

## **MILLS IN THE INCHBROOK VALLEY**

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### **Introduction**

This study will examine the site of the now demolished water mill, known as Park Mill, on the Woodchester Park Estate in Gloucestershire. The site of the mill lies at the eastern end of the chain of five lakes that run eastwards down the centre of the valley in which the park lies. These lakes were formed through the damming of the Inchbrook Stream that runs along the valley bottom. Using cartographic and documentary sources for the site it is hoped to build up a chronology of the development of the mill's structure and usage. Although the location of the site of the mill is well known, the exact position of certain important elements of its structure, vital in understanding the nature of the operation of the mill, are now unknown. Therefore archaeological survey techniques, including a resistivity and an earthwork survey, have been used in an attempt to clarify the position of the structural elements of the mill on the ground.

### **The Geology and Topography of the Park Mill Site**

The sides of the Inchbrook valley, rise up steeply to 750 feet and are now heavily wooded with both mixed woodland, and large areas of single species plantations.

The geology and topography of the Inchbrook valley make it a good location for water mills. The valley is made up of Upper Lias Clay deposits, from which the greatest number of springs arise in the area, compared to those on the oolite in the western part of the Parish (Tann 1965, 54). This combines with the effects of the porous limestone, which effectively creates natural reservoirs (Tann 1965, 54), and allows a constant rate of water into the Inchbrook and therefore to the mill. Two mills are marked on Taylor's map, one at the eastern end of the park, below the dam of the lowest of the chain of lakes, that became known as Park Mill Pond, after the mill itself, and a second mill situated below the dam of the middle pond.

The site of the Park Mill lies on relatively flat ground below the lake's substantial dam, which is around 10 metres high. The area in which the mill stood is now in a relatively open area of woodland, although recently (1999) cleared of undergrowth. The land here rises steeply on its northern side, but drops away sharply down to the Inchbrook which is fed from the lake above, and forms the southern edge of the site.

### **The History of Park Mill**

There have been mills in the Parish of Woodchester from at least the time of the Domesday survey in 1086 when one was recorded as being worked there (VCH 1976, 298). The earliest specific reference to mills within the park comes from the map of Gloucestershire by Isaac Taylor, published in 1777. It is likely, however, that mills existed on the Inchbrook stream, if not in precisely the same locations as marked by Taylor, for perhaps centuries before this.

The Park Mill is clearly shown on the early estate maps, and is also mentioned throughout the nineteenth century in a number of written sources. Although it is first shown on the Taylor map, the greatest detail on the structure of the mills buildings comes from the detailed estate map produced by John Spyers in 1782 (Figure 1). He was Capability Brown's partner and he subsequently carried out major alteration to the park, removing the formal gardens and introducing a much more open landscape. His map shows the mill to be a substantial structure abutting the dam side, laid out in an 'L' shape. On its eastern side lay a smaller ancillary building, and it was between this and the main mill that access was gained from the roadway which ran along the lower valley slopes above the area of the mill. It is known that between 1777, the time that Spyers' survey, and 1800, that the mill was worked by at least two people: a James Thomas in 1780 and a Nathaniel Cook by 1792 (VCH 1976, 298). It appears that during this period no substantial alterations were made to the mill, as both the detailed estate maps of 1790 (Figure 2) and 1800 (Figure 3) show the mill as it was when Spyers surveyed the site. The former map was produced after Ducie had purchased land here from John King. The later estate map of 1800 shows the mill but it lacks detail of earlier maps and it appears to have been produced to show the extent of the lakes which are highlighted vividly in blue and only the northern side of the estate is shown in any detail.

An advertisement for the letting of Park Mill in an edition of the *Gloucester Journal* in April 1804 provides more detail on its workings and its capacity in the early nineteenth century. The advertisement describes how the mill had been recently improved, and contained three pairs of French stones capable of grinding fifty wagon loads of wheat a week. The stones were powered by a large water wheel 33 feet (10.1 m) in diameter (Wilson 1994, 29). By 1818 it is known that the tenant, Thomas Hart, was still working the site as a corn mill (VCH 1976, 298) and by this time it may have had a very large capacity, as an advertisement for the letting of the mill in 1820 claimed that it could grind 1000 bushels of wheat a week (Wilson 1994, 29).

By 1838 however, when the tithe map for this area was produced (Figure 4), it is clear that there had been a number of major additions. On the western side of the mill a two storey wing was added, which abutted the dam, perhaps to allow easier access into the mill from the top (Wilson 1994, 29). There were further alterations on the southern end of the mill, as well as the construction of a secondary ancillary building.

However, in the following years the nature of the activity at the mill appears to have changed, because it was described as a bone-mill in 1838 (VCH 1976, 298). It should be noted that the tithe map of the same year marks the site as a 'croft' rather than a mill (GRO T1120 1). It seems to have altered in function again later in its history, because at some point it became a silk mill (VCH 1976, 298). An Estate Map of 1859 does not show the mill building, so it had certainly ceased to operate by then, although the structure may still have been in existence. (Figure 5). Certainly it was demolished by 1884 because no buildings are marked in its position on the Ordnance Survey map of that year (Wilson 1994, 29).

### **The Visible Remains**

None of the above cartographic sources show the exterior workings of the mill, and its most important element, the water wheel. In consequence various archaeological surveys have been carried out with the aim of defining the position of these features, and record any evidence of structural material surviving both above and below the ground level. First, however, it is necessary to know which features are visible.

The surviving features include a section of walling which abuts the dam and survives to a height of approximately 1.5 m and 3.5 m in length. From its position it would appear that this is the remains of the ground floor wall of the western wing of the building, which was a two storey structure as it allowed access from the top of the dam.

Further parts of the structure survive to the east of this a section in the form of rectangular cuts into the natural hill slope. An L- shape cut seems to represent the north-eastern corner of the main mill building . In the very corner of the section of earthwork running north-south is a small area of stone walling, presumably part of the main mill building's eastern wall. The line of the earthwork cut running east-west aligns with the remains of the wall against the dam presumably indicating the location of the northern wall of the building. A further rectangular cut into the slope, running on a north-south orientation, would seem to represent the area of one of the mills ancillary buildings, although there appears to be no masonry in situ currently visible. From these earthwork remains and the masonry structural remains it is possible to define on the ground the basic plan of the northern part of the main mill building, as well as the secondary structure. (Figure 6)

The best preserved element of the mill's structure is an arched stone culvert, 0.8 metres wide and 1 metre in height, which continues to channel water into the Inchbrook on the southern edge of the site.

Unfortunately, the position of some of the main features of the mill, in particular the siting of its large water wheel are not clear from the surface features.

### **Earthwork Survey**

The aim of the survey was to identify and plot the position of any structural remains on the surface of the site. It was hoped that this would give a clearer insight into the mill's structure and workings, and expand on the known map evidence.

The earthwork survey was carried out using plane tables, tape measures and an alidade. Although this was satisfactory on the more level areas of the site, the nature of the topography and the size of the dam abutting the site meant that this method was often restrictive. It is recommended that a further survey be carried out using an Electronic Measuring Device, which was unavailable at the time of writing.

The initial observations showed that large cuttings had been made into the slope on the northern side of the site. These cuttings possibly indicate the position of former structures. Furthermore, there was a large scattering of stonework in the area in which the mill is known to have stood. This stonework appeared to be the remains of building masonry. A more detailed earthwork survey confirmed these initial findings: the stonework did indeed represent the surviving remains of the mill's fabric (Figure 6 - above). This confirmed that the cuts in the natural slope on the northern side of the sites were on the same alignment as the buildings shown in the latest map available of the site, the 1838 Tithe map. Two sections of walling built into these slopes were recorded, and are probably all that remain of the mill's structure in its original location. An area with a more dense concentration of stone blocks was recorded, but they appear to represent fallen masonry rather than sections of walling or foundations. This area of stone blocks approximates to the ancillary building to the south of the main mill,

as shown on the Tithe map. It was not possible however to identify any other structural elements which would have enabled the identification of the site of the water wheel.

The best surviving element of the mill's structure is an arched stone culvert on the southern side of the site, which empties into the Inchbrook stream, and which was identified through observation of the site undertaken by the Gloucestershire Industrial Archaeological Society. This culvert is 0.8 m wide and 1 m high and may represent the end of the mill's tailrace, although this is questionable because of its small size. It seems unlikely that it would have been able to accommodate the quantity of water discharged from the mill (Wilson 1994, 30 and SMR entry 20320). Water continues to empty out of this culvert and it was hoped that by following the line of the flow the location of the wheel pit might be discovered. No other evidence survives on the exterior features of the mill, therefore a resistivity survey was carried out in order to determine the position of these features and to obtain more information on the survival of any other sub-surface remains.

### **Resistivity Survey**

A resistivity survey was carried out in an attempt to establish the extent of any structure surviving below the ground level. In particular it was hoped that the survey would show the location of the water wheel and any further channels, which cannot be seen on the surviving map evidence.

The area of the survey was chosen based on the position of the mill as shown on the various maps. Two 20 m<sup>2</sup> grids were laid out running vertically on a north-south alignment along the bottom edge of the Park Mill Pond dam and measurements were taken at 1 m intervals using parallel traverses. The results of the surveys were processed using Geoplot 2.02 software.

Unfortunately it was not possible to survey with further grids on the eastern side of the site because of the overgrown nature of the site and the extent of the tree growth.

Overall, however, the results of the resistivity survey were disappointing in that the aim of identifying the elements of the mill's workings were not achieved through this method. The wet nature of the site, due to nearby springs, and the weather conditions contributed to these poor results. An area of high resistance was identified at the bottom edge of the dam (Figure 7). It appeared to be regular in shape with a well defined corner. From its location it would seem likely that the area of high resistance on the dam edge represents the corner of part of the western side of the mill building. It is known from documentary sources, including the Tithe map (GRO TI/201) and an engraving of 1809 (BL Maps K Top.13.18), that a wing extended out of the western side of the mill and onto the dam side, to allow direct access from the dam top into the upper story of the mill. It would appear that this represents the foundations of this part of the mill.

### **The Other Mill**

There is one documentary source which indicates the existence of an additional mill within the park. The Taylor map shows a second mill positioned between the Middle Pond and the Kennel Pond. It has always been presumed that this second mill was a mistake on the part of

Taylor because no later references exist for it (Wilson 1994, 30), however it appears that this mill did indeed exist. Firstly, the position in which it would have stood is below the largest dam in the park, and the area between this dam and the Kennel Pond is the only other area, apart from Park Mill, where there is enough land beneath a dam for a substantial structure. The field names on the valley sides as listed in the 1782 Spyers seem to preserve the memory of a mill in this area. Thus there such field names as Mill Pond Hill East and West above the northern side of the Middle Pond. This probably reflects the previous function of this area as a mill pond. The dam spillway here also contains eel traps, which were often associated with mills, whose tenants would use them to supplement their income. The only other eel traps in the park were those associated with Park Mill. Also, there is evidence on the site of a building, in the form of large pieces of masonry on the southern side of the dam spillway. Perhaps the most definite physical evidence for the mill comes from discovery of a large mill stone, now half buried and only accidentally uncovered from beneath the undergrowth during the site observations for this study. Such a substantial mill stone must surely have belong to a mill on this site, as its very size would seem to prohibit it from having been brought in and deposited from another site.

## **Bibliography and References**

### **Abbreviations**

BL: British Library  
GRO: Gloucestershire Record Office  
SMR: (Gloucestershire) Sites and Monuments Record  
VCH: Victoria County History of Gloucestershire

### **Published Sources**

Tann, J. (1965) Some Problems of water Power A Study of Mill Siting, *Transactions of the Bristol and Gloucestershire Archaeological Society*, 84, pp 53-77.

VCH (1976) *Victoria County History of Gloucestershire*, Volume 11.

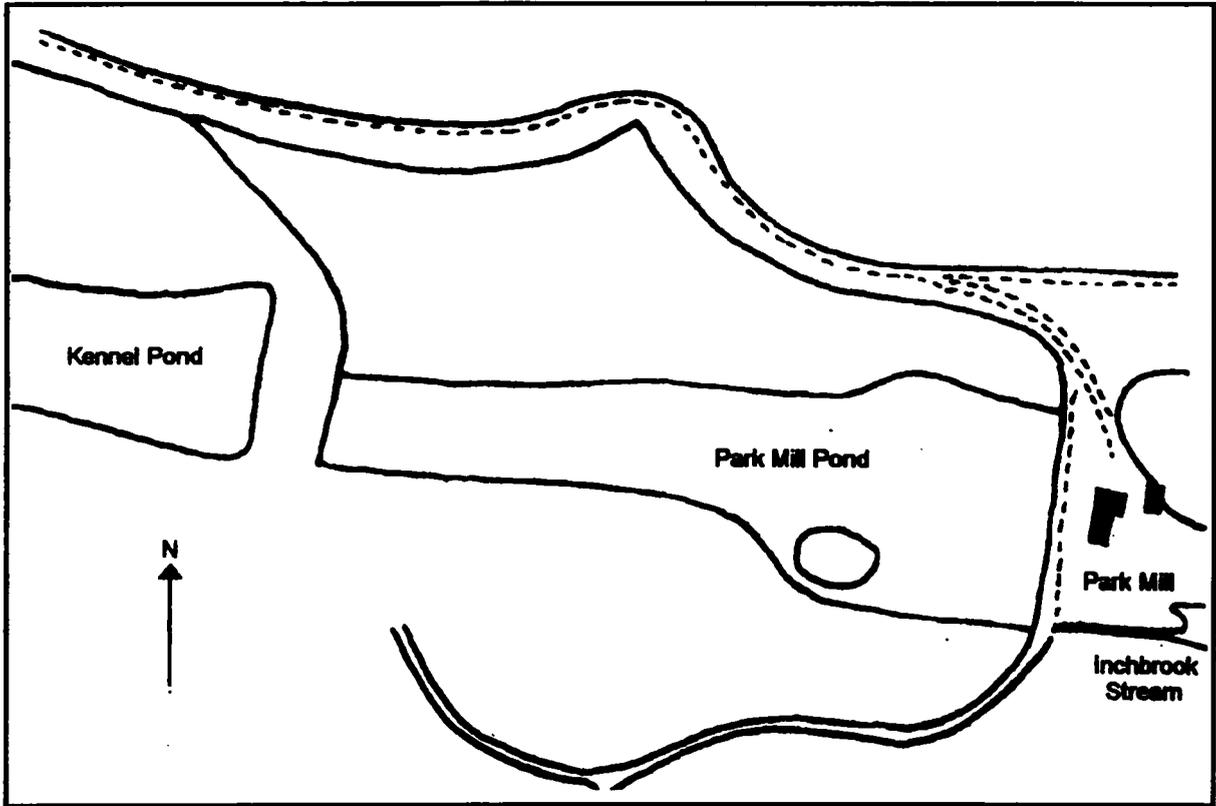
Wilson, R. (1994) The Industrial Archaeology of Woodchester Park - An Interim Note, *The Gloucestershire Society for Industrial Archaeology Journal*, pp 28-32.

### **Map Sources**

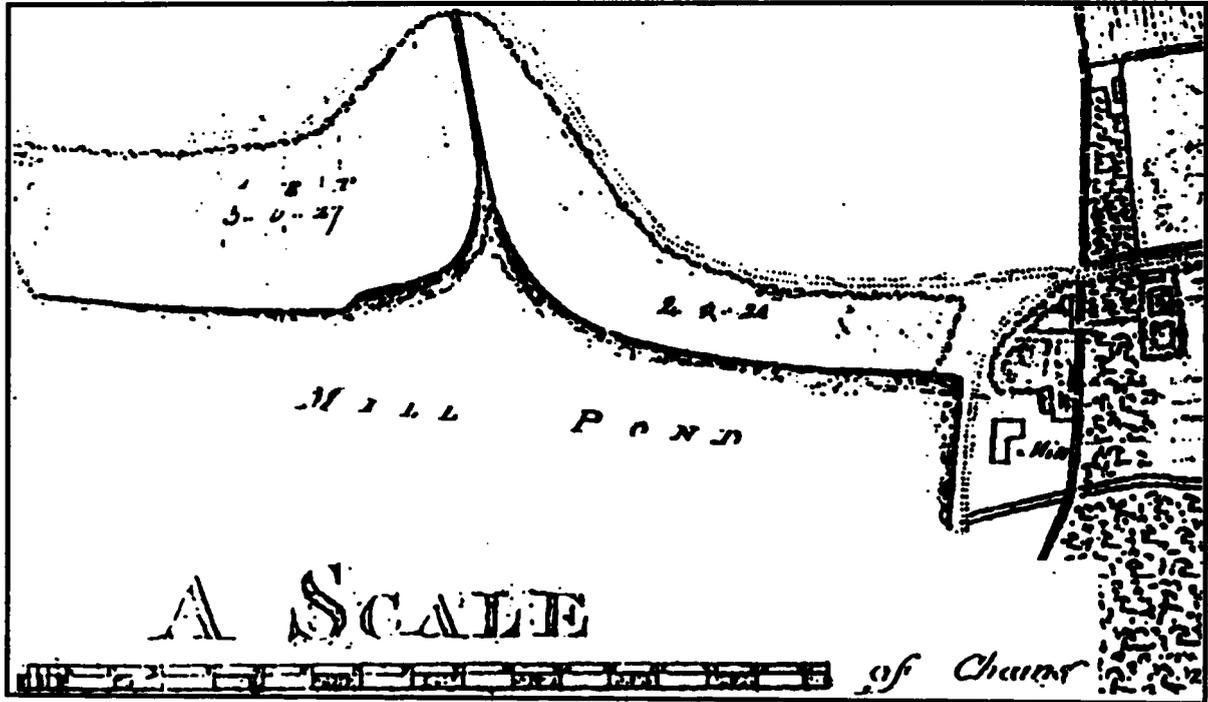
GRO D1011 P8: 1782 John Spyers Plan  
GRO D1011 P9: 1790 Estate Map  
GRO D1011 P10: 1800 Estate Map  
GRO D1011 P11: 1859 Estate Map  
GRO T1/201: 1838 Tithe Map

Ordnance Survey 1830 first edition 1"  
Isaac Taylor 1777 Map of County of Gloucestershire

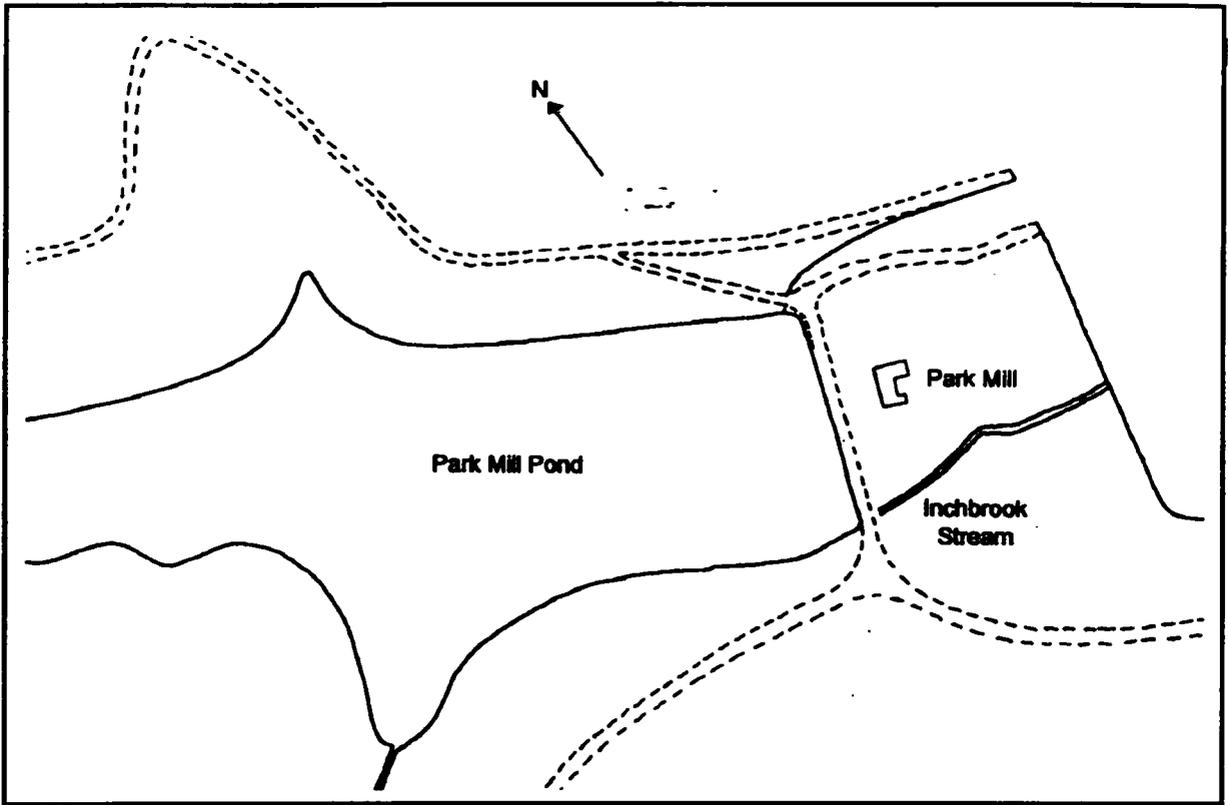
Editor's note: Mr Pollington was awarded an MA in Landscape Archaeology from Bristol University in 1999. This article is based on his thesis.



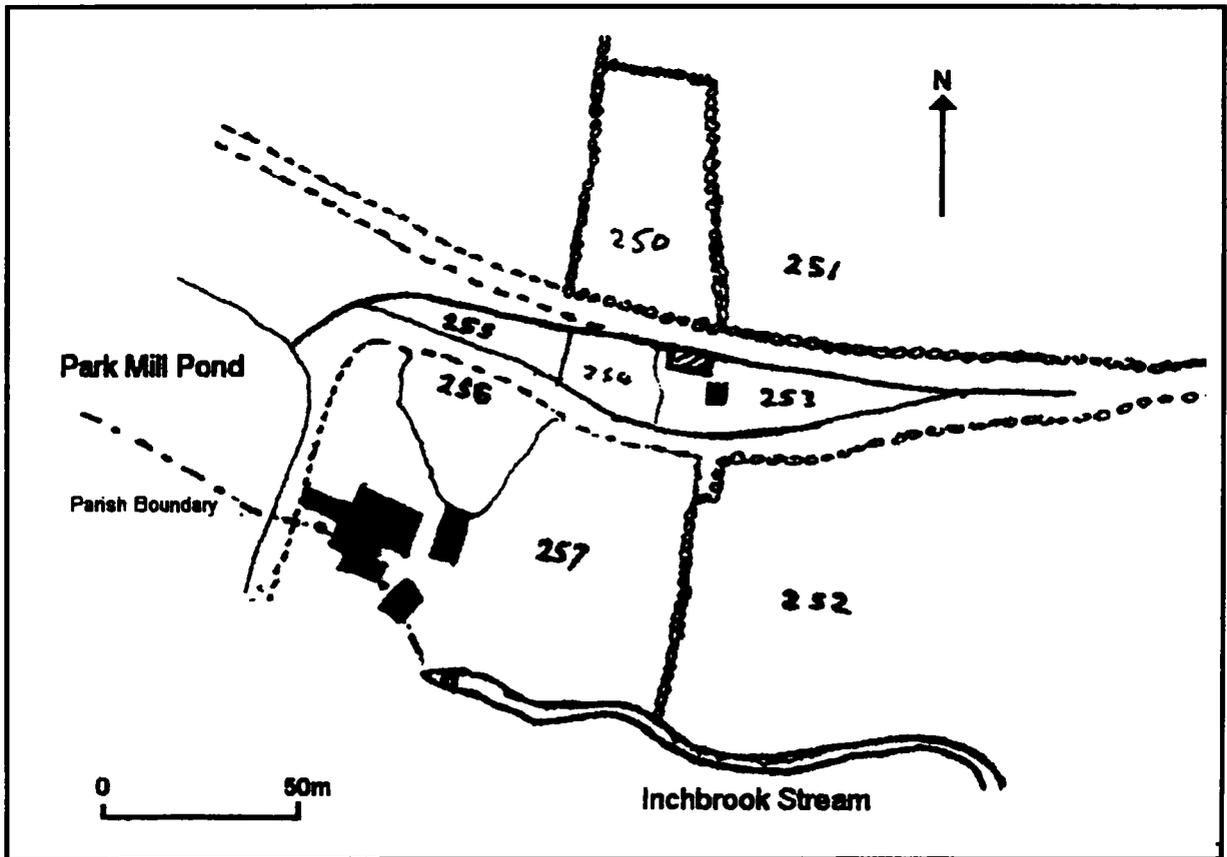
**Fig. 1** Extract redrawn from the 1782 map by John Spyers showing Park Mill (GRO D1011 P8).



**Fig. 2** Park Mill as shown on the 1790 Estate Map (GRO D1011 P9).



**Fig. 3** Extract redrawn from the 1800 map showing Park Mill (GRO D1011 P10).



**Fig. 4** Detail of Park Mill from the 1838 Tithe Map (GRO TI/201 Redrawn by R. Wilson).

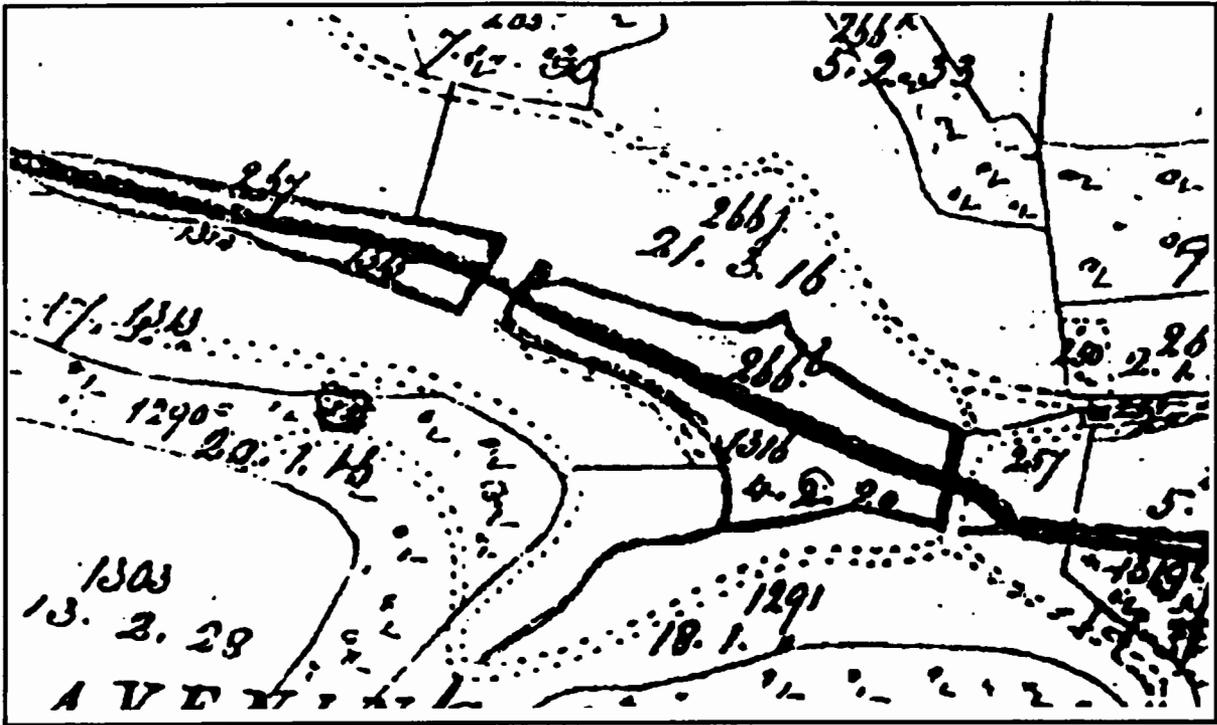


Fig. 5 Detail of Park Mill from the 1859 Estate Map (GRO D1011 P11).

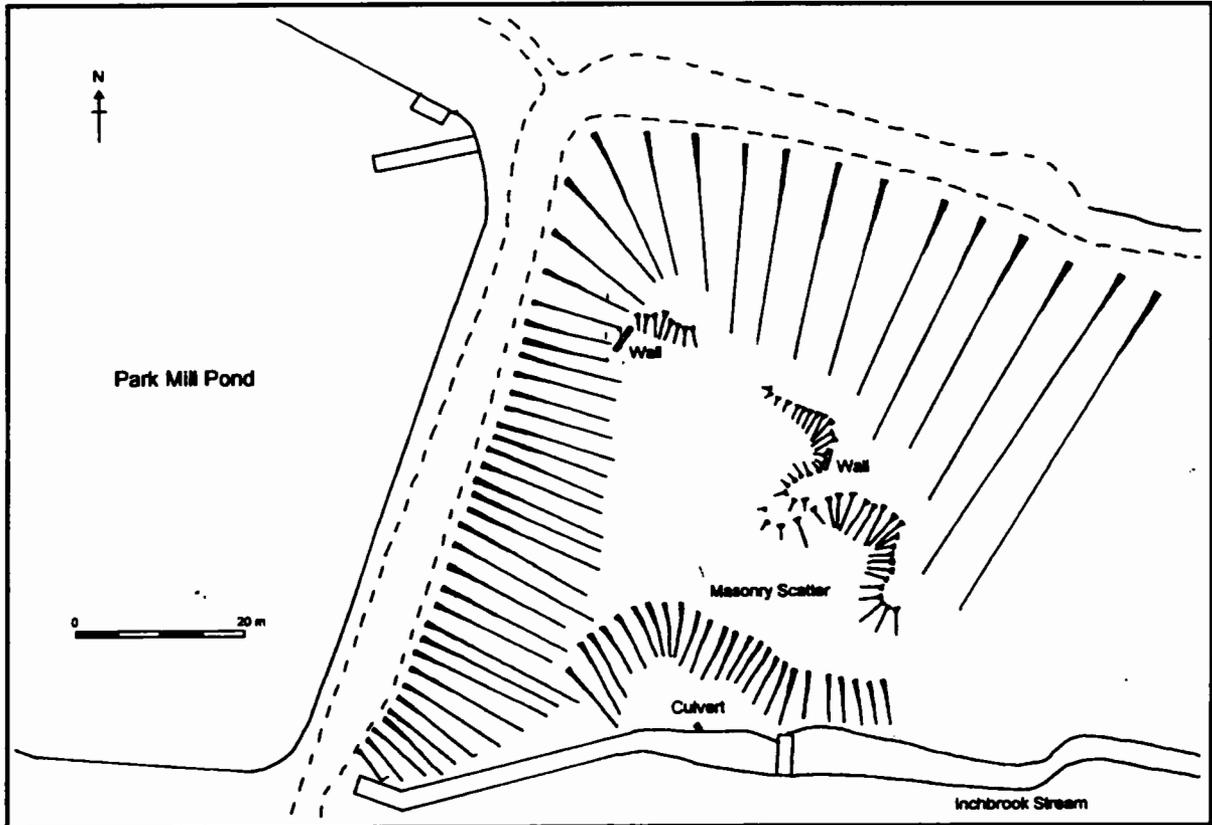


Fig. 6 The Earthwork Survey of the Park Mill site.

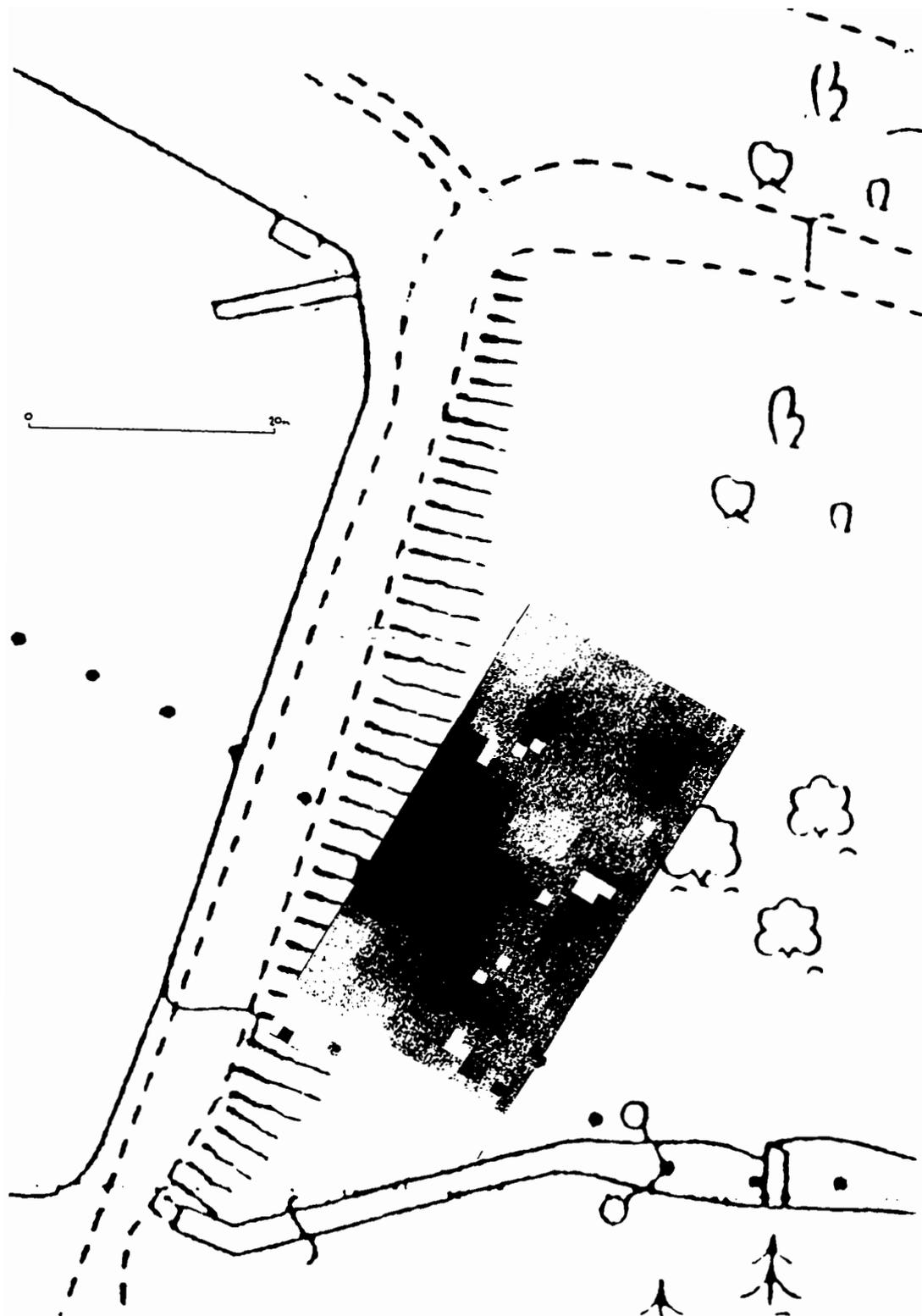


Fig. 7 The Resistivity Survey of the Park Mill site.