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A TOPOGRAPHICAL SURVEY OF DAM BANKS, MOOR POND WOODS, PAPPLEWICK, NOTTINGHAMSHIRE

The University of Nottingham

A topographical survey of Dam Banks, Moor Pond Woods, Papplewick, Nottinghamshire

A report for Friends of Moor Pond Woods

by
David J. C. Walker
and Richard Sheppard

OS Grid Ref. SK 5464 5095 (centred)
TPA Project Code: PMP.5
February 2011

Trent & Peak Archaeology
University Park
Nottingham
NG7 2RD

Tel: 0115 951 4823
Fax: 0115 951 4823
E-mail: TPA@nottingham.ac.uk

SUMMARY

- In early 2009 Trent & Peak Archaeology (TPA) was commissioned by the Friends of Moor Pond Woods, Papplewick to conduct a topographic survey of the narrow strip of woodland known as Dam Banks. It is situated north of Moor Pond Woods, to the south side of Linby Road and just east of the River Leen. Most of the area lies within Papplewick parish.

- The area surveyed is roughly rectangular in shape, measuring 218m north-west to south-east and 35-45m wide, and centred at NGR 5464 5095; its east side is defined by a leat with a footpath running alongside it. The area is distinguished by a series of irregular shaped banks or platforms, several clear breaks of slope, a number of hollows that often retain standing water and a curving gully towards the south-east end. The earthworks, although irregular and variable, appear to mark a series of 'compartments' running along the east side of the area. The area was surveyed between March-July 2009 by TPA staff using a Leica TCR705 total station.

- In 2005 Nottinghamshire Community Archaeology project staff excavated several 1m square test-pits in the Dam Banks area. This concluded that a drain running along the west side of the area was probably cut / re-cut in relatively modern times and that as mollusca associated with standing water were absent from the hollows this suggested that there had been no long-term water content.

- The name *Dam Banks* first appeared on the Second Edition 6 and 25 inch scale Ordnance Survey maps of 1900. There is nothing showing on earlier maps, within the literature about the Robinson enterprises or documents from the period that relate to Dam Banks and provide clues as to how it might have been used. It remains unclear whether or not the Dam Banks area was deliberately designed for a particular function and what that function could have been.

- Options for its use include being intended for the bleaching of linen. The area around Dam Banks featured a number of cotton mills and a complex water management system was created between c.1778-94 by George Robinson. He was initially a bleacher, who arrived in the Bulwell area in 1738 and not long afterwards took over the lease of Walk Mill, just south of Dam Banks. In 1771 Robinson was still principally described as bleacher. The area around Walk Mill (perhaps including Dam Banks) was certainly used for crofting, a practice whereby fabrics were spread out on grassy areas for weeks at a time and generallly kept damp. However, Dam Banks appears to have been contemporary with (or later than) the adjacent leat and this probably dates from c.1780. By this time the traditional Dutch crofting method was dying out following the discovery that sulphuric acid and chlorine gas could speed up the bleaching processes. Modern specialist bleaching works were set up in Basford between 1780-85.

- Alternative possibilities include 'hemp pits,' which are recorded in the tithe award for Linby close to the River Leen. The potentially damp conditions within most of the Dam Banks could also have been used for growing of willows for spiling, the revetting of banks (such as canal banks) and steep slopes by using stakes with willow poles woven between them. The area may have served no other purpose than to act as a holding area for water when the leat or nearby Upper Dam threatened to overflow after heavy rains and affect Linby Lane. The supposed earthworks within Dam Banks may be the result of dumping of soils from either the initial digging of the adjacent leat, or from later dumping when housing spread along Linby Lane. At present, Dam Banks remains something of a mystery.

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D. J. C. Walker and R. Sheppard

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1. INTRODUCTION

In early 2009 Trent & Peak Archaeology of the University of Nottingham was commissioned by the Friends of Moor Pond Woods, Papplewick, to conduct a topographic survey of the narrow strip of woodland identified as 'Dam Banks' on the Ordnance Survey 1:10,000 map (Figure 1). This is situated north of Moor Pond Woods, to the south side of Linby Road and just east of the River Leen. The woodland is west of the village of Papplewick and the parish boundary with Linby runs through it.

The area surveyed is roughly rectangular in shape, measuring 218m north-west to south-east and 35-45m wide, and centred at NGR 45464 35095. The area is distinguished by a series of irregular shaped banks or platforms, several clear breaks of slope, a number of hollows that often retain patches of standing water and a curving gully towards the south-east end. The west side of the area is marked by a hedge and a drainage channel and its east side by a footpath running alongside a leat. The earthworks as such, although irregular and variable appear to mark a series of 'compartments' running along the east side of the area.

The survey work was carried out over three days in late March and early July 2009, in a short window between the clearance of brambles and invasive tree species by the Friends of Moor Pond Woods, and the flowering of the bluebell banks.

2. HISTORICAL BACKGROUND

The *Moor Pond Woods Project* is a Local Heritage Initiative (LHI) grant-aided scheme, set up as a millennium project by Papplewick Parish Council in 1999. Its aim has been to enhance the largely wooded area between the west side of the village and the River Leen for local recreational use, for nature conservation and also as an educational resource as it contains relict features dating from the Industrial Revolution that include earthworks of leats, silted-up former millponds and sluices, all parts of a complex water management system designed to power a series of cotton mills built by George Robinson alongside the Leen. Robinson was first attracted to the area by the Leen's soft pure water being especially suitable for bleaching, initially for linen. He went on to build six cotton mills between 1778-94, together with a sophisticated water supply system to ensure sufficient power could be derived from a modest river. The system of millponds and leats may have developed in stages as more mills were built and as concerns over water supply grew.

Papplewick is recorded as having two water mills and a mill dam in 1540 (Walker 1970, 231) and a good case can be made for the latter having been 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

north. In 1778 a new lease allowed Robinson '*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 (which was later enlarged) was situated close to present-day Grange Farm, but now only its footings remain buried under grassland and gardens. Robinson's second mill, Top Mill, was built, along with new ponds (Top Upper Dam and Upper Dam), close to the border with Linby. This building was Robinson's smallest mill and being castellated was also known as Castle Mill. Dam Banks is situated close to this mill and just below the now the infilled Upper Dam.

Trent & Peak Archaeological Unit was commissioned to produce a desk-based study of the mill sites and the water-supply system and a Stage 1 report was submitted to the Project's Steering Group in 2001. A Stage 2 field survey in 2003 involved some detailed mapping of those parts of the water management system not already covered. Since 2002 fieldwork has been carried out around Moor Pond by volunteers from the Friends of Moor Pond Woods, scouts, Air cadets and the Leen Valley Conservation Volunteers. Several stone-built sluices have been uncovered and recorded, and in one instance restored as a feature. Other wall restoration has taken place at the south-west corner of Moor Pond. Close to this, a curious brick-lined drain has been explored and stabilised, since which other stone walling facing the north side of Papplewick Lane has been uncovered and also recorded (report forthcoming).

Although the Stage 2 survey extended some distance, from the top end of Upper Dam at the northern extreme, to Grange Farm at the southern end, the area known as Dam Banks was only superficially covered. Only a single terrace, a subsidiary ditch from the nearby leat and a lower drainage channel were measured in (reproduced as Fig. 2). It was later decided that this area, with its curious series of earthworks, should be the subject of a more detailed survey in the hope that this might help explain how the area was once used.

3. METHODOLOGY OF SURVEY

The topographic survey was undertaken by Panagiota Markoulaki and Dr David Walker of Trent & Peak Archaeology. The team used a Leica TCR705 total station with a prism reflector to conduct the survey. Nine intervisible stations were located around the wood, and approximately 2000 survey points were recorded around the site. Survey points were recorded along the tops and bottoms of visible features, and profiles were recorded across those features. The survey was downloaded and processed using Leica Survey Office and LISCAD software, and the resulting CAD file was further processed in AutoCAD 2009. Surfaces were lofted between the survey points, resulting in the surface plan shown as Figure 3. From the raw survey data a traditional hachured plan was also created (Fig. 4), together with a simplified contour plan (Fig. 5).

4. SITE DESCRIPTION

The area of Dam Banks was first looked at during the site survey of 2003 when one of a number of measured profiles was included at a central point of the area, running from the east bank of the River Leen up to the leat marking the east side of the Banks area (Fig. 2, profile B in the 2003 report). When surveyed, there was found to be a drop of 1.2m from the current base of the leat to the drain running along the west border of the area marking the west (from O.D. 72.7m to 71.5m). Whilst the west part of the profile crossed a gently sloping arable field by the river, the Dam Banks area showed up as being relatively flattish although distinguished by a marked rise between the western and the eastern parts (from 72.0m to 72.5m), and then a second marked rise up to the footpath running alongside the leat (at 73.5m).

The positions of trees in the Dam Banks area were surveyed in by Friends of Moor Pond Woods between 2003-08 and a resulting plan of these included the most distinct aspects of the varied terrain found in the woods (Walker 2008). In 2005 members of the Nottinghamshire Community Archaeology project excavated several 1m square test-pits in the Dam Banks area down to recognised natural mudstone. These included several within what are best described as hollows and another in the west drain. The resulting report concluded that the drain was probably cut / re-cut in relatively modern times. Mollusca associated with standing water were absent from the hollows, suggesting no long-term water content. The report concluded that the area may have been used for temporary retention of water for bleaching, drying or washing purposes associated with the Robinson's mills, or alternatively, may have been borrow pits associated with the construction of his water management system (ibid.).

5. INTERPRETATION

The name *Dam Banks* first appeared on the Second Edition 6 and 25 inch scale Ordnance Survey maps of 1900. As most of the wooded area lies on the east side of the parish boundary within Papplewick it is not shown on 'A Plott of the Lordship of Lynby,' the earliest known map of the area from 1692, nor on the Linby tithe map of 1841. On the latter, the field to the west was recorded as Pickle Bottom, an area used for arable. No tithe map is known to survive for Papplewick. On another map of Linby dated to 1847, parts of which appear in Greatrex's article of 1986 (see bibliography below), the area between the River Leen and the leat is shown as one open area with no earthworks or water indicated and the area is unnamed; the present whereabouts of this map are unknown. There is also nothing in the literature about the Robinson enterprises or documents from the period that relate to Dam Banks and provide clues as to how it might have been used.

The Dam Banks area is about 2 acres in size and it would appear on plan (see Figure 6) to be fit with and be integral to a zone of reservoirs, ponds, leats and

other features in the landscape that ran between Top Upper Dam and Old Mill / New Mill near the present-day Grange Farm. However, it remains unclear whether or not the Dam Banks area was deliberately designed for a particular function and what that function could have been. The site may not have been unique as there is reference in the Papplewick parish rate survey of 1812 to *Slater's meadow with banks* at Lower Mill Dam. Several options for Dam Banks are discussed below.

George Robinson

George Robinson's earliest business interest with the River Leen was when he arrived from Scotland in about 1738 and commenced bleaching linen textiles near Bulwell, an activity that had been carried out by hosiers in Nottingham since at least the 12th century. Robinson took over the lease of another existing mill, Walk Mill, just south of Dam Banks. Robinson is likely to have used the lands around Walk Mill as bleaching fields, perhaps extending northwards to include the area of Dam Banks. The name *Walk* is itself of interest as it occurs at other early mill sites such as on the Rivers Don and Sheaf, and is an alternative name to Bleach Mill Farmhouse west of Kildare in North Yorkshire.

In 1771 Robinson and his second son Joseph were principally described as bleachers and in 1783 George was described as a merchant, thread manufacturer and bleacher; he retired from bleaching a few years later (Murfet 1991, 351). During the 1770s the use of cotton was threatening to supersede that of linen and the Robinsons decided to move into cotton spinning in Nottinghamshire. In 1778 George Robinson was building the first of a series of large industrial scale cotton mills near present-day Grange Farm (the so-called *Old Mill*). Within about six years he had also built Top Mill (*Castle Mill*), which was powered by two newly created reservoirs or dams, and four other mills (including an expansion of Old Mill). The mill building was accompanied by the construction of a complex system of leats and reservoirs for storing water and releasing it through sluices as and when required.

Bleaching

The general bleaching method used at this time was described as Dutch in origin. During the Middle Ages the Dutch perfected the bleaching of fabrics in a process called crofting, whereby fabrics were spread out in large fields for maximum sunlight exposure. The practice quickly spread throughout Europe, and *bleaching fields* were documented in Great Britain as early as 1322. In this process the fabrics were soaked in a lye solution for several days, then "bucked" or washed clean. The fabrics were then spread out on the grass for weeks at a time and generallly kept damp. This process was repeated five or six times until the desired whiteness was achieved. Next, the fabric was treated with sour milk or buttermilk, and again bucked and crofted. This method was lengthy and tedious, and it monopolized large tracts of land that could have been used for farming. It was considered that the soil of the bleaching field should be gravelly or sandy so that water might pass quickly through it, and that the heat might be increased by the reflection of the soil; the success of the operation depended on the mutual

action of heat and evaporation. The River Leen was favoured for this, having pure soft water derived from the adjoining streams and springs, and from flowing through light soils.

Until the year 1787 little further alteration was made in the process of bleaching. However, in 1756 scientists found that dilute sulphuric acid would work better than buttermilk and the time required for the bleaching process was greatly reduced. An even more dramatic improvement in bleaching technology resulted from the discovery of chlorine in 1774 by Swedish chemist Scheele, and the French chemist Berthollet then discovered the gas's effectiveness as a bleaching agent. The use of chlorine gas was first introduced into the neighbourhood of Glasgow, and into Lancashire; by the end of the 18th century it had spread elsewhere. By its application bleaching could be performed in a few hours and in a much smaller space (including specialist drying rooms), whilst the old process required the exposure of cloth over hundreds of acres of land and used up valuable farming land. Specialist bleaching works were set up in Basford between 1780-85.

Although the general processes involved in the Dutch method of bleaching are understood, how this was applied in the landscape is not generally known. There are few prints from the time which show bleaching fields with cloth laid out. These fields are generally believed to have been close to watercourses for both the supply of water and for the damp atmospheric conditions close to them. Light, undulating land was preferred. An area of land just south of Walk Mill is similar in character to this and could well have been so used. There is no supporting evidence, as yet generally known about, to suggest that efforts were made to deliberately create earthworks to somehow assist the process. The amount of space required and the economics of the long bleaching process would suggest otherwise.

The features at Dam Banks include what may have been a feed or overflow channel from the main leat on its east side. The site's general appearance and layout suggests it is either contemporary with this leat or later in date, indicating a date within the late 1770s (when Robinson was starting to create his mill and water management system) or later. By this time potential developments in the bleaching process were probably known about and experimentation may have been taking place. However, there is no record of bleaching having occurred, or specialist buildings that may have been so-used, having been at Top Mill, the closest mill to the site.

Alternative possibilities

So-called 'hemp pits' are recorded in the tithe award for Linby, areas close to the River Leen where hemp was evidently grown in damper, sunken areas. Although few traces of these now show where they are recorded to have been, due to modern farming having obliterated them, the possibility that Dam Banks is a survival of this within Papplewick parish cannot be ruled out.

Although there are no records of osier beds for growing willows in Linby parish for use in basketry, potentially damp conditions such as found within most of the Dam Banks area (with water made available and controlled from the leat) might have been conducive to some limited specialist growing of willows. Osier willows grow fast and prolifically and produce long pliable poles that were also used in the revetting of banks. Stakes with willow poles woven between them would be driven into parts of collapsing or deteriorating banks, a process known as spiling. It was commonly done to repair canal banks. Robinson's water management system included long stretches of leats and extensive sloping around Moor Pond so spiling may have been practiced here too. The possibility that Dam Banks was a willow coppice, with a potential to grow tens of thousands of willows within its two acres, cannot be fully discounted.

Finally, the area may have served no other purpose than to act as a holding area for water when the leat, running down from Top Upper Dam, threatened to overflow after heavy rains and affect Linby Lane. There might be archaeological evidence close to Linby Lane or at the north end of Dam Banks of a separate water inlet either off the leat or directly from Upper Dam. The supposed earthworks within Dam Banks may be the result of dumping of soils from either the initial digging of the adjacent leat, or from later dumping when housing spread along Linby Lane. However, whether or not further archaeological investigation could help resolve the question of how Dam Banks came to appear as it does today remains uncertain. At present Dam Banks remains something of a mystery.

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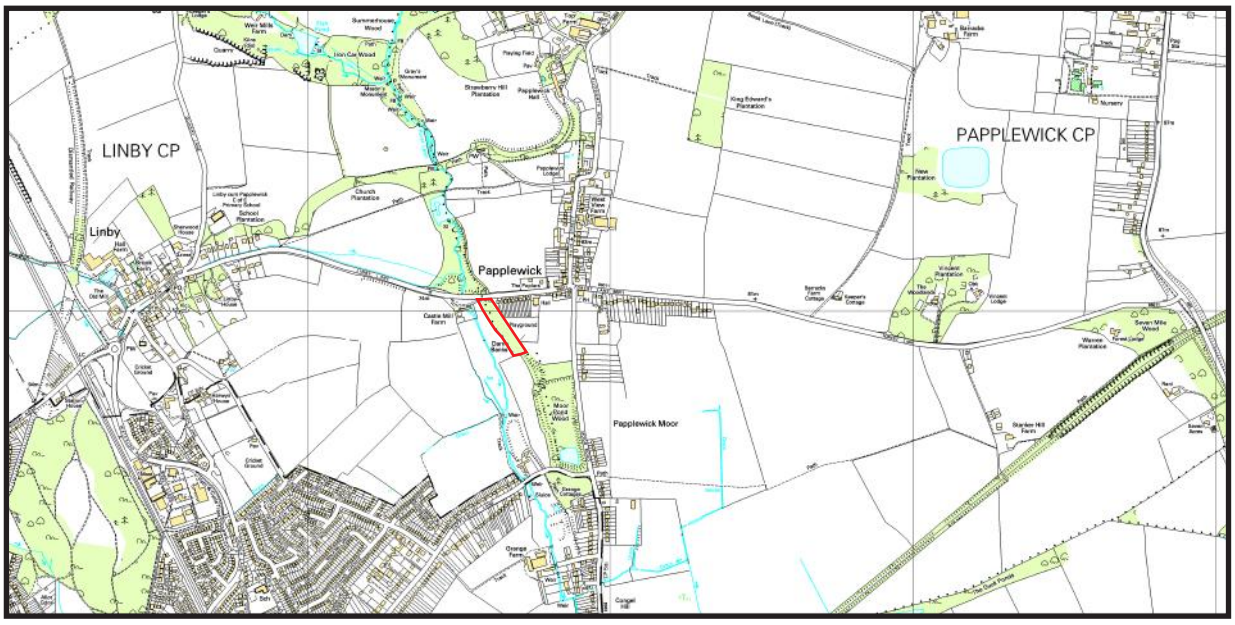
ILLUSTRATIONS



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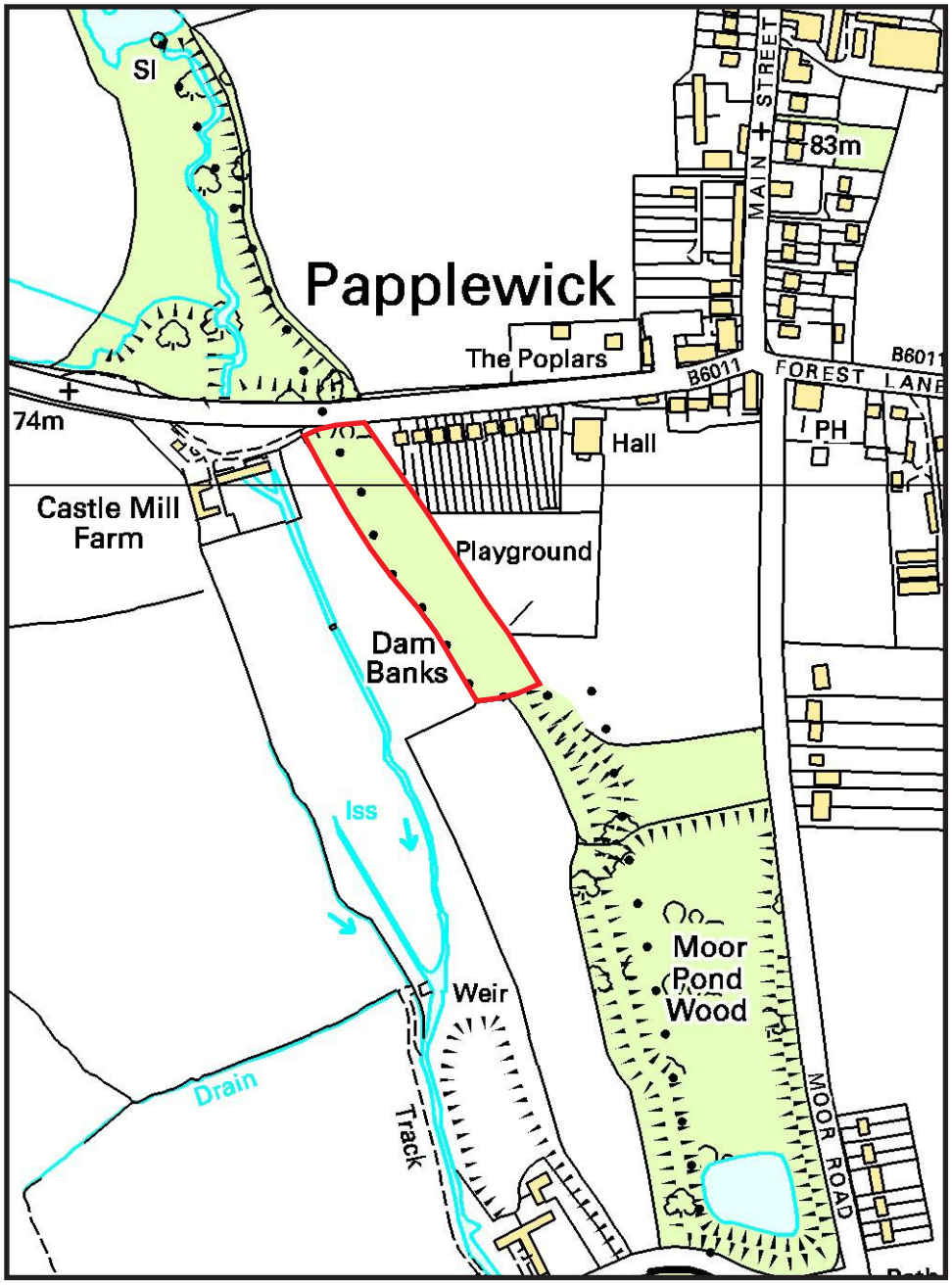
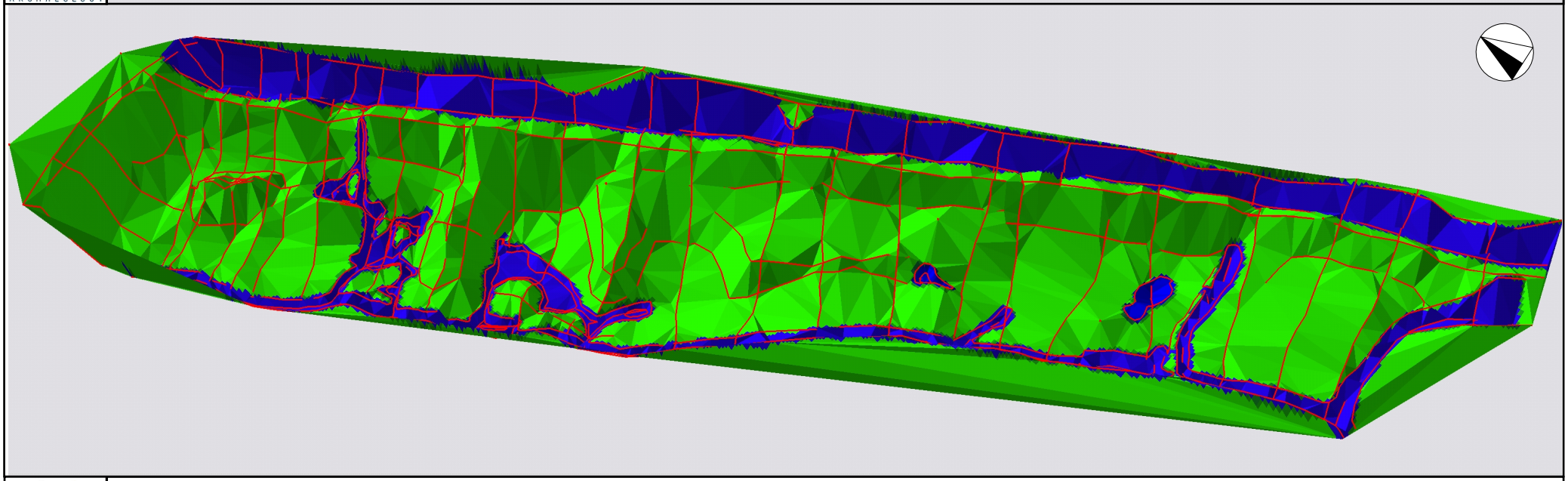


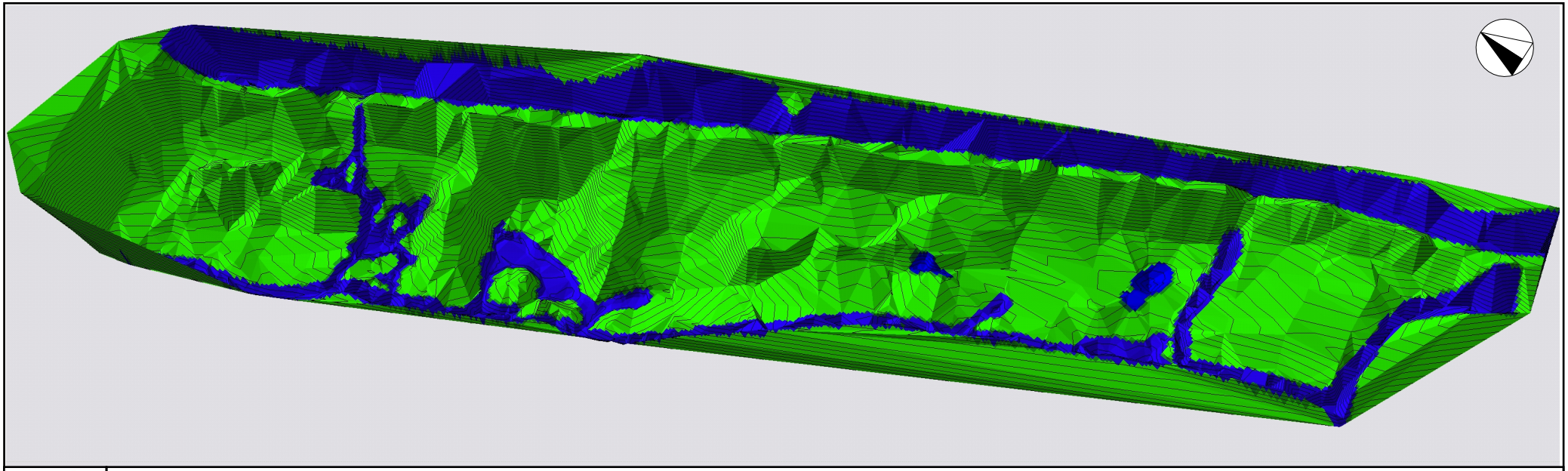
B

Figure 1: A: Location of Dam Banks in relation to the villages of Papplewick and Linby, north of Nottingham. Scale 1:10,000. B: Location of Dam Banks in relation to the River Leen, Moor Pond Wood, Castle Mill, Wark Mill (bottom) and the centre of Papplewick. Scale 1:2000.

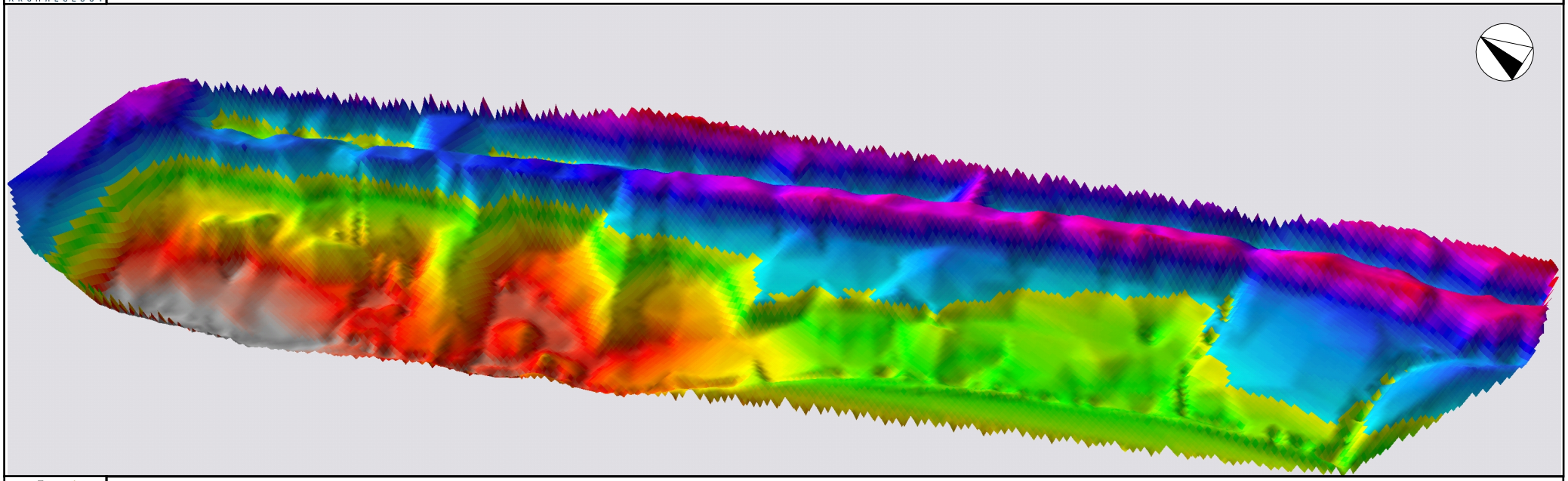
PMP: Pond Moor, Papplewick
Figure 2a: Individual survey points and string lines as surveyed March 2009. Elevations exaggerated x5.
Not to scale. DW 03/04/2009



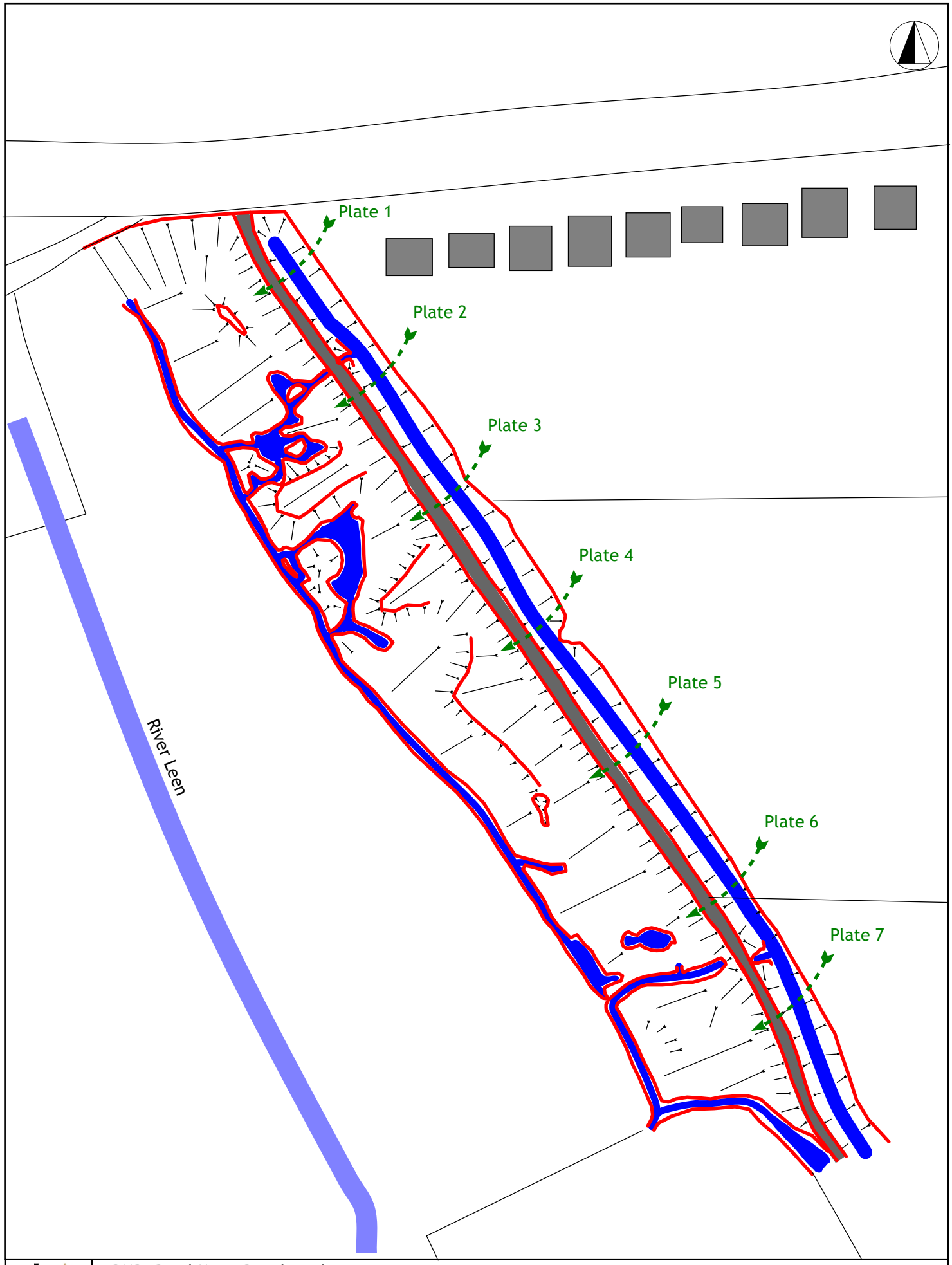
PMP: Pond Moor, Papplewick
Figure 2b: TIN model interpolated from survey points and string lines (shown), with approximate locations of water channels and ponds indicated.
Elevations exaggerated x5. Not to scale. DW 03/04/2009



PMP: Pond Moor, Papplewick
Figure 3a: Shaded TIN model with contour lines at 100mm intervals. Elevations exaggerated x5.
Not to scale. DW 03/04/2009



PMP: Pond Moor, Papplewick
Figure 3b: Height-shaded model of the Dam Banks area. Elevations exaggerated x5.
Not to scale. DW 03/04/2009



PMP: Pond Moor, Papplewick
Figure 4: Plan of woods as surveyed March 2009
Scale 1:1000 at A4 DW 03/04/2009

0m 50m

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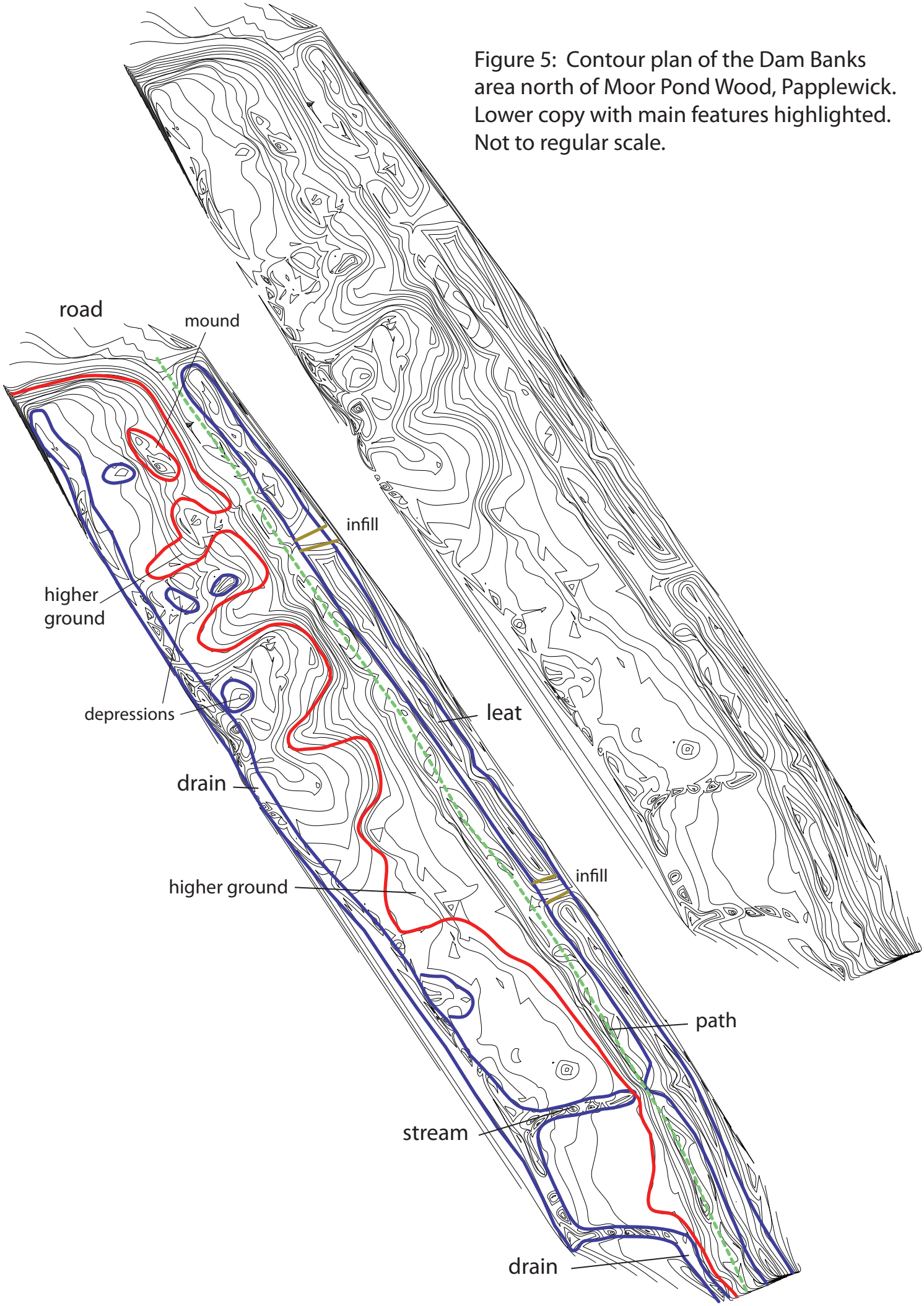

Figure 5: Contour plan of the Dam Banks area north of Moor Pond Wood, Papplewick. Lower copy with main features highlighted. Not to regular scale.

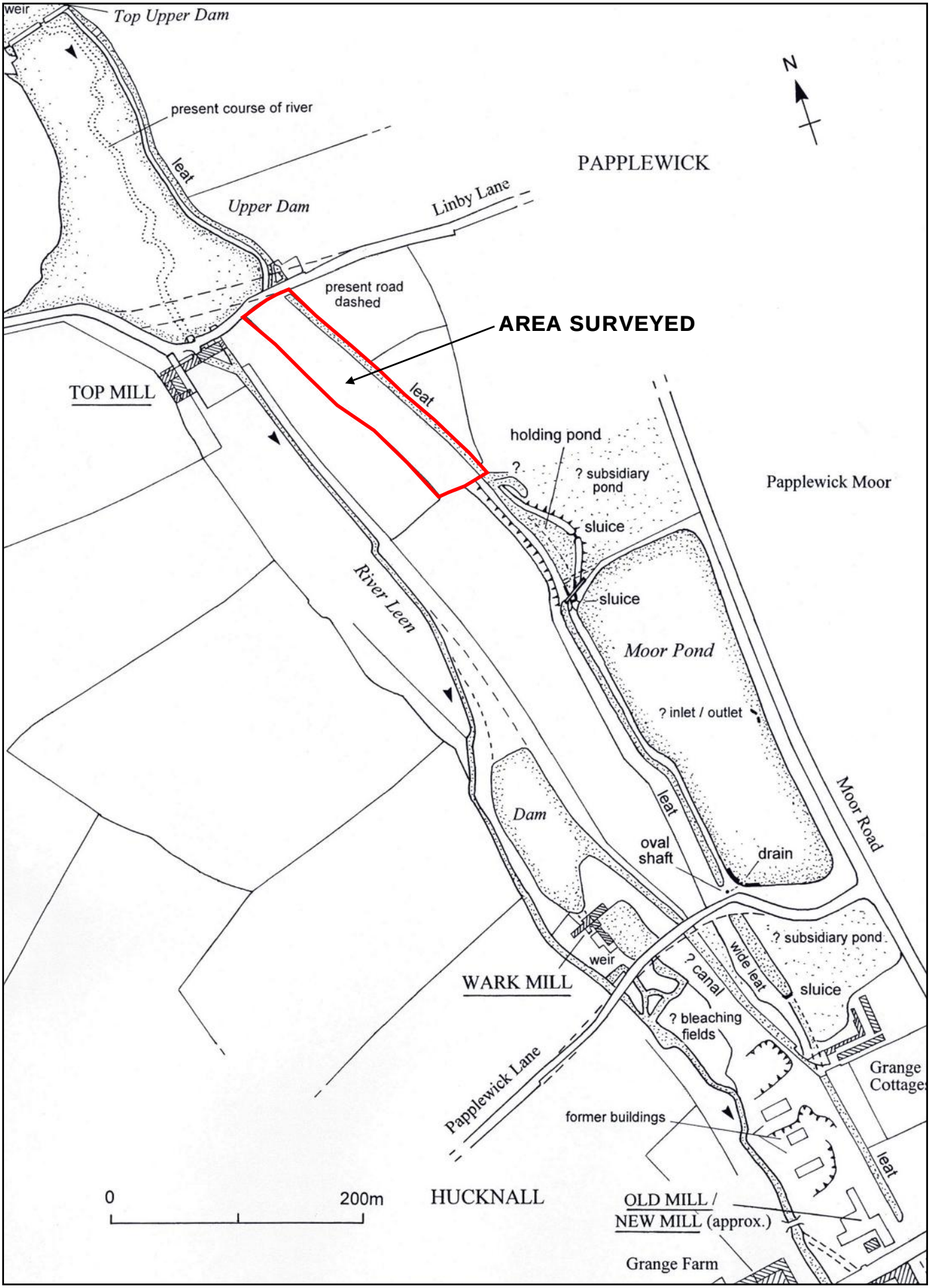

Figure 6: The location of Dam Banks, the area surveyed, in relation to the mills and associated features in the area in the late 18th century. Scale 1:4,000.

PLATES

Plate 1: 180º panorama looking south from the main path, location as shown on Figure 4.

Plate 2: 180º panorama looking south from the main path, location as shown on Figure 4.

Plate 3: The 180º panorama looking south from the main path, location as shown on Figure 4.

Plate 4: 180º panorama looking south from the main path, location as shown on Figure 4.

Plate 5: 180º panorama looking south from the main path, location as shown on Figure 4.

Plate 6: 180º panorama looking south from the main path, location as shown on Figure 4.

Plate 7: 180º panorama looking south from the main path, location as shown on Figure 4.