 remaining courses ranging from 90mm to 130mm in thickness. It was clear that the eastern section of wall abutted the eastern face of the sluice [0003] and is not keyed in to it (Plate 6) This was not clear with the western wall [0010] as the relationship with wall [0004] had been lost due to localised damage (Plate 4)

6.1.5 Upon removal, the two walls are found to be resting on top of a large limestone slab measuring 78 x 108 cm [0011]. Excavation below this slab revealed a void containing timber fragments and iron nails (Plate 1).

6.1.6 During the excavation of the central area between the walls [0009] and [0010], a large amount of loose, roughly hewn stone rubble was removed, similar to deposit (0012). This collapsed stonework implies that these two walls were taller when they were first built, or that another feature, such as an arch or gate, was originally present.

6.1.7 *Cross wall [0019]*

A east-west aligned wall [0019], approximately 1.2m wide, was identified spanning the space between the two stone faces of the sluice [0003] and [0004]. Initially only a small section of intact wall was revealed on the western side of the sluice, with a demolished rubble infill (0012) spreading across the top of the culvert [0006] to the east side where the wall would have continued (Figure 6)

6.1.8 Once the rubble infill was removed however, more intact sections of walling were revealed on both sides of the sluice with stonework apparently keyed-in to the western face of the sluice. The southern face of this feature comprised roughly hewn stonework not as well built as the two main walls of the sluice with an absence of mortar between the stones. A line of seven mortared bricks were found sitting in a diagonal position on top of thinner courses of un-mortared stonework at the eastern extent of the feature, in alignment with the main stone faces of the sluice, suggesting a 'springer' course for an arch [0017] (Plate 7). This may be why there was no intact wall in the centre of the sluice. A similar course of bricks was located under the loose infill (0012) of the western side of the cross wall [0023], suggesting that the arch would have spanned a width of approximately 2m (Plate 8). Remnants of the arch itself [0013] and [0016] were visible in the north facing section of the rubble infill (0012) before it was removed (Figure 8). The shape and location of masonry [0013] in particular suggests that the arch would have been directly keyed-in to the western face of the sluice as both sets of stonework align (Plate 9).

6.2 Brick Culvert

6.2.1 The remains of a north-south aligned brick culvert [0006] were found in the middle of the two sluice faces, running parallel with them and continuing half way underneath the rubble of the cross wall [0019]. To the south, culvert [0006] seems to have been damaged at the same time as cross wall [0019]. The culvert measured 3.05m in observed length, and up to 118 cm in diameter horizontally and 92 cm in diameter vertically. The culvert had a sub-rounded cross section (Figure 9). The crown of the culvert was made up of bricks ranging in length from 245 mm to 455 mm, with a maximum width and depth of 153mm and 72mm respectively, although four courses in the upper half of the culvert were tapered (Plate 10). 35 courses were observed in total. The culvert would originally have continued north up to stone slab [0011], measuring a total of 4.6m in length, but the brick work has been removed, leaving only the construction cut [0008] in the underlying clay (0005). The remaining structure had also been damaged at the south end, leaving the base visible (Figure 7).

- 6.2.2 A pinkish clay (0005) was used to pack around and over the top of the culvert to a depth of 1.2m, and the bottom half of the culvert seems to have been set into this deposit. The clay abutted sluice walls [0003] and [0004], covering the exposed lower courses. This clay was also found in the eastern face of the sluice and seems to have been used to repair the damaged sluice face.
- 6.2.3 The culvert itself contained a red brown clay fill (0007) containing a high concentration of angular stones and pebbles
- 6.2.4 No further evidence of the culvert or any other structure was found beyond cross wall [0019] in the extended south part of the trench

6.3 Finds

- 6.3.1 A large number of finds were recorded from the topsoil and clay rich subsoils. Those important to the dating of deposits are noted here. All other finds have now been cleaned, processed and returned to the Friends of Moor Pond Wood for archiving.

6.3.2 North end of the sluice

An early example of edged pearlware (c. 1800) was retrieved from the subsoil (0002) of the leat edge, potentially suggesting a c.1790's date for the erection of the sluice

- 6.3.3 The topsoil and the subsoil from above the stone slab [0011] and walls [0009 and 0010] contained various intact bottles, dating to between 1880 and 1910. These deposits also contained fragments of leather shoes, saltglazed stoneware and white bodied earthenwares.
- 6.3.4 In the base of the leat, there were several specimens of intact (but disarticulated) shells of *Anodonta cygnea* (Swan mussel), a freshwater bivalve mollusc.

6.3.5 South end of the sluice

A higher quantity of finds were found to the south of the sluice and in the extension trench within deposit (0015), including large fragments of coarse earthenwares, brown salt glazed stonewares, porcelain, yellow ware and white bodied earthenwares, all fabrics dated to the late 18th to the early 20th century.

- 6.3.6 A piece of slate and a 4mm thick piece of glass were also revealed within the rubble and subsoil deposit (0015)

7 Discussion

7.1 Stone Sluice

- 7.1.1 It is possible that the stone sluice was built in the 1790's, a date supported by some of the artefacts found in the subsoil (0002) and (0021) on the leat banks. Such a date would coincide with the erection of the 'New Mill' at the Grange.
- 7.1.2 The profile of the stone faces suggests that the sluice was built to channel water from the north to south aligned leat, to a central point, such as a gate. This is similar in design to the Dam Banks South Sluice (Walker 2015)
- 7.1.3 The cross wall and underlying arch are potentially of the same date as the sluice walls, as they seem to be keyed into the western face of the sluice. The roughly hewn, dry-stone south face of the cross wall suggests that an earthen bank may have abutted the stone

work, to prevent damage from a high water level within the leat. This is also implied by the lack of evidence to suggest that the sluice extended further north than the cross wall.

- 7.1.4 The absence of a large part of the eastern sluice wall suggests that, at some point, this part of the structure was destroyed and then repaired with pink clay. It cannot be said as to whether the damage was accidental, when this damage occurred, or whether it was associated with the collapse of the cross wall [0019].

7.2 Brick Culvert

- 7.2.1 A brick culvert was built to run underneath the cross wall. It is possible that it was built after the cross wall collapsed, so that water could continue to flow through the structure (Plate 11). The cross wall could have then been rebuilt over the top of it, with further debris and soil and placed on top of the culvert to strengthen and support the original sluice walls (Walker 2015). However, the presence of the apparently keyed-in arch masonry [0013] in the rubble infill might suggest that it is unlikely that this rubble was removed to build the culvert, and then redeposited. It is possible that the sluice was built whilst the cross wall and arch were still standing and clay was packed in around the culvert and underneath the arch to make the entire structure narrower and watertight, potentially speeding up a dwindling flow of water (Figure 8).
- 7.2.2 The culvert and sluice are not contemporary but the mixed use of both brick and stone within the arch and the northern walls [0009] and [0010], suggests that these features are dated to no more than 50 years apart.
- 7.2.3 There is no good evidence for a control mechanism for either the stone sluice or the brick culvert, however the large slab [0011] at the north of the main structure covering a potentially timber lined slot could have formed the sill of a control gate. The dry stone walls overlying the slab, although crude, could have supported such a mechanism, which would have guided water into the brick culvert. A control mechanism at the northern end of the sluice would have helped to control the pressure coming down the leat (Walker pers comm. 2015).
- 7.2.4 Alternatively culvert may actually be a much later feature, providing water to a pond to be the header for a fountain at the Grange. Although, it may simply have been modified to perform that function, however as yet there is no evidence for this.

7.3 Demolition

- 7.3.1 The destruction of both ends of the culvert [0006] and the cross wall [0019 and 0024] seem to be broadly contemporary. However, the demolition rubble (0012) of the cross wall, containing remains of the arch and numerous pieces of loose and mortared stonework, seems to be contained within the cross wall area, and does not extend further north than the remaining intact crown of the brick culvert.
- 7.3.2 Extended excavations further south revealed more structural rubble (0015) spread down the south slope of the leat terminus, this might indicate another stone structure, or a control point, further down the leat beyond the sluice. The partial demolition of the entire sluice and culvert structure suggests that only the masonry visible through either side of the leat bank was destroyed and buried under a firm brown red silt clay deposit (0021).
- 7.3.3 The date of the demolition is unclear, however late 19th century bottles found in the silty subsoil (0002) of the leat floor to the north of the sluice, suggest that there may have still been water present at this point, and potentially the brick culvert and stone sluice to channel it. 19th century finds mixed in with the rubble spread in the extended excavations, also suggest a date of the late 19th century as the potential point of demolition and burial of the structure

8 Conclusions

8.1 Additional work in the Grange Cottage Woods

8.1.1 Possible future work in this area now includes:

- 8.1.1.1 Undertaking a more detailed examination of the leat, to establish its true profile at varying points north of the sluice.
- 8.1.1.2 Undertaking a detailed examination of the slope at the southern end of the sluice to establish how the water got to the mill
- 8.1.1.3 Undertaking more research into the fountain at the Grange to assess whether it is feasible that this structure was used to provide the head of water for a fountain.

8.2 Conservation

- 8.2.1 The sluice and culvert structure is to be conserved and is to be made accessible to the public by the Friends of Moor Pond Wood, who are currently felling any unsafe vegetation and establishing a new path system around the structure.
- 8.2.2 Prior to the conservation, Trent & Peak archaeology have also undertaken a laser-scanned survey and structure from motion (SFM) photogrammetry of the structure (Strange-Walker and Townsend 2015), the images of which can now be used for accurate measurements and for interpretation.
- 8.2.3 Interpretation panels will also be erected, to disseminate the final results to the general public.

8.3 Community engagement

- 8.3.1 The Friends of Moor Pond Wood and member of the wider community have been excavating the sluice for over three years. Approximately 50 volunteers have been involved at some stage over the excavation, and have learned new skills, including excavation, finds processing and interpretation. The project has also featured within the Council for British Archaeology's (CBA) Festival of Archaeology, using displays and tours of the site to help local people become more aware of their local heritage.
- 8.3.2 It is hoped that the conservation of the structure will allow it to remain an interesting feature of Moor Pond Woods for many years to come.

9 Acknowledgements

- 9.1.1 Thanks are extended to the Friends of Moor Pond Wood and the Leen Valley Conservation Volunteers, led by Lee Scudder, for their invaluable assistance with the excavation. Thanks are also extended to Stephen Walker for his support with the interpretation and evaluation of the site, and to Richard Sheppard and Gareth Davies who managed the project.

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Plates



Plate 1: Plan shot of sluice and brick culvert prior to the remove of the cross wall rubble (0012) and the excavation of the cut of the culvert [0008], stone slab [0011] in the front of shot. Looking south (S. Walker, 2012)



Plate 2: Eastern wall of sluice, partially destroyed. Pinkish clay has been used to fill this gap. Looking north east (L. Binns 2015)



Plate 3: Eastern wall of sluice, the northern end, with clearly visible return. Looking south east (L. Binns 2014)



Plate 4: Western wall of sluice, the northern end, where the evidence of the wall returning is unclear. Looking south west (L. Binns 2014)



Plate 5: Western wall of sluice, the southern end, where the sluice face seems to be keyed in with the cross wall. Looking north west (L. Binns 2015)



Plate 6: Dry stone northern wall [0009] abutting the eastern wall of sluice. Looking south east (L. Binns 2015)

Plate 7: Eastern end of cross wall [0024] above remains of springer course of brickwork [0017]. Looking north east (L. Binns 2015)



Plate 8: Western end of cross wall [0019] above remains of springer course of brickwork [0023]. Looking north west (L. Binns 2015)



Plate 9 (below): Cross wall infill (0012) before its removal. Remains of the arch are visible in section. Looking south (S. Walker 2012)





Plate 10: Profile of the culvert. Looking south (S. Walker 2012)



Plate 11: The brick culvert running parallel to and the same length as the sluice walls. Looking south east (S Walker 2015)

Figures

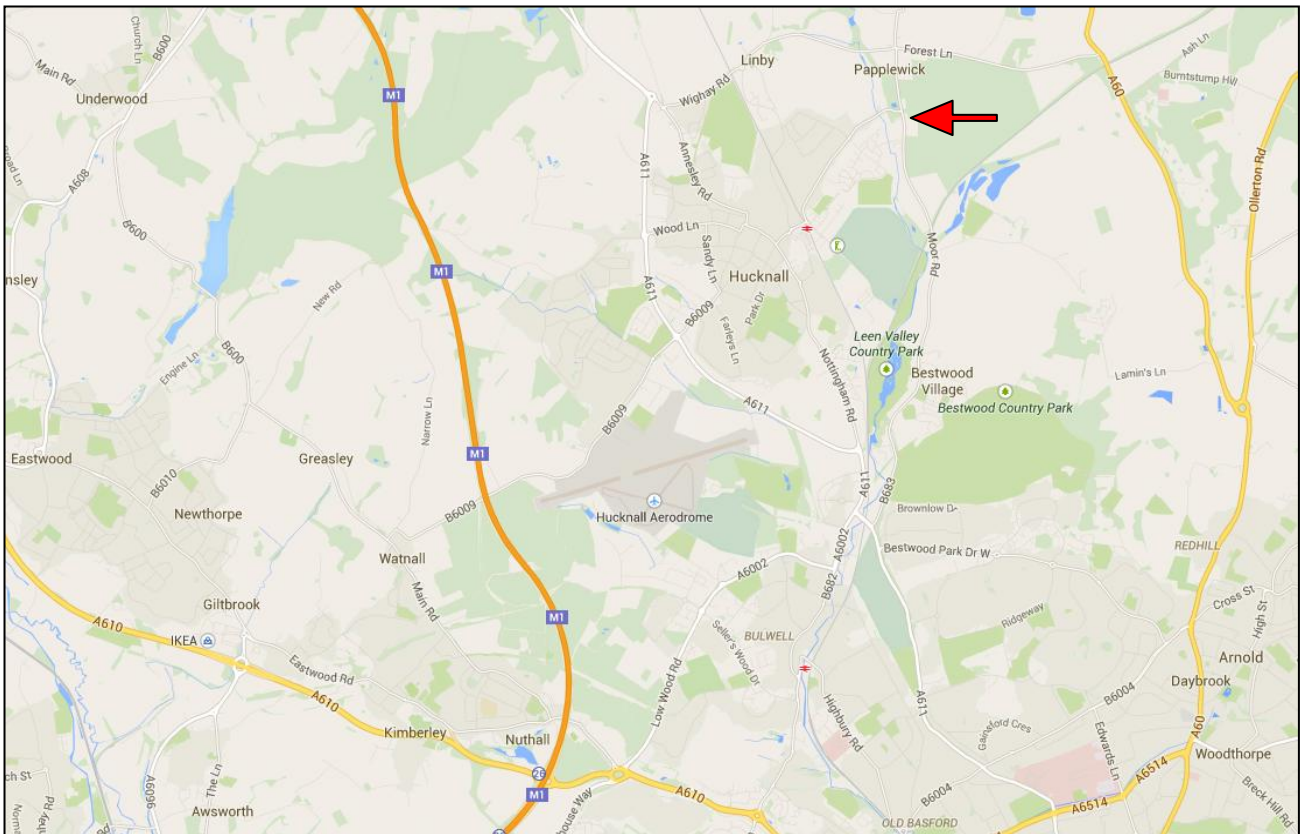


Figure 1: Location map of Grange Cottage woods, Papplewick, Nottinghamshire. (Ordnance Survey map reproduced with the permission of Her Majesty's Stationery Office © Crown Copyright License No. AL 100020618).

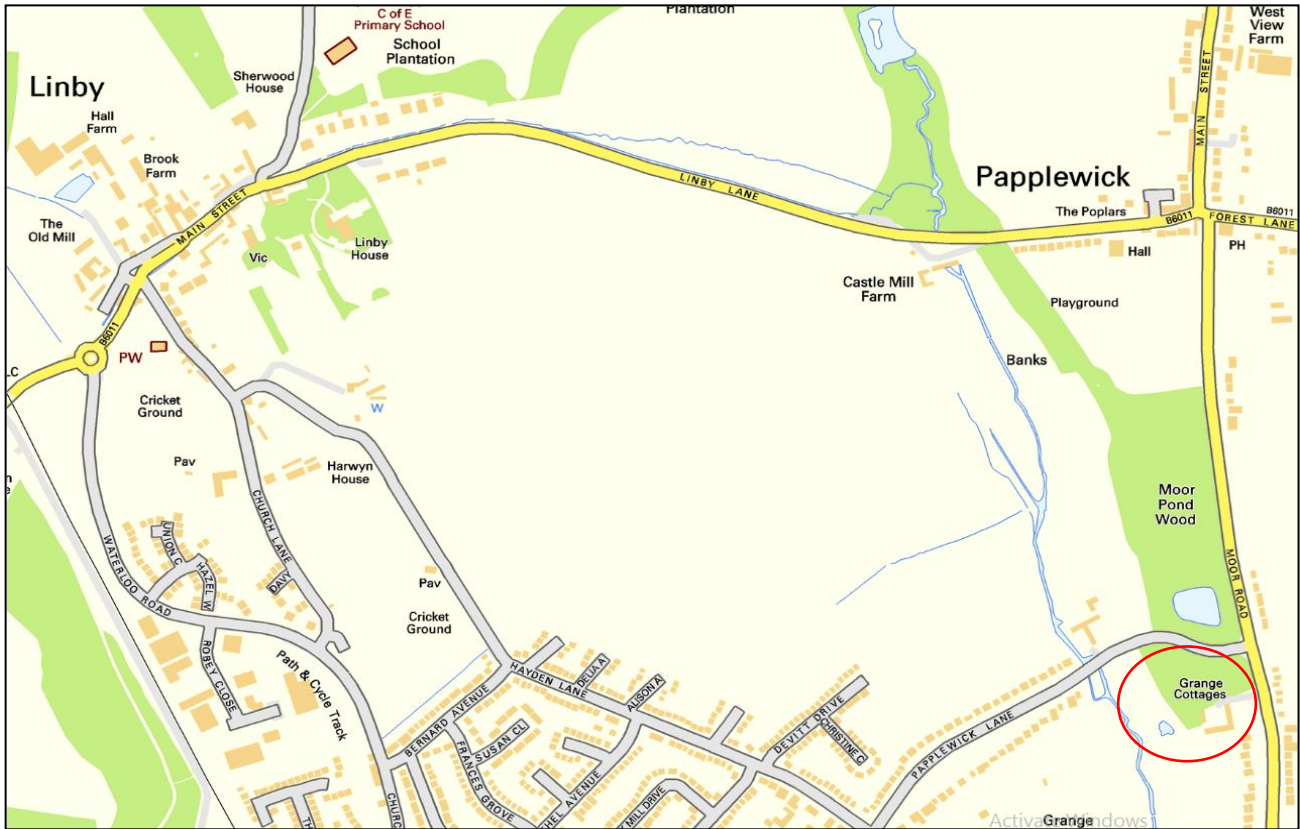


Figure 2: Location of Grange Cottage woods within the Moor Pond wood area (Ordnance Survey map reproduced with the permission of Her Majesty's Stationery Office © Crown Copyright License No. AL 100020618).

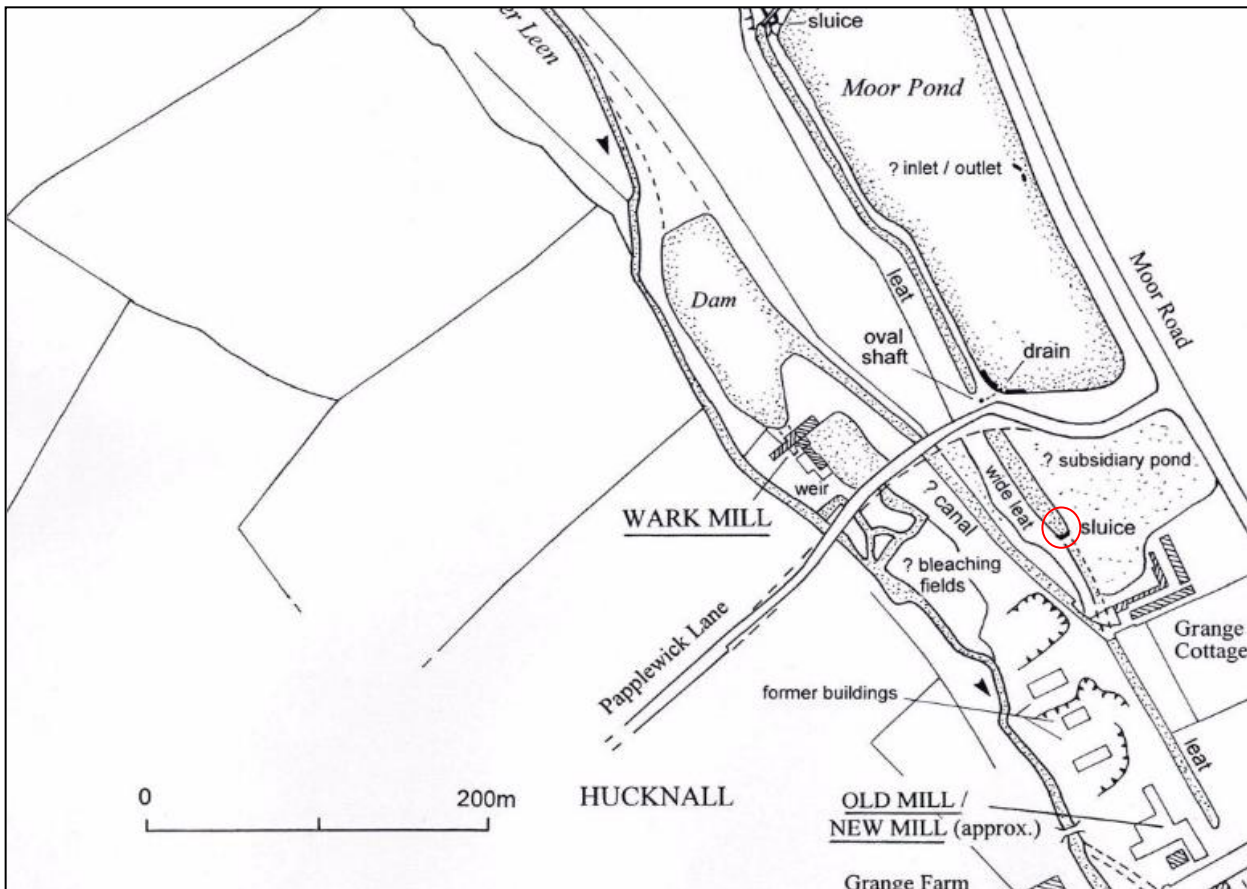


Figure 3: The location of the Grange Cottage Woods sluice, in relation to the mills and associated features in the area in the late 18th Century. Scale 1:4,000. (After Sheppard, 2011).

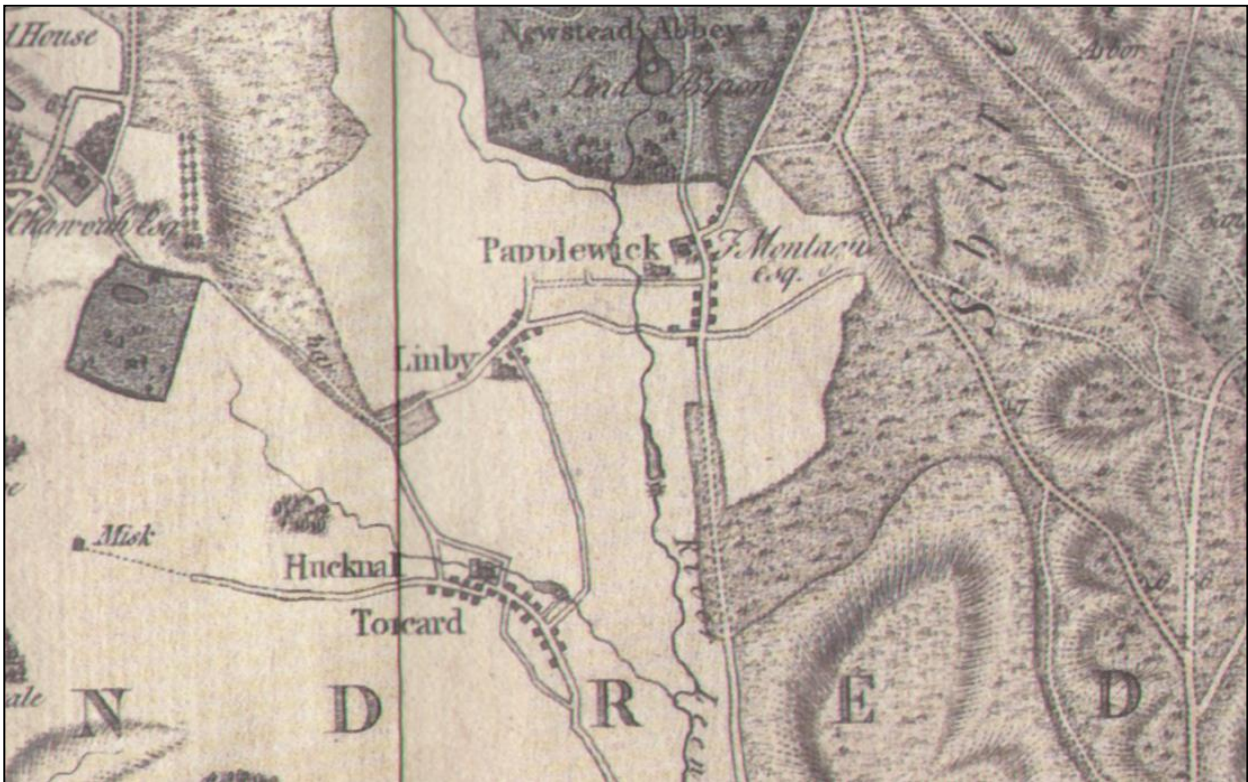


Figure 4: Chapman's map of Nottingham 1774. A mill and associated pond can be seen south of Papplewick on the River Leen. Not to regular scale.

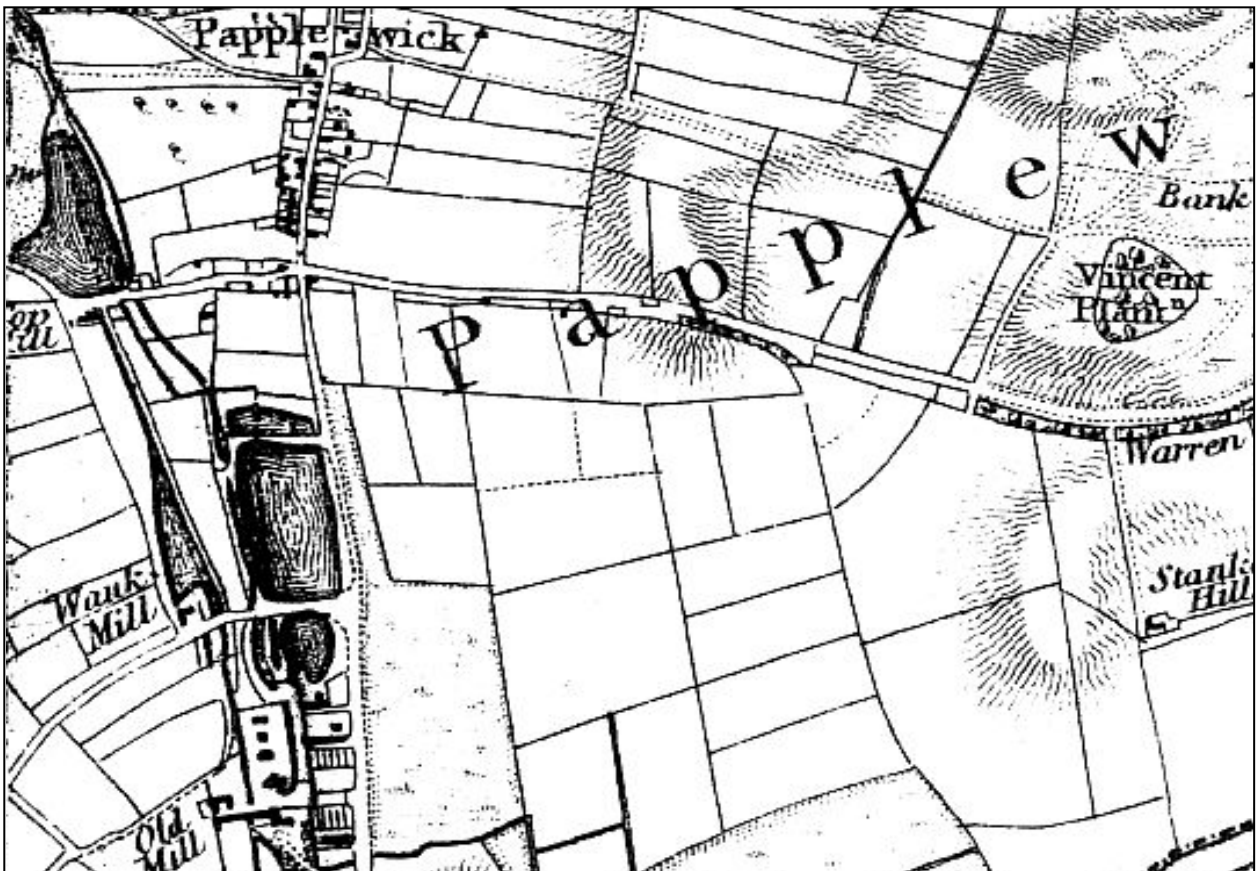
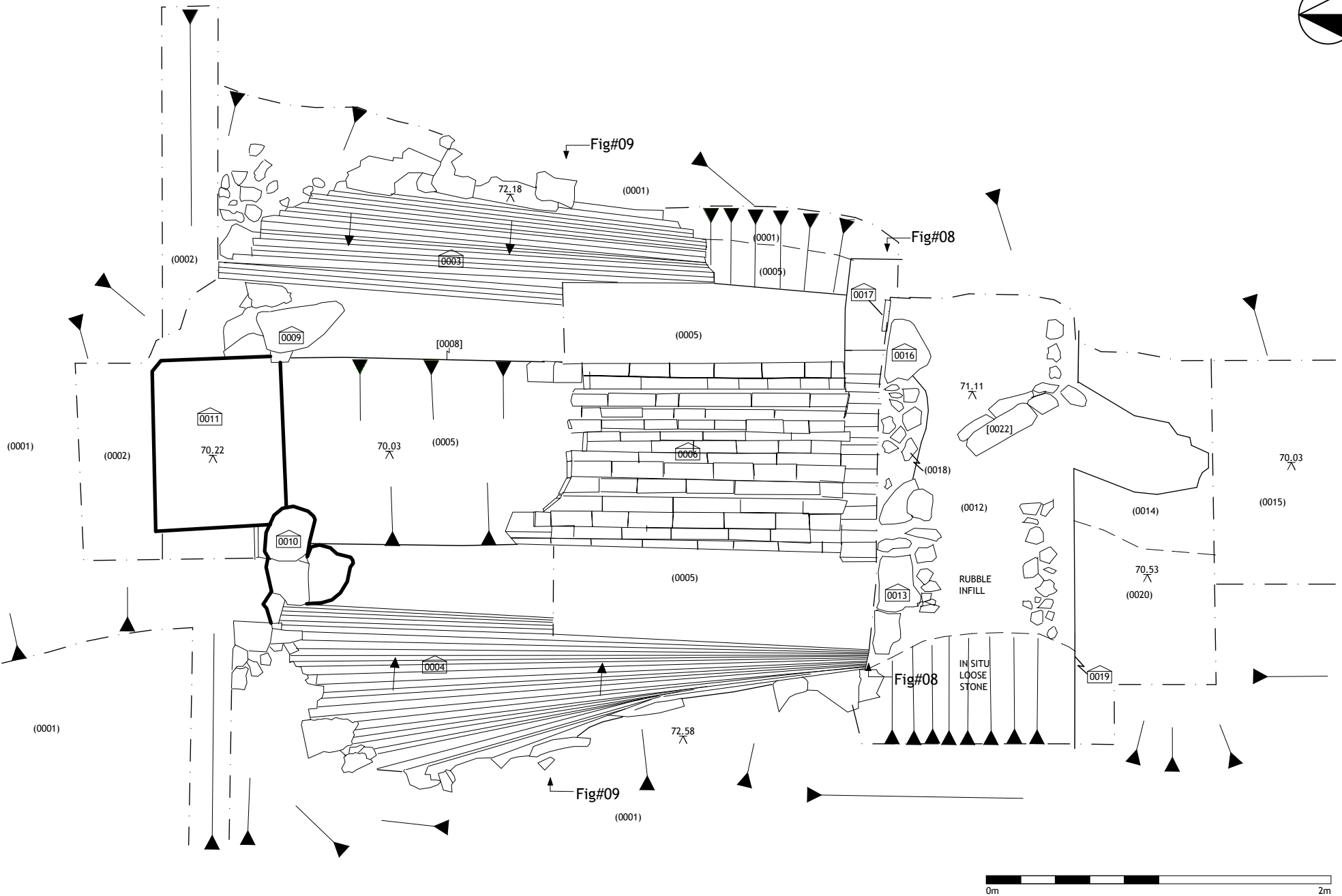


Figure 5: Sanderson's map of Nottingham 1835. The terminus of the leat and the holding pond are clearly visible. Not to regular scale.



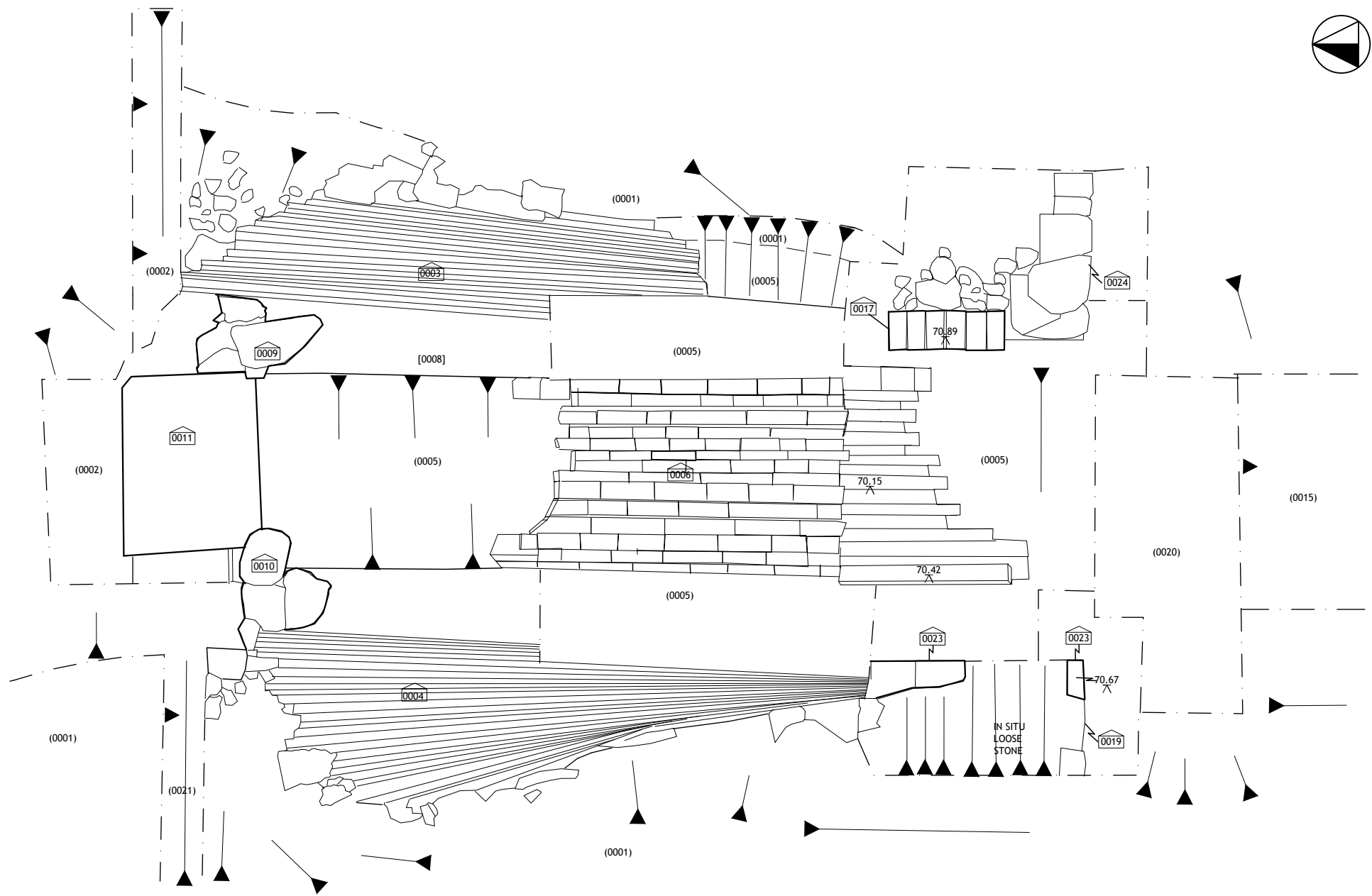


Fig. 8

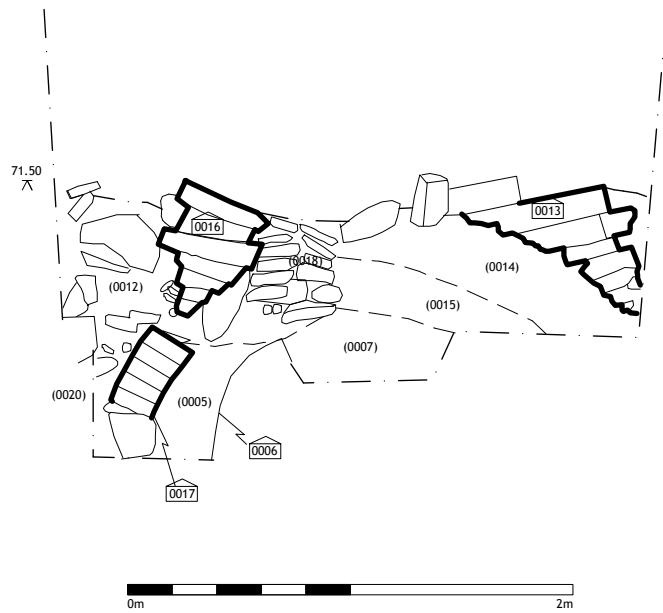


Fig. 9

