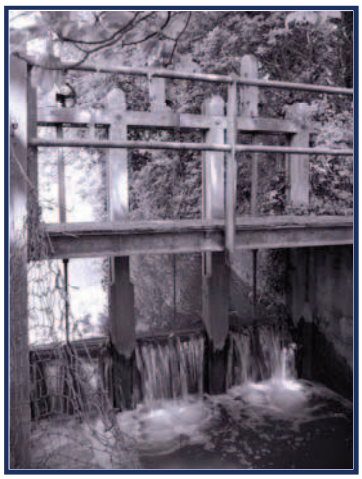
Towles Mill Sluice
Oxford



Archaeological Desk-based Assessment

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Oxford Archaeology

For Atkins Limited on behalf of the Environment Agency

Towles Mill Sluice,
Oxford

ARCHAEOLOGICAL DESK-BASED ASSESSMENT

INCLUDING TEST-PIT AND GEO-ARCHAEOLOGY REPORTS

NGR: SP 517 039

October 2006

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Summary

Oxford Archaeology (OA) was commissioned by Atkins Limited on behalf of the Environment Agency to prepare a desk-top study for Towles Mill Sluice, Oxford. This study complements an archaeological baseline study already prepared for the Oxford Feasibility study. The desk-top includes research into the mill complex and its immediate surrounding area mainly through a map regression exercise. This assessment is to help inform plans for proposed flood conveyance improvement works by the Environment Agency along the Hinksey Stream.

Towles Mill Sluice is situated on the Hinksey Stream of the Thames to the south west of Oxford. It is on the site of a mill. The mill has been known by a number of names throughout its history including Langford Mill, Hinskey Mill, New Hinksey Mill and Towles Mill. Research confirmed the likelihood that the site is the location of the medieval Langford mill, recorded by the beginning of the 12th century with probable Saxon origins. It is described as being located close to 'Oxford Bridge', a reference to the Grandpont, the medieval causewayed bridge that crosses the study area as Abingdon Road.

Originally in use as a corn mill, it was later converted to the production of paper and card. Rocque's map of Berkshire of 1761 provides the first evidence of this. A sequence of maps provides evidence of the building complex comprising the industrial building straddling the main water channel with various offshoots and extensions growing around its original core and other ancillary buildings, probably including a residence for the miller on the west bank of the stream. The maps also illustrate the nature of the numerous watercourses within the study area and the evolution of engineered water management undertaken especially to the south of the Grandpont bridge.

During the 19th century the mill was associated with John Towle, one time Mayor of Oxford, who sought to develop new markets for the mill's products by experimenting with the use of card as a building material. He constructed Paisley House from cardboard produced at the mill. The 'paper house' stood from 1844 to its demolition in 1996.

The mill ceased production in the early 1920's and its structures were largely demolished by 1960. Subsequent to this the few surviving buildings have been demolished and the only standing visible remains of the mill are the ashlar stone retaining walls of the narrowing of the main channel which marks the site of the mill. The managed watercourses of the site are another reminder of the mill's former presence.

The site has potential for the survival of below-ground remains relating to the sequence of mill complexes and water management. Although the railway line, road improvements and construction associated with the dairy depot and waste reception centre may have had an impact on potential archaeological deposits, the site of the mill itself is not likely to have been disturbed and is thought likely to contain undisturbed archaeological deposits.

Five options for improvement works at the sluice have been proposed in the Atkins Towles Mill Sluice Improvements Scoping Report and the archaeological implications of these options are considered. Options 1 and 2 are 'do nothing' and 'do the minimal' proposals and would have no archaeological implications. Options 3 and 4 replace the sluice with a Crump Weir and riffle respectively. These interventions both involve the total loss of the ashlar stone revetment wall of the east bank and a wider area of the bank that coincides with the site of the former mill. There is a high potential for below-ground archaeological deposits in this location and it is likely that further archaeological assessment would be expected to inform detailed design. Option 5 proposes a large scale of works with the side channel to the east of the sluice extensively enlarged, affecting the known location of former mill buildings, and the historic character and hierarchy of the water channels, but retaining the historic ashlar walls of the main channel. There is a high potential for below-ground archaeological deposits in this location and it is recommended that further assessment is undertaken to inform detailed design.

Towles Mill Sluice

Oxford

ARCHAEOLOGICAL DESK-BASED ASSESSMENT

1 INTRODUCTION

1.1 *Project Background*

1.1.1 Oxford Archaeology (OA) was commissioned by Atkins Limited on behalf of the Environment Agency in April 2006 to prepare a desk-top study for Towles Mill Sluice, Oxford (SP517039). This study complements an archaeological baseline study already prepared for the Oxford Feasibility Study (OA, 2005). The desk-top is to help inform plans for proposed flood risk improvement works by the Environment Agency along the Hinksey Stream at Towles Mill Sluice. Such works may involve channel widening and further information regarding likely archaeological remains was required to inform the design and planning stage of the proposed improvements.

1.2 *Location and Topography*

1.2.1 Towles Mill Sluice is situated on the Hinksey Stream of the Thames, south west of Oxford, close to South Hinksey (to the north west) and the suburb of New Hinksey (to the north) (Figure 1). At this point along its course the Thames is split into two main channels; the Hinksey Stream and Weirs Mill Stream, which is outside the study area to the east. The Hinksey Stream itself splits into a number of courses within the study area forming an island now holding a Dairy, to the north, and a Waste Reception Centre, to the south. In addition there are a number of other leats and streams feeding into the Hinksey Stream in and around the Study Area.

1.2.2 The main line rail track between Oxford and London Paddington crosses through the Study Area to the west of the Sluice. The historic Oxford to Abingdon road forms a right angle, crossing the railway and river in a south west - north east orientation and then heading north-west.

2 METHODOLOGY AND SOURCES CONSULTED

2.1 *Methodology*

2.1.1 This desk-based assessment is designed to compliment an existing archaeological baseline study prepared for the Oxford Feasibility study and does not repeat analysis covered by that investigation. The general approach and methodology for the current assessment is focused on a review of historic mapping, documentary and secondary sources specifically relating to the date and location of any historic mills and sluices within the Study Area shown on Figure 1 and defined by Atkins Limited.

2.1.2 These sources were used to carry out a historic map regression, concentrating on evidence relating to the former mill and water management features of the Study Area.

2.1.3 The results of the map regression and the findings of the earlier archaeological baseline study were used to produce a statement of the areas general archaeological potential (for as yet undiscovered archaeology). Areas of high archaeological potential and areas of known disturbance were identified and the archaeological implications of the proposed works in the area discussed.

2.1.4 A walkover survey was undertaken on 10th of May 2006. The results of this are described in Section 5 and incorporated into the analysis and the gazetteer (Appendix One).

2.1.5 This assessment has been conducted with regard to the Institute of Field Archaeologists (IFA) standards as set out in the *Guidelines for the Production of Archaeological Desk-based Assessments* (IFA Nov 2000) as appropriate.

2.2 *Sources Consulted*

2.2.1 The historic data for this assessment was collated from a number of sources as follows:

- Published, secondary sources, maps and historic photographs held by Oxfordshire Studies;
- Primary sources held by the Berkshire Record Office (BRO);
- Primary sources held by the Bodleian Library;
- Published secondary sources held by the Sackler Library.

2.2.2 A previous investigation within the study area carried out by Oxford Archaeological Unit and reported on in 1998 of Paisley House (OAU, 1998), a building made of paper and subsequently demolished, has provided some information about the wider mill complex. Much of this information was drawn from research by Robert S Sephton into the life of John Towle, one time owner of the mill. This research was supplied in draft form to OAU as 'John Towle 1796-1885' and dated 25/11/96. Sephton has also published articles relating to Towle in the volumes of Oxfordshire Local History (see Section 7 for further details).

2.2.3 Appendix One is a gazetteer of archaeological sites and features observed through the map regression and the site visit within the Study Area. Each entry has been allocated an OA number (*eg* **OA 13**), which is included in the gazetteer, referred to in the text and marked on the Archaeological Features Mapping (Fig. 2). A full list of sources consulted is listed in Section 7.

3 BRIEF REVIEW OF FINDINGS OF THE OXFORD FEASIBILITY STUDY

3.1.1 The Oxford Flood Risk Management Feasibility Study Archaeological Baseline of June 2005 carried out by Oxford Archaeology, identified five archaeological features within the current Study Area. The earliest identified features are a medieval multi-span bridge, carrying the Oxford to Abingdon road across the multiple courses of the river at this point. This structure forms part of the more extensive Grandpont causeway (**OA 3**). The site of the mill complex was also identified and thought to have medieval origins (**OA 1**). Two post-medieval features were identified; the site of a Tollhouse connected with the Turnpike Road (**OA 2**) and the site of Paisley House, a 19th century house constructed from paper and related to the mill (**OA 5**). The site of Abingdon Road Halt railway station was also located (**OA 4**).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND AND MAP REGRESSION

4.1.1 The mill complex (**OA 1**) has been known by a number of names and used for various

processes through its history. References include Langford Mill, Hinksey Mill, New Hinksey Mill and Towles Mill. The complex was presumably originally a corn mill later converted by the 18th century into a paper mill. Further research is likely to yield more information about the complex, its origins, owners, occupiers and its various industrial uses.

4.2 *Langford Mill*

4.2.1 A mill of considerable importance, known as Langford Mill, is documented during the middle ages at South Hinksey (VCH Berks IV, 1924, 408). The identification of the site of this mill has been the subject of debate but it seems very likely that Langford Mill was the forerunner of Towle's Mill. Abingdon Cartulary notes that Langford Mill was located 'near Oxford Bridge' (Salter, 1936, 15). 'Oxford Bridge' refers to Grandpont (**OA 3**), the Norman causewayed route across the marshy and wet ground which forms part of today's Abingdon Road. This description matches precisely the location of the later Towles Mill. The antiquarian Anthony Wood also made the connection using the evidence in the Cartulary. He states '*All that I shall say further of it* [Langford Mill] *is that it stood on the South Bridge neare the farther end therof towards Bagley, and is the same (as I think) which wee now call Hinxsey Mill*' (Clark, 1889, 407). Further evidence for Langford Mill being the forerunner of Towles Mill is provided by the earliest map located during the research for this assessment. This undated map is thought to be of 16th-17th century date and was commissioned by New College (Figure 3, see 4.3 for further discussion). The map depicts the Mill (**OA 1**) close to bridge (**OA 3**) and labels it 'Hinxsey or Langford Mill'.

4.2.2 Anthony Wood suggests that Langford Mill had Saxon origins stating the mill '*....sometimes belonging to Abingdon Abbey by the gift of a benefactor divers years before the Norman Conquest. At which time it came into the hands of one Anskill, a knight of great worth in these parts. When the possessions of that monastry were taken into the King's hands, came after his death to William de Sevecorda his son'*. Further research may be able to identify the mill in Domesday entries which would confirm its possible Saxon origins.

4.2.3 Later medieval references to the mill confirm its existence by the beginning of the 12th century when it was granted to Abingdon Abbey by William de Seacourt. Later this transaction was disputed, however the Abbey's claim was validated and they retained ownership (VCH Berks IV, 1924, 408).

4.2.4 In 1547 the mill was granted to George Owen and passed with his manor to Sir John Williams. Its later history is not recorded, and it seems to have fallen into decay. Sir John William's lands were divided between his two daughters and South Hinksey fell to the younger, Margery wife of Henry Norreys. Norreys was created Lord Norreys in 1572 and two years later acquired the manor of Cumnor. From this date South Hinksey does not seem to be a separate manor and follows the descent of the manor of Cumnor. The two were enclosed together in 1820 with South Hinksey described as a chapelry of Cumnor (VCH Berks IV, 1924, 409).

4.3 *16th-17th century New College map - Figure 3*

4.3.1 The earliest map located of the Study Area is an undated map of the 16th - 17th century commissioned by New College. The map is most concerned with the numerous watercourses to the south of the bridge, a number of which are labeled 'Coll. Water' and 'Coll. W' and are presumably the reason for the map. The mill is depicted to the north of the bridge with a gabled roof and two archways presumably

over the watercourse which is shown flowing from the mill and labelled 'The Streme from Langford Mill'. The mill is labeled 'Hinxey or Langford mill'. No further detail is given to the north of the bridge. Three watercourses are shown exiting to the south of the bridge that join with another water course to the east labeled 'Egrove Water beginnes'. The area to the south of the bridge is shown as a mass of water courses and islands of land with 'Hinxey and Kenington Moore' and 'Hinxey Kitney Meade' interspersed between.

4.4 *Manuscript documents of the 17th and 18th centuries held by the Bodleian*

4.4.1 A number of manuscript documents relating to the mill were located in the Earl of Abingdon Bertie Papers at the Bodleian Library. The Earl of Abingdon became the primary landholder of the manor of South Hinksey. Further research using this archive and a more considered reading of the following documents is likely to yield further useful information.

4.4.2 A counterpart of a lease of 1695 relating to 'South Hincksey Mill' was located in the papers. This lease documents the agreement between Thomas Taylor [also Tayler] of South Moreton in the county of Berkshire, miller and the Earl of Abingdon for a term of 21 years for an annual rent of fourteen pounds. The lease describes the holding including the water mill, mill house and outhouse, gardens, orchards and wharfsides. It also discusses the mill's waters, watercourses and appurtenances. Thomas Taylor of South Moreton is therefore the earliest named miller related to the mill discovered in research to date.

4.4.3 An early 18th century survey and valuation of the estates of the Earl of Abingdon include a reference to the mill in the listings of South Hinksey Manor. The document lists all tenants and describes their holdings. A Mr Litchfeild [sic] is the tenant connected with the mill. The holding is 1:2:0 acres, rods and perch, and described as mead and charged at a rent of three pounds. A note against this holding reads 'This is the water mill, which is allwayes empty t'was formerly in Daniel Peirce'. This suggests that the mill was unused at this period and that had previously been leased by Daniel Peirce.

4.5 *Rocque's map of Berkshire of 1761 - Figure 4*

4.5.1 Rocque's map of Berkshire of 1761 forms the next map in the sequence. Within the Study Area Hinksey Stream is depicted, split into the three courses suggested by the earlier New College map (**OA 6**). A further leat is shown skirting the eastern edge of the settlement of South Hinksey and defining the boundary to the east of the mill between the wet meadow land and the arable fields. The distinctive right-angled course of Abingdon Road crosses the streams. To the south of the bridge the mass of watercourses and islands are shown with land marked 'Common' along the west side. Further meadows are shown to the north of the Study Area. The mill (**OA 1**) is depicted to the north of the bridge flanked by two islands of land defined by the three streams. The mill is shown as a rectangular structure straddling the main, central watercourse and is labeled 'Paper Mill'. Therefore by 1761 the mill had ceased to be a corn mill and had converted to a paper mill.

4.6 *Andrew's and Dury's map of the country round London of 1777 - Figure 5*

4.6.1 Andrew's and Dury's map of 1777 is at 1 inch to the mile scale and therefore provides less detail than Rocque's view. The mill, however, is depicted and labeled as 'Paper Mill'. The numerous watercourses to the south of the bridge are shown as three courses rather than the more complicated arrangement shown in Rocque. This

may be a simplification due to scale, or it may suggest that some degree of engineering or water management had been carried out between the surveys.

4.7 *Weirs Mill*

4.7.1 The 1777 map does not depict Weirs Mill but by 1795 this structure had been constructed (Newbigging, 1999) as a corn mill, to the north-east of Towles mill on the branch of the Thames known as 'The Weirs'. Subsequently (by 1816) the mill was converted to a paper mill and shares some connection with Towles Mill, at times being held in the same ownership.

4.8 *Enclosure map - 'A map of South Hincksey referred to by the annexed award by William Church Abingdon', 1814 - Figure 6*

4.8.1 The parishes of South Hinksey and Cumnor were enclosed together from the late 18th century with final acts dating to 1820. As part of this process a map of 1814 of South Hinksey provides the next view of the mill complex. This provides the most detailed view of the mill structure yet in the map sequence. A rectangular structure with various additions and outshoot elements, suggestive of an amalgamation of phases of construction, straddles the main Hinksey Stream channel and extends across an island of land to a smaller leat channel or mill race (**OA 7**). Detached from this industrial structure and set to the west is a smaller building, likely to represent the residence of the miller (**OA 8**). A trackway is shown leading from the mill to the Turnpike Road (**OA 9**). Land surrounding the mill is divided into large meadows including 'Mill Meadows' and 'Feast Meadow'. The remains of a medieval strip field system are set to the west of the Turnpike Road and labelled 'Oxford Grounds' (**OA 10**). To the south of the bridge the map is less detailed but numerous water courses are depicted suggesting that this area was still dominated by marsh land and various branches of the River Isis (as it is labelled). The mapping of these channels suggests that some degree of water course management has been carried out with one main channel exiting the bridge rather than the three shown in earlier depictions. Much of the land is owned by the Rev'd Willoughby Bertie, likely a member of the Earl of Abingdon's Bertie family. A number of land parcels are noted to have been exchanged by the Earl to the Rev'd Bertie. Further information concerning the occupants of the mill at this date is likely to be found in the enclosure apportionments.

4.8.2 In the 1816 Customs and Excise list of Paper mills operating in and near Oxford William Drewett (also Drewitt) is listed at Hinksey Mill and John Evans at Weirs Mill (Carter, 1974, 70). Drewitt used the mill to produce cardboard or mill boards from 1825 (VCH Oxon Vol II, 242). In 1828 John Towle, later Mayor of Oxford and possibly sarcastically known as 'Honest John' (Newbigging, 1999, 94), married Mary Ann Drewitt, probably William's daughter, and became associated with the mill. Perhaps under Towle's direction, it was one of the first to produce boards for portmanteaux (OAU, Sept 1998, 2-3).

4.9 *Oxford and Great Western Railway plan and section, 1842 - Figure 7*

4.9.1 There is no tithe map for the parish as tithes were extinguished by the 1820 enclosure. The next map in the sequence comes in the form of a plan related to the construction of the railway line which crosses the study area to the immediate west of the site of the mill. This plan shows in detail land plots and buildings either side of the proposed route. It also provides an apportionment-like list of owners and occupiers and describes the nature of the plot. An inset sketch of the mill complex provides another detailed view of the mill building, slightly at odds with that shown on the enclosure map. The building depicted does not extend as far to the east as that on the earlier

map. A projecting offshoot to the western side of the north face of the building likely represents an extension, however, the other differences may just represent differences in surveying accuracies and detail requirements. To the west of the mill two structures are shown (**OA 8**); one narrow thin building set north-south and to the south of this a squarer structure of similar proportions but different location, to the probable mill house shown on the earlier map. Another structure is shown set at the angle of the main Hinksey Stream and the bridge (**OA 11**). The list entry for the mill in the survey book accompanying the plan is as follows: '24, Paper Mill and various buildings, cottage yard, garden, millstream, pieces of meadow land and ozier beds'. The property is owned by the Earl of Abingdon, leased by William Drewitt and John Towle and occupied by John Towle.

4.9.2 Robert Sephton's research into John Towle provides further information about the mill complex in the mid and late 19th century. Exactly when Towle took over the Drewitt's enterprise is unclear although from 1848 Towle is listed among 'out of town' freemen with a papermaking business at Hinksey Mill, then in Berkshire. In the 1851 census only Towle and an unmarried niece are recorded at Hinksey Mill and it is presumed that Drewitt and his daughter were both dead by that date. (OAU, Sept 1998, 2-3).

4.9.3 Towle obviously had an interest in developing the business and finding new markets for the mill's card and paper products. He became interested in the possibilities of using card and paper as permanent building materials and went on to build a house of paper as part of the mill complex. The origins of Paisley House, as the structure was known, may have been connected with the proposed construction of the Great Western Railway line between Oxford and Didcot which opened in 1844. Towle opposed the construction of the railway and in an Inspection report undertaken on its completion by Major-General Pasley [sic] (who the house may be named after!) it is noted that Brunel blamed the insecure state of the bridge carrying the Oxford-Abingdon turnpike over the railway on Towle's actions. Brunel alleged that Towle had erected a paper 'house' on the site in order to claim compensation from the Railway Company. A small structure is noted on the 1842 Railway Plan that may depict the original paper hut (**OA 11**). Paisley House, constructed in 1844 and lived in by Towle until his death in 1885 was demolished in 1996. Prior to this loss a thorough record of the structure was made by Oxford Archaeological Unit (OAU, 1998). This investigation suggested that the original phase of Paisley House may have been the structure Brunel described as a 'small hut of timber framework covered with brown paper, with a fireplace in it' (OAU, 1998, 3-4). It is unclear if Towle received any compensation.

4.9.4 From 1854 a John Towle Junior is listed as a freeman at Hinksey Mill. This may be a son but is thought more likely to be a nephew mentioned in attendance at Towle's funeral (Sephton, 1998,20). It must be this John Towle that in 1885 removed the paper-making machines from Weirs Mill and converted it into a board manufactory working in conjunction with Hinksey mill.

4.10 *Ordnance Survey 1st edition Twenty Five inch map of 1875 - Figure 8*

4.10.1 The first edition 25" Ordnance Survey map depicts the mill complex as 'New Hinksey Mill (Paper)' and shows another slight variation in the main mill building. A further extension has been added to the south of the structure. The long, narrow north-south orientated building shown on the railway plan has been extended and added to, creating an 'L-shaped' structure which cuts across a track linking to the bridge (**OA 8**). The building adjacent to the junction of Hinksey Stream and bridge remains unchanged. Paisley House and gardens are shown for the first time in the map

sequence set close to the embanked bridge crossing the completed railway line (**OA 5**).

4.10.2 The trade directories of the period list the mill and provide information on its occupants. In Shrimpton's Oxford directory of 1875 John Towle, Abingdon Road and RM Jeffries, Weirs Paper Mill, Abingdon Road are listed as paper makers. By the Vaulters Oxford post office directory of 1887 WW Towle and Mrs Towle are listed at Papermills, Abingdon Road. The Vaulters directory of 1889 lists both Weirs Papermill and Towles Mill, Abingdon Road and records Watson Welborne as manager of both establishments. He appears in subsequent directories up to and including Kelly's directory of 1900, for most of the period he is listed as living in Paisley House.

4.11 *Ordnance Survey 2nd edition Twenty Five inch map of 1899 - Figure 9*

4.11.1 The second edition 25" Ordnance Survey map shows the main mill building unchanged from the first edition. The 'L-shaped' building adjacent is shown as two separate elements with the trackway passing between the two (**OA 8**). A small structure is set on the side of the road to the mill within the garden of Paisley House (**OA 12**). The building close to the junction of the mill access road and Abingdon Road has been extended (**OA 11**) and a new structure is depicted on the north side of the bridge to the east of the main water course and leat within a new plot (**OA 13**). To the north of the mill the development of the New Hinksey suburb is extending onto the medieval strip field system with Norreys Avenue partially developed with terraced houses and Wytham Street and Sunningwell Avenue laid out ready for development (**OA 10**). To the west of the railway line and north of the mill, an additional leat has been cut, adding to the numerous channels of the area (**OA 14**).

4.12 *Early 20th century end of production at the mill*

4.12.1 Kelly's Directory of 1900 lists Watson Welbourne at Hinksey Paper Mill, however he had moved out of Paisley House, replaced by George Hambridge Turner, who was still listed there at the 1926 Kelly's Directory. By the 1910-11 Kelly's Directory the mill is referred to as John Towle and Co millboard manufactrs. Mrs Welbourne is listed at the Papermill, Weirs Lane, Cold Arbour, possibly suggesting the death of Watson Welbourne between 1900-1910. The mill is last mentioned as John Towle and Co millboard manufactrs. in the Kelly Directory of 1922. Subsequent directories make no mention of the mill. This suggests that between 1922 and 1923 the mill ceased trading.

4.13 *Historic photograph of Hinksey Mill derelict 1930s - Plate 1*

4.13.1 Only one historic image of the mill has been located during the research for this assessment. The image shows the mill during the 1930's in a derelict state. The quality of the image makes extensive interpretation difficult, however, it demonstrates the series of extensions surrounding the earlier core of the mill. Materials seem to include timber framed elements with weather board cladding and other brick-built elements.

4.14 *Ordnance Survey Revision 1936 Twenty Five inch map - Figure 10*

4.14.1 The OS series of maps throughout the 20th century provides evidence of the decline and eventual loss of the mill complex. The revision of 1936 suggests a number of demolitions have taken place on the site. The shorter range of the 'l-shaped' complex

has been demolished. The shading of the map also suggests that the core of the mill structure has been lost, with no building straddling the main water channel (However, see 4.14.1). A line crossing the channel at the point where it narrows marking the former location of the mill, possibly represents the sluice (**OA 15**). To the south a foot bridge (**OA 19**) crosses the narrow channel before it widens again.

4.15 *Ordnance Survey Six inch map1961, surveyed 1956 - Figure 11*

4.15.1 The six inch map contradicts the information of the 1936 map as it shows the mill structure spanning the water channel. It seems most likely that this suggests that the shading on the 1936 map is incorrect and that the area shown unshaded where the core of the mill had previously stood was in fact still standing at this date. A small structure is shown on the island to the east of the mill.

4.16 *Ordnance Survey Twenty Five inch map 1971, surveyed 1960 - Figure 12*

4.16.1 By the survey date of 1960 the depot to the west of the mill has been constructed. The majority of the mill buildings have been demolished with one rectangular structure retained and labeled 'Mill (disused)'. This structure seems to represent a northern extension on the main mill structure. The building does not survive today. Two footbridges are marked at either end of the narrowing of the channel, marking the former site of the mill structure that spanned the watercourse. The footbridge to the north is a sluice and is likely to represent the structure that survives today. The footbridge to the south does not survive today. The building on the island is shown but was subsequently lost (see 5.1.5).

4.16.2 Paisley House was demolished in 1996 and marked the loss of the last surviving building of the mill complex.

5 WALKOVER SURVEY

5.1.1 As part of the desk-based assessment a walkover survey of the vicinity of the sluice was undertaken by OA on 10 May 2006. The weather was dry with good light conditions. The survey was constrained to some extent by the overgrown nature and in places boggy conditions on the island to the east of the sluice, which obscured the ground surface, occasionally obscured the sides of the water channels and obstructed access. A watercourse cuts across the island midway along its length and prevented access to the southern half of the area.

5.1.2 The objectives of the survey were to:

- Inspect on the ground ('ground-truth') previously known archaeological and historical landscape features;
- Identify new features of potential archaeological/historical significance;
- Record other features of potential interest *eg* extent and nature of any ground disturbance.

5.1.3 The construction of the sluice itself was investigated (**OA 15,** Plate 2). The relatively crisp condition of the timber of the structure and the metal work of the ratchet system did not suggest a great age for this feature and it was seen to be associated with concrete repairs to the side of the channel. It is likely to be the sluice first shown on the 1971 OS 25" map which was surveyed in 1960 (Fig 12). Dairy Crest may hold records relating to its construction or upkeep that may more securely date this feature.

5.1.4 The narrowing of the watercourse as it passes through the sluice point, and formerly through the mill itself, is constructed of high quality historic ashlar stonework, in

places obscured by the 20th century concrete sluice additions (**OA 16,** Plate 3). This historic fabric is of high archaeological significance as it represents the only surviving built remains of the mill complex still visible on the site. The large ashlar blocks are well cut with fine joints and are most likely to belong to one of the more recent, post medieval phases of the mill.

5.1.5 Immediately opposite the sluice, on the island in between the channels, a large ivy-covered mound was observed (**OA 17,** Plate 4). Rapid investigation suggests that this represents the remains of a structure (possibly that shown in this location on the 1971 OS map (Fig 12)). The mound may represent a pile of demolition material from this structure but has the potential to disguise something beneath, possibly extant mill structure. Building materials including asbestos sheet roofing, a large metal bolt and a fragment of thick glass milk bottle marked 'County' were observed during this rapid investigation (and replaced).

5.1.6 A length of historic iron railing (**OA 18,** Plate 5) was observed at the northern end of the island close to the weir crossing the eastern mill leat (**OA 7,** Plate 6). No built element was observed at the point where the leat rejoins the main channel at the southern end of the island.

5.1.7 No other features of interest or disturbance were identified during the course of the walkover survey.

6 ARCHAEOLOGICAL POTENTIAL

6.1 *Assessed potential*

6.1.1 Originally operating as a corn mill, the processes involved in the mill complex would have included the delivery and storage of the raw grain, the grinding and processing of the grain into flour and the collection, packaging and distribution of the flour. A typical arrangement of a corn mill is over three storeys with grain stored in the upper storey in grain bins to discourage rats and mice, and stored as close as possible to the grinding stones on the storey below. Known as the 'stone floor', the middle level held the mill stones. Grain was fed from the upper storey to the pair of stones; the 'bed stone', the lower and static stone and the 'top' or 'runner stone' above which rotated, driven by a shaft connected to the water wheel on the ground floor below. The processed flour moved from the centre of the stones to the edges via a series of grooves cut in the bed stone and was collected and bagged on the ground floor. The ground floor held the water wheel housed in a wheel pit on the watercourse which powered the whole operation. The wheel was attached to the mill stones by a series of rotating shafts. The bagged sacks of flour where then distributed from the ground floor of the mill, either to ancillary buildings for further storage or onto carts for immediate distribution (Wood E S, 1995, 541-545).

6.1.2 The narrowing of the channel lined by the ashlar walling (**OA 16**) may represent the wheel pit where the water wheel powering the mill was located. The absence of a mill pond further up stream suggests that the wheel was undershot, with the water flowing against the bottom of the wheel, rather than overshot with water led along a wooden trough from the millpond to strike the buckets of the wheel just past its highest point (Wood E S, 1995, 541). The narrow leat to the east of the mill (**OA 7**) forms part of the system managing water flow passing through the mill. A system of sluice gates would have been used to redirect water from the Hinksey Stream to the leat when the mill was not working.

6.1.3 From the 16th century mills were adapted from corn mills to a range of other

purposes. In the case of Towles Mill the conversion was to a papermill. The processes involved in this phase of the mill complex required a plentiful supply of iron-free water and proximity to a sizeable town as a source of rags (Wood ES, 1995, 550). The rags were cleaned, boiled and then pulped, often by water-driven hammers. The pulp was mixed with water in a vat, where additives such as china clay could be added. The pulp was then lifted out on a mould consisting of a wire screen in a wooden frame ('deckle'). Water was drained from the pulp and the deckle removed, the pulp fibres were turned out on a bed of woollen felt. Further water was removed through a screw press and then the sheet was hung out to dry in a loft, pressed, given a coat of size, and then dried and pressed once more (Wood ES, 1995, 550). During the late 18th and 19th century this time consuming process was mechanised although the basic sequence remained the same.

6.1.4 The only identified standing remains relating to the mill complex are the surviving ashlar wharfsides either side of the narrowing of the channel marking the former location of the mill. The date of the walling is unknown although it is most likely to date to one of the more recent, post medieval phases of the mill, possibly of 18th or 19th century date. This walling, the narrowing of the main channel, together with the narrow leat to the east are the only identified visible surviving indications of the mill complex. The existing timber sluice gate itself is probably of early to mid 20th century date.

6.1.5 The study area has potential for the survival of below-ground remains relating to the sequence of mill complexes demonstrated to have existed here and located through the historical research and map sequence. Numerous water courses have been depicted through the map sequence and there is potential for others that have not been mapped. The mapping of these channels suggests changes in courses over time, there is potential for the archaeological remains to show similar variation. Areas of high archaeological potential have been mapped as part of Figure 2 and cover the known location of the mill buildings and edges of the waterways and leats and route of the medieval bridge.

6.1.6 Potential below-ground remains include surviving elements of industrial buildings and processes close to the power supply of the water courses of the river. There is also potential for evidence relating to water management, such as leats, mill races, finding ponds and tanks and sluice gates to control the flow. There is some potential for the remains of the trackway linking the mill to the toll road.

6.2 *Previous impacts*

6.2.1 No previous excavation or geotechnical information is available for the site and it is therefore only possible to make general statements about likely previous impacts that may have effected potential archaeological remains.

6.2.2 The mill complex was systematically demolished and the site cleared after years of dereliction. The construction of the railway, upgrading of Abingdon Road and construction of the dairy depot and waste reception centre all have the potential to have destroyed archaeological deposits. However, the site of the mill buildings that straddled the water course has not been subsequently developed and therefore has the potential to hold undisturbed archaeological deposits that survived the site clearance.

7 ARCHAEOLOGICAL IMPLICATIONS OF THE PROPOSED WORKS

7.1.1 The Towles Mill Sluice Improvements Scoping Report by Atkins was supplied in draft form dated December 2005, together with a number of working plans showing

various potential options by Black and Veatch.

7.1.2 Option 1 is to do nothing. This would have no archaeological implications, although with no maintenance the condition of the surviving masonry may deteriorate.

7.1.3 Option 2 is to do the minimum, which involves maintaining the existing maintenance regime of the sluice. This would have no archaeological implications.

7.1.4 Option 3 is to replace the sluice entirely with a concrete Crump Weir (Figure 13). This involves the construction of a new weir on an enlarged channel involving the removal of part of the right bank. The archaeological implications of this option are significant with the total loss of the historic ashlar retaining wall on the east side of the main channel. The area of the island to be removed to form the new enlarged channel includes the mound (**OA 17**) identified during the walkover survey and is likely to contain below-ground remains from the sequence of mill buildings on the site. Further assessment is recommended to provide information on survival and significance of any archaeological remains, and to inform detailed design. If significant remains were identified and preservation *in situ* could not be guaranteed then mitigation, which is likely to involve recording of the ashlar retaining walls, and excavation and/or watching brief on remains possibly surviving behind these walls would be expected.

7.1.5 Option 4 is to replace the sluice entirely with a riffle (Figure 14). This involves the construction of three linear constructions across an enlarged channel. This has largely the same archaeological implications as Option 3 with the same area of the right bank being lost to create the enlarged channel. Three times as much impact is likely on the left bank, including on the historic ashlar retaining wall, due to the three constructions rather than the single weir construction of Option 3. These impacts are, however, not likely to be extensive. If this Option were chosen it is likely that archaeological mitigation would be required as outlined for Option 3.

7.1.6 Option 5 suggests a larger scale of works with the replacement of the existing sluice with a fixed overfall weir and the enlargement of the side channel to the east of the main Hinksey Stream (Figure 15). The archaeological benefits of this option is that the historic ashlar retaining walls are retained as are the historic mill remains that may survive immediately behind. However, the enlargement of the side channel has greater impact on the site of the mill buildings known on the island from the historic map sequence. If this Option were chosen further assessment would be recommended to define the specific limits of any mill structure or archaeological deposit, as outlined for Options 3 and 4.

7.1.7 As well as the archaeological impact in terms of below-ground remains, all the Options have a negative impact in terms of the surviving historic character of the Study Area. As discussed above the historic character of the Study Area has been significantly eroded by the removal of the mill buildings and the redevelopment of the wider site. However, the options will further erode the identified surviving elements of historic character for example, the eastern leat is consistently shown as a narrow, obviously man-made channel or mill race, relating to the management of water flow to the mill. By widening this channel to the same width as the main channel (or greater), Option 5 would damage the historic hierarchy of the river channels and erode further one of the few surviving traces of the mill complex negatively impacting on the historic integrity of the site. However, it may be judged that this is archaeologically less damaging than the loss of the ashlar retaining walls marking the site of the mill on the main channel.

8 CONCLUSION

8.1.1 Towles Mill Sluice is on the site of a mill which has variously been known as Langford Mill, Hinksey Mill, New Hinksey Mill and Towles Mill. Langford mill is known to have been in existence by the beginning of the 12th century and is likely to have Saxon origins. It is described in Abingdon Cartulary as being close to 'Oxford Bridge', a reference to the Grandpont, the medieval causewayed bridge that crosses the study area as Abingdon Road.

8.1.2 The mill originated as a corn mill, but by Rocque's map of 1761 it had been converted to a paper mill. The sequence of historic maps plots the development of the mill complex including the mill itself straddling the main channel with various ancillary buildings and presumed millers residence adjacent on the west bank of the stream. The maps also illustrate the numerous watercourses within the study area and the evolution of engineered water management, especially to the south of the Grandpont Bridge.

8.1.3 During the 19th century the mill was associated with John Towle, one time Mayor of Oxford, who sought to develop new markets for the mill's products by experimenting with the use of card as a building material. He constructed a house made from paper known as Paisley House which stood from 1844 to its demolition in 1996.

8.1.4 The mill ceased production in the early 1920's and its structures were largely demolished by 1960. Subsequent to this the few surviving buildings have been demolished and the only standing visible remains of the mill are the ashlar stone retaining walls of the narrowed main channel which marks the site of the mill. The managed watercourses of the site are another reminder of the mill's former presence.

8.1.5 The site has potential for the survival of below-ground remains relating to the sequence of mill complexes and water management. Although the railway line, road improvements and construction associated with the dairy depot and waste reception centre may have had an impact on potential archaeological deposits, the site of the mill itself is not likely to have been disturbed and is thought likely to contain undisturbed archaeological deposits.

8.1.6 Five options for improvement works at the sluice have been proposed in the Towles Mill Sluice Improvements Scoping Report and the archaeological implications of these initial options are considered in this report. Options 1 and 2 are 'do nothing' and 'do the minimum' proposals and would have no archaeological implications. Options 3 and 4 replace the sluice with a Crump Weir and riffle respectively. These interventions both involve the total loss of the ashlar stone revetment wall of the east bank and a wider area of the bank that coincides with the site of the former mill. There is a high potential for below-ground archaeological deposits in this location and it is likely that further archaeological assessment would be required. If significant remains are identified at this stage any report is likely to recommend the need for mitigation by excavation or redesign. Option 5 proposes a large scale of works with the side channel to the east of the sluice extensively enlarged. The current design is likely to affect the known location of former mill buildings, and the historic character and hierarchy of the water channels, but retains the historic ashlar walls of the main channel. There is a high potential for below-ground archaeological deposits in this location and it is likely that further archaeological assessment would be required to inform the detailed design.

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Oxfordshire Photographic Collection held by Oxfordshire Studies:
1 image of the mill located in the 'Oxford Mills' folder, 75/4582, showing the mill in a derelict state in the 1930s

The following were consulted but contained little or no information regarding Towles Mill:

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Phillipson J, 1996, *South Hinksey Village Trail*

Swain H, 1970, 'The Hinksey villages' in *Thames Valley Countryside Magazine*, vol 10, no. 38, October 1970

Wakeman F, 1991, *Notes towards an account of Paper mills in Oxfordshire*, The Plough Press, Kidlington

Folder of newscuttings headed North and South Hinksey held by Oxfordshire Studies

The following were consulted at the BRO:

T/X 26/13 Details of records at Oxfordshire Archives, 1980

T/X 42/9 catalogue of estate papers of Earls of Abingdon held by the Bodleian Library, Oxford - the Bertie papers.

D/EB d E1 Accounts of the estates of the Earl of Abingdon, 1760-1780.

The subject index of the BRO was also searched under 'Mills' and 'Paper mills' - no references to the Mill in the study area were found.

The Manorial Index of the BRO was searched under 'South Hinksey Manor', the manor was listed but no holdings were indexed.

The following were consulted at the Bodleian Library and are held as part of the Earl of Abingdon's Bertie Papers:

Survey and valuation of estates in Hinksey, Seacourt, Wytham and Cumnor, Berks; Long Crendon, Bucks; and Dorchester, Rycote, Albury, Thame, Beckley with Horton, Crowell, Chesterton and Wendlebury, Oxon, early 18th century. MSS. Top. Oxon. C. 381

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Andrew's and Dury's Map of the Country Round London 1Inch to the mile 1777 - reproduced in Carter, 1974

A map of South Hinksey referred to by the annexed award by Wm Church Abingdon 1814 - Enclosure map viewed at BRO Q/RDC55 T/M 77

Oxford and Great Western Railway Plan and Section and survey book, 1842 - viewed at BRO Q/RU m 22

Ordnance Survey 1st Edition Twenty-Five Inch map of 1875

Ordnance Survey 2nd Edition Twenty-Five Inch map of 1899

NB. There is no Tithe Map for South Hinksey parish. Tithes were extinguished by enclosure of 1820. The manuscript and printed map catalogue of the BRO was searched for Hinksey, South, South Hinksey and Cumnor no further maps were referenced.

Other Drawings

The Prints and photographs index of the BRO was searched - no relevant images were identified.

The Oxfordshire Photographic archive, including the images of Henry Taunt, was consulted at the Oxfordshire Studies - no views of the mill were identified.

Appendix One

Gazetteer of Archaeology within 100m Study Area (Figures 2 and 3)

OA - Oxford Archaeology
Oxford Feasibility Study - Oxford Flood Risk Management Feasibility Study. Archaeological Baseline, Oxford Archaeology, 2005.
SX etc - Listed Building reference no. (DCMS)
WS - Walkover Survey
ME - Map evidence

OA No.	Type	Description	Period	Source
1	Site of	Site of Hinksey Mill. Also known as Langford Mill, Towles Mill and New Hinksey Mill. Langford Mill may have Saxon origins and was definitely in existence by the beginning of the 12th century. Originally used as a corn mill it converted to paper and card production by the 18th century. The complex included an industrial building straddling the main stream with ancillary buildings and probable millers residence on the west bank. The mill ceased production in the mid 20th century and no standing buildings survive today. (Plate 1)	Medieval and Post Medieval	Oxford Feasibility Study - OA 306, MOX 10843.
2	Site of	Site of post medieval Tollhouse	Post Medieval	Oxford Feasibility Study - OA 309, MOX 10921.
3	Monument	Medieval multi-span bridge, part of the Norman Grandpont causeway.	Medieval	Oxford Feasibility Study - OA 311, MOX 10954.
4	Site of	Site of Abingdon Road Halt railway station	Modern	Oxford Feasibility Study - OA 312, 315, NMR No. 502164, MOX 10931.
5	Site of	Site of Paisley House, a house made of paper and card produced at Hinksey Mill and constructed in 1844 by the then mill owner John Towles. Demolished in 1996.	19th century	Oxford Feasibility Study - OA 313, MOX 10960.
6	Water course	The Hinksey stream is shown split into three channels to the north of the Grandpont bridge (**OA 3**) with numerous water courses shown to the south on a series of historic maps. Early 19th century maps suggest that by this time a degree of water management engineering had been undertaken in the southern part of the study area reducing the number of	Medieval and Post Medieval	ME 16th-17th century New College map,

OA No.	Type	Description	Period	Source
		channels and creating an larger island of reclaimed land.		Rocque 1761, Andrew's and Dury map of 1777 and 1814 Enclosure map (Figs 3-6)
7	Mill Leat	The course of the existing narrow leat or mill race to the east of the Sluice is first shown in detail on the 1814 Enclosure map. This channel is obviously an artificially constructed channel relating to the operation of and water flow through the mill. A weir is located at its northern extent where it branches from the main channel. No masonry was observed along the sides of the channel during the site visit. (Plate 6).	Unknown although potentially medieval	ME - 1814 Enclosure map (Fig 6)
8	Site of	A series of ancillary buildings forming part of the mill complex are shown on historic maps on the west bank adjacent to the mill structure. The 1814 Enclosure map shows a single structure likely to be the millers residence. In later maps this has been replaced or extended by a sequence of buildings. The 1842 Railway map shows a long thin building orientated north - south, with a smaller structure (possibly residence) to the south. By the first edition 25" OS map of 1875 these buildings had been added to forming an 'L-shaped' complex. By the second edition 25" OS map of 1899 the range is shown as two separate wings.	Original structure date unknown. 19th century additions and extensions	ME - 1814 Enclosure map (Fig 6), 1842 Railway map (Fig 7), 1st edition 25" OS map (Figure 8), 2nd edition 25" OS map (Figure 9)
9	Site of	A track is shown leading from the mill building to the Abingdon Road on the 1814 Enclosure map and later maps.	Unknown although potentially medieval	ME - 1814 Enclosure map (Fig 6)
10	Medieval field system	The remains of a medieval field system is depicted on historic maps. Late 19th century and 20th century OS maps show the development of these fields with the laying out of the New Hinksey terraces. The grain and pattern of the field system is retained in the urban form of the terraced development. The 2nd edition 25" OS map shows the laying out of the terraces with the roads of Norreys Avenue and Sunningwell Road laid out down the middle of former field strips with terraces and gardens laid out either side, extending to the original field boundaries. Evidence of the field boundaries may be retained in the existing property boundaries.	Medieval	ME - 1814 Enclosure map (Fig 6)
11	Site of	A small structure is shown at the apex of the junction of the Hinksey Stream and the Abindgon Road on the Railway Plan of 1842. This may represent Towles original Paisley Hut. Extensions to this building (or potentially a new structure on this plot) are shown on the 2nd edition OS map of 1899.	19th century	ME - 1842 Railway Plan (Fig 7)
12	Site of	The 2nd edition 25" OS map of 1899 shows a small structure set on the side of the track to the mill (OA 9) within the garden of Paisley House (OA 5)	19th century	ME - 2nd edition 25" OS map (Figure 9)
13	Building	The 2nd edition 25" OS map of 1899 shows a building depicted on the north side of the bridge to the east of the main water course and leat, set within a new plot.	19th century	ME - 2nd edition 25" OS map (Figure 9)
14	Watercourse	The 2nd edition 25" OS map of 1899 shows an additional leat to the west of the railway line and north of the	19th century	ME - 2nd edition

OA No.	Type	Description	Period	Source
		mill.		25" OS map (Figure 9)
15	Sluice	Current sluice mechanism. The sluice probably dates to the early-mid 20th century given the crispness of the timber and metal work. It is built using concrete added to the historic revetment walls of the watercourse. (Plate 2).	20th century	WS
16	Walling	Historic high quality ashlar stonework revets the narrowing of the main water channel as it passes through the site of the former mill. Probably the walls of the Wheel Race, but is now sluice. (Plate 3).	Unknown	WS
17	Feature	Ivy covered mound on the island close to the sluice. Probably represents the decayed remains of a structure shown at this location on the 1971 OS map. (Plate 4).		WS
18	Railing	Length of historic iron railing. (Plate 5).		WS
19	Site of	Site of a footbridge marked on the 1936 map.		ME - 1936 OS revision 25" map (Figure 10)

Appendix Two

Archaeological Test-pit Report

Summary of Test-pit Excavations at the site of Towles Mill, Hinksey Stream Oxford

During June 2006 Oxford Archaeology hand excavated ten 1 x 1 m Test-pits and 11 hand augered boreholes on the former site of Towles Mill on Hinksey Stream, Oxford, NGR SP 517 039 (Fig. 17).
The Environment Agency are proposing to construct a flood alleviation scheme at the site.

These works were requested, and specified in a brief written by Steve Kemp, Archaeologist for the Environment Agency (issued to OA by e-mail on 22 June 2006), and were prompted by documentary and cartographic work detailed in the main body of this report.

The works had a clear objective to inform on the presence, nature and date of archaeological remains in the area of the proposed channel-widening scheme (Option 5, Black and Veatch).

Specifically the Test-pits were to:

- define the specific location and extent of the C19th mill and any possible underlying earlier, mill remains, whilst leaving all structural remains encountered in situ.
- evaluate the nature of any archaeological deposits along the southern bank of the northern/bypass channel

The Auger work was to:

- identify the sedimentary and palaeo-environmental potential of the site in preparation for possible later works

The level of undergrowth affected the location of some trenches. The results of the test pits are detailed in this Appendix and the report on the auger work is detailed in Appendix 2 below.

Test pits on the site of the mill

Test Pits 1, 2, 3 and 11 were located on the historic footprint of the former mill. This was ascertained through a combination of the use of historic maps and field observation. The historic limestone ashlar block walls either side of the southern stream were considered to be the walls to the wheel race, and a large ivy covered mound immediately to the north of this channel was considered to be the remains of the demolished mill. When compared to the historic maps it was concluded that the mill extended to the north of the wheel race and in the 18th / 19th century extended almost as far as the northern channel (thought to be the Bypass channel.

Trench 11 was located within the ivy-covered mound and revealed extant mill structure 1101. This brick structure formed a U shaped housing around some rusted iron fittings mortared into the brick for strength. The bricks were 7 - 8 cm thick indicating an 18/19th century date. Immediately to the north Test pit 2 revealed a truncated linear foundation

All the pottery from these test pits was dated to the 18/19th centuries except for a single piece of 12/13th century Brill Borstall Ware. These date corroborate the structural evidence and hint at the sites medieval antiquity.

Test pits on the line of the south bank of the former mill bypass or northern channel.

A total of six Test-pits, Numbers 4, 6, 7, 8, 9, and 13, were excavated along the line of the Bypass or Northern Channel. To the north-west of the mill footprint TP 8 was located nearest to the weir at the upstream end of the Bypass Channel with TP 4 some 20m to it's east. To the south-west of the former mill footprint were TP's 6, 7, 13 and finally TP 9 located furthest to the west.

No features of archaeological interest were encountered in these interventions and the sequence in each is detailed in the Geo-archaeology Report (see Appendix 3). The Test-pits to the east showed more signs of activity in the subsoil, where pieces of building material and glass were present, perhaps indicating this deposit had been generally disturbed or even redeposited/dumped in the 18/19th Century. In comparison the subsoil in the TP's to the west of the former mill appeared less disturbed. A small pit, 605, was recorded in TP 6. This measured 0.30m deep and did not contain any finds, this was sealed by a gravel surface associated with a kerbing than ran from TP 3 and probably represented a 19th Century path. The 'path' was sealed by topsoil.

Watching Brief observations on three slit trenches on the north bank of the mill bypass or northern channel

In all three slit trenches modern/victorian landfill was seen to overlie truncated alluvium.

Specialist finds Reports

Pottery and Clay Pipes by John Cotter

Introduction and Methodology

A total of 28 sherds of pottery weighing 356g was recovered from 11 contexts. All but two sherds were of late post-medieval date.

All the pottery was examined and spot-dated during the present assessment stage. For each context the total pottery sherd count and weight were recorded on an Excel spreadsheet, followed by the context spot-date which is the date-bracket during which the latest pottery types in the context are estimated to have been produced or were in general circulation. Comments on the presence of datable types were also recorded, usually with mention of vessel form (jugs, bowls etc.) and any other attributes worthy of note (eg. decoration etc.).

Date and Nature of the Assemblage

The pottery was generally in a fairly scrappy fragmentary condition although a few of the 19th-century sherds were fairly large and relatively fresh.

Nearly all the pottery is of later 18th- and 19th- century date, with one or two pieces possibly of early 20th- century date. These mostly comprise mass-produced Staffordshire-type white and cream earthenwares, modern English stonewares, post-medieval red earthenwares and flowerpots. One or two sherds of glazed red earthenware, including a sherd of post-medieval Brill slipware, are probably of late 17th- or 18th- century date but are small, worn and possibly residual. There is a single sherd from a Raeren stoneware mug of *c*. 1475-1550 imported from the Rhineland but this is also residual in its context. The earliest piece (context 101) is a single jug sherd of *c*. 1200-1350 in early Brill/Boarstall ware from west Buckinghamshire, but this is also fairly worn and may also be residual.

The Clay Pipes

The pipes were recorded in a similar way to the pottery (see Excel table). A total of 12 pieces of clay pipe weighing 43g was recovered from 3 contexts. Two bowl fragments from context 202 were of mid 19th- century type and a third bowl fragment from 802 was of late 19th- or early 20th-century type. The latter appears to be a short stemmed 'nosewarmer' or 'navvy' pipe with moulded briar decoration.

Summary and Recommendations

Both the pottery and pipe assemblage comprise relatively late and well-known types, most of which are in a fairly poor condition. No further work on either assemblage is therefore recommended.

The Ceramic Building Material by Leigh Allen

A total of 11 fragments of ceramic building material weighing 479g were recovered from the archaeological investigations. The assemblage comprises 11 fragments of unglazed peg tile two with round holes through them. Most of the tiles are in red fabric, showing various quantities of sand. The standard form of peg tile introduced in the late 12th century remained relatively unchanged until the 19th century. Glazed examples seem to be limited to the Medieval period, this small collection of unglazed fragments probably date to the Post Medieval period.

CBM was recovered from the following context: 201, 202, 203, 301, 303, 304, 704, 802, 907.

The lead window came by Leigh Allen

A toal of 308g of twisted and fragmentary lead window came was recovered from context 701. The came has diamond shaped fragments of coloured glass (green and orange) still insitu. The cames were made in a toothed mill and are 18th or 19th century in date (Knight 1985 154-156, fig 48, No.2 type F).

Knight B 1985, 'Lead Cames' in Hare J N Battle Abbey The eastern Range and the excavations of 1978-80. 154-156.

Hare J N 1985, Battle Abbey The eastern Range and the excavations of 1978-80. 154-156.

Conclusion

Test-pits along the line of the Bypass or Northern Channel revealed a consistent sequence of alluvium, overlain by subsoil itself overlain by topsoil. A single undated feature and a probable path, running NW-SE - parallel with the Bypass Channel. This was probably associated with the later use of the mill.

Test-pit 11 demonstrated that extant structural elements of Towles Mill are currently hidden by ivy and undergrowth under the raised mound on the 'mill island'. These in-situ brick remains contain evidence of metal fittings that may pertain to gearing and drive mechanisms relating to mill operations. The position of the mound suggests that it was part of the core of mill buildings located on the northern side of the wheel race, which survives today as a stone

lined element to the current southern channel (formerly the mill channel). The size of brick and the associated pottery finds date this structure and its use to the 18/19th century.

Beyond the limits of the mound, and as evidenced from Test-pits 1, 2, and 3 further to the north, there are buried structural remains relating to the same phase of 18/19th century activity.

The buried remains of a probable limestone foundation in TP 2 indicate the presence of non-brick structural elements probably relating to an earlier mill building. These could be of medieval date or later and may be contemporary with the stone wheel-race channel walls.

Other evidence of the mill's appearance is indicated by building materials found in TPs 2, 3, 7, 8 and 9 at some distance from its footprint. The ceramic peg tiles, commonly used in medieval and post medieval structures, indicate a roofing material, but also potentially may have hung, as a cladding, on half-timbered upper wall elements. The remains of coloured leaded window point to an aesthetic consideration to the building's appearance perhaps suggesting a domestic as well as practical function. Alternatively any of this material may have been imported to the site and relate to non-mill structures.

Appendix Three

Geoarchaeological Borehole Report

Introduction

This report presents geoarchaeological fieldwork carried out at Towles Mill, South Hinksey (NGR: SP 517 039). A total of nine augered boreholes were taken at the base of the excavated 1 x 1 m test pits, and two from ground level (Fig. 16).

Towles Mill Sluice is situated on the Hinksey Stream, south west of Oxford where the Thames splits into two main channels: the Hinksey Stream and Weirs Mill Stream. The Hinksey Stream further splits into a number of channels. The site is situated on an island, formed by these managed watercourses that relate to the mill.

The site lies on the alluvium of the Thames Floodplain. The riverine silts overlie Pleistocene sands and gravels of the first river terrace. Jurassic Oxford Clay comprises the solid geology (BGS sheet 236). This evaluation examined the local subsurface stratigraphy of the banks of the Hinksey Stream.

Geoarchaeological investigations undertaken at Towles Mill aimed to add to archaeological interpretation by:

- assessing the nature and character of the sediments underlying archaeological deposits along the line of the west bank of the 'bypass' channel
- establishing the depth of the sequence below ground level (bgl)
- proving sediments deposited by natural processes

Methodology

Deep sediment sequences were inaccessible using test pits due to high groundwater levels, and sediments were obtained by coring using a hand auger. During field investigation, continuous borehole samples were recovered and sediments logged in the field.

Sedimentary units were described by a qualified geoarchaeologist using standard geological terminology and summary proformas were completed for each trench (OA, 2000). These descriptions were used to correlate stratigraphy between trenches and define sediment facies types.

Results

Sediment logs are presented for the 11 boreholes at the end of this report (Logs 1 -11), and the generalised sequence is summarised below (Table 1).

Table 1	
Topsoil	Moderately compact, dark brown/black sandy loam with a high organic content, occasional snails, occasional medium rounded - sub-rounded flint pebbles and heavy rooting. Contains 19th century and modern material
Subsoil	Soft, dark orange brown sandy/gritty clay loam with high organic content and heavy rooting. Contains 19th century and modern material
Man made deposits	Heavily rooted moderate/firm orange brown loam for landscaping and backfilling sometimes containing building material such as limestone and brick masonry
Alluvium	Firm, blue/grey clay and silty clay with frequent small fragments of mollusc shell and occasional, medium sub-angular limestone clasts
Organic alluvial clay	Soft dark brown/grey sandy clay with frequent fragments of mollusc shells
River terrace sands and gravels	Loose, grey/brown, clast supported sands and gravels in soft clay matrix

All boreholes, with the exception of BHs 12 and 14, were taken from the base of the test pits and assumed the test pit number. Ground level averaged 54.69 m OD, measuring 54.61m OD consistently at the south end of the island, rising slightly towards the weir to the north. Test pits varied in depth bgl from approximately 0.50m to 0.60, and boreholes reached between 1.30m and 1.80m bgl. No archaeological deposits were detected below the limit of test pit excavation. Sediments extracted with the auger related to the channel, displaying alluvial deposits approximately 1m thick.

Boring was not possible below the sands and gravels at the base of the boreholes. This coarse sedimentary unit was encountered at *c* 53.06m in BHs 3, 8 and 14, appearing to rise slightly between these points. The apparently raised basal unit in BH4 (*c* 53.43m OD) may have been caused by an obstruction to the auger rather than true variation in the height of the gravels.

In general, a slight rise in the height of the gravel is observed to the south of the site to *c* 53.60m OD.

The organic alluvial clay deposits directly overlay sands and gravels in the majority of the boreholes. These sediments were absent in BHs 12 and 13 (Logs 9 and 10). This lower alluvium and the overlying blue grey clay are thought to have been deposited by similar means. The upper boundary of the blue grey alluvial clay lies at a height of approximately 54.25 m OD in all boreholes with the exception of those recording man made deposits where there appears to be some truncation.

The topsoil and subsoil that cap the sequence are heavily affected by root action and contain 19th century artefacts and masonry garden features. The soils are generally clay-rich and appear to be derived from the alluvium.

Discussion

Borehole lithology has been interpreted and the stratigraphy correlated (Fig. 18).

Late-glacial deposits occur commonly beneath the floodplains of The Thames and its tributaries (Sumbler, 1996), and it is likely that the sand and gravel material found at the base of the sequence was laid down at this time. The sands and gravels are clearly part of the recent Upper Thames Pleistocene succession, comprising low-level terrace gravels composed largely of local limestones (Bridgland, 1994). The limestone-rich Northmoor Formation is likely to be that observed at Towles Mill, and limestone clasts are found throughout the sequence. The small rise in OD height of the gravels to the south of the site pertains to the dynamics of the Late-glacial river system. The current watercourse and its landscape are likely to be shaped by the underlying topography, as local variations play a role in sediment build-up and subsequent erosion.

The alluvium that forms the floodplains of the Thames is the one of the major expressions of Holocene sedimentation inland (Sumbler, 1996). Typically, alluviation occurred during the later Iron Age and Roman period in the Upper Thames following a rise in water table and flooding in the middle Iron Age (Allen et al, 1997). The alluvium noted at Towles Mill is likely to conform to this regional picture.

The lower alluvium and the overlying blue clays are considered as one sedimentary unit. Slow flowing, low energy depositional environments are suggested by the colour, organic content and thickness of the lower fine-grained organic clay (typically < 0.30). It is likely that they represent initial silting up across the floodplain during the early and mid Holocene. The blue grey alluvial clay represents flood overbank deposits associated with the former river system. The fragmentary molluscan remains within the clay suggest that the snails are not *in situ*, but have been redeposited with the floodplain sediments. Species analysis would further clarify the nature of the depositional environment and local environmental conditions, such as the proximity of the deposits to the former watercourse or to dry land, but is not necessary within the scope of this project.

Variations in sediment thickness and consistency are largely attributed to local topography. For example, thicker organic alluvial clays noted in BH3 from *c* 53.86m to 53.06 m OD (Log 3) may have accumulated in a local depression. Alternatively, increased erosion prior to overbank deposition in the surrounds may have resulted in observed deposit thickness. The lack of organic alluvial clay sediments in BHs 12 and 13 and the height of the gravels suggests that this area was subject to increased erosion until surrounding flood deposits were able to build up, or remained dry until alluvial flood deposits encroached.

The current channels of the Hinksey Stream and Weirs Mill Stream cut through these soft clay sediments. Further overbank deposits associated with the current watercourses have produced the deposits now capping the island.

Clay-rich loams lying between alluvial clays and topsoil in BHs 1, 2, 3 and 7 (Logs 1, 2, 3 and 6) are interpreted as landscaping material, deposited perhaps as early as the medieval period with the establishment of Langford Mill (OA, 2006). The landscaping associated with the mill may have seen the use of alluvial material for land stabilisation or levelling.

It is thought that the topsoil material built up during the late Holocene and historic period, and underwent disturbance while the mill was in use. Episodes of channel management may have resulted in sediments excavated from the channel edges to maintain a free flowing watercourse being dumped on the island, and contributing to top- and subsoil development. The sediments would also have experienced a rising and falling watertable and periods of flooding. The slight rise in ground level from *c* 54.61 m at the south end of the site to 54.86 m OD at TP8 reflects a slight build up of sediment, perhaps associated with the weir.

In summary, the sediments recorded reflect the broad stages of floodplain development in the Holocene Upper Thames. Differences in sediment consistency and compaction across site are attributed to varying local depositional environments as well as the nature of the current stream. The proximity of the sample to the former watercourse and the degree of current waterlogging affect the character and thickness of the sedimentary unit.

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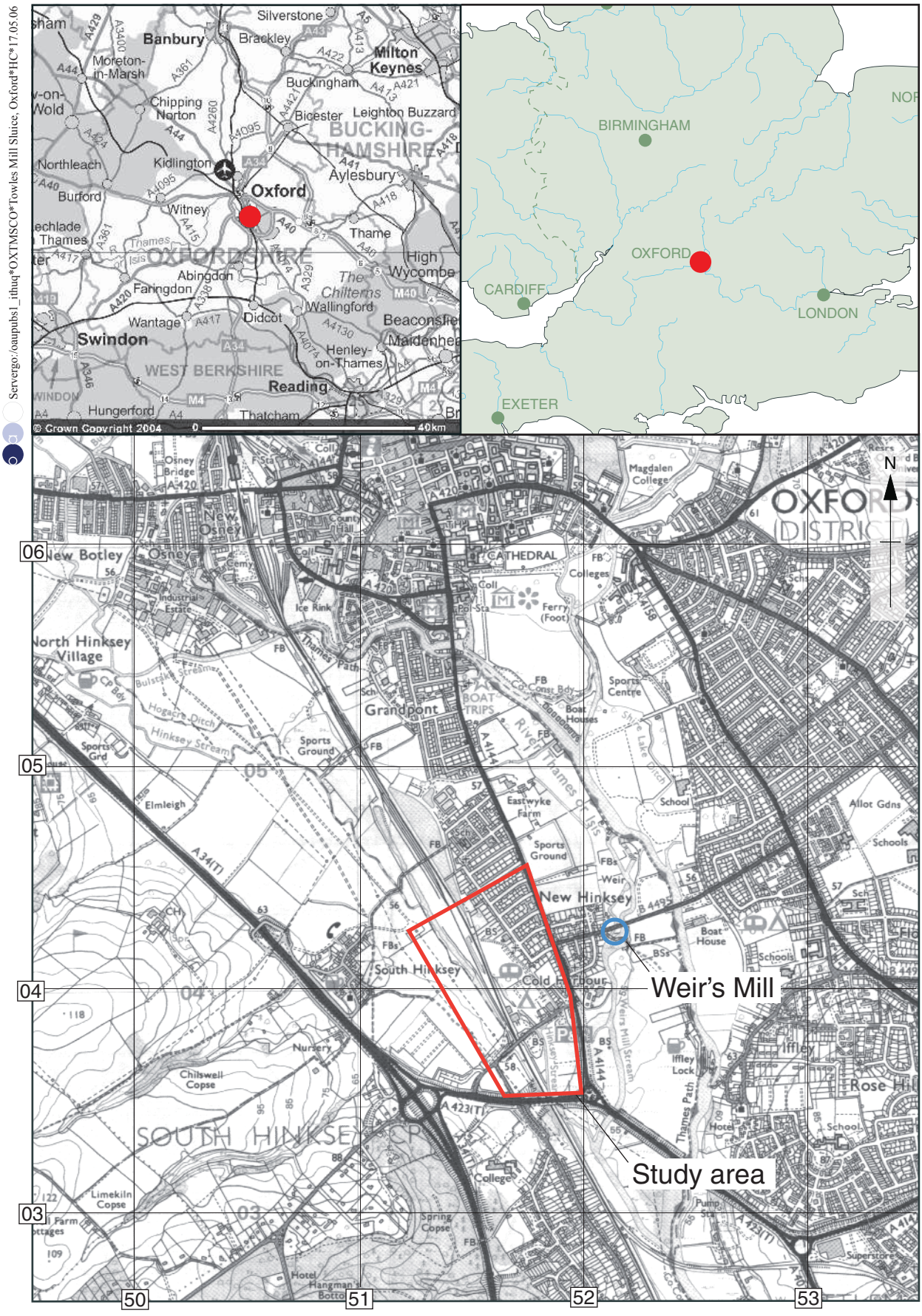
Bridgland, D R, 1994 *Quaternary of the Thames*, Chapman and Hall, London

OA, 2006 Archaeological desk-based assessment Towles Mill Sluice, Oxford, Oxford Archaeology, unpublished

OA, 2000 Oxford Archaeology Environmental Sampling Guidelines and Instruction Manual (First edition, July 2000) Unpublished

Sumbler, M G, 1996 *British regional geology London and the Thames Valley* (4th edition). HMSO, London for the British Geological Survey



Scale 1:25,000

Figure 1: Site location

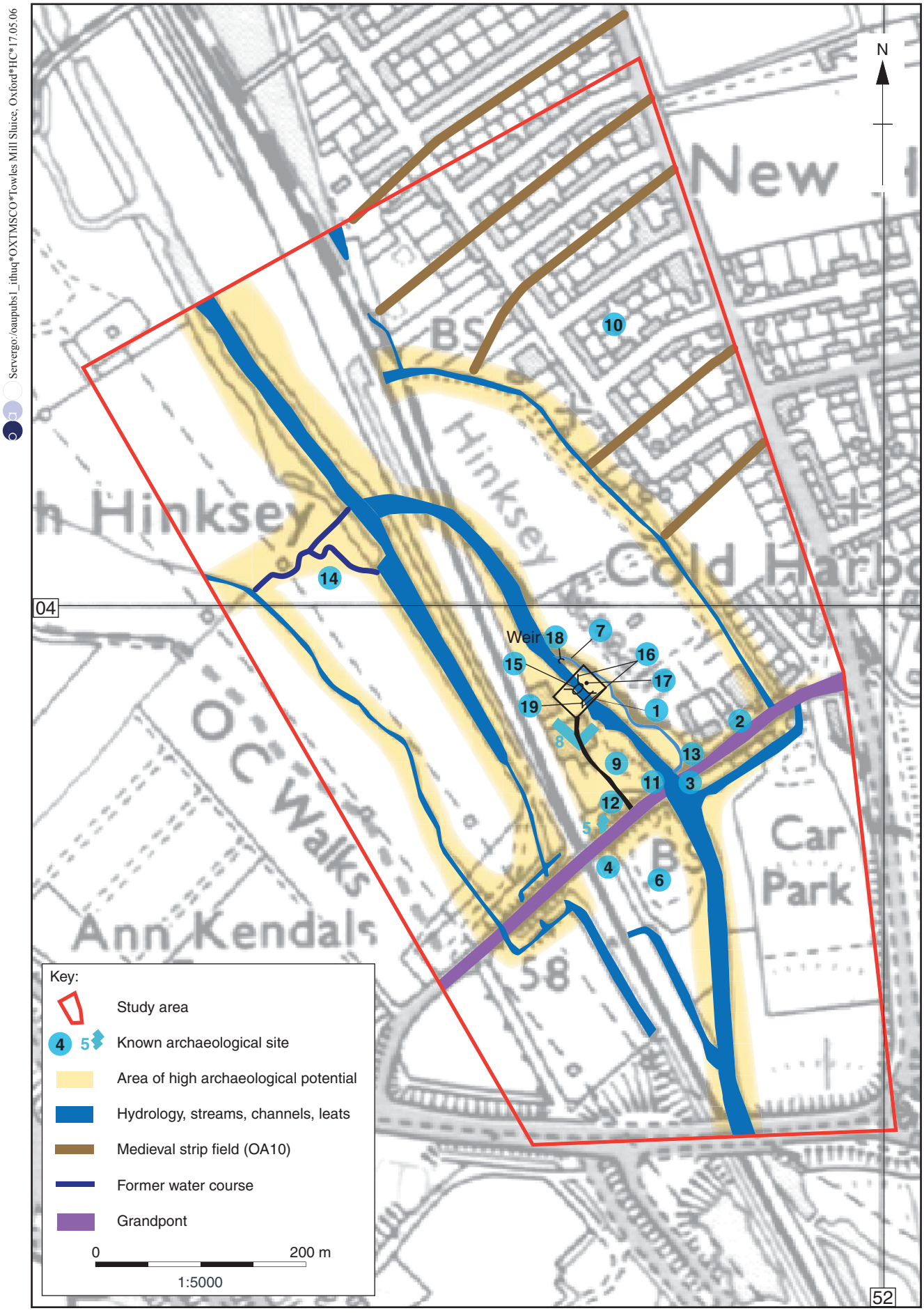


Figure 2: Archaeological features and areas of high archaeological potential map

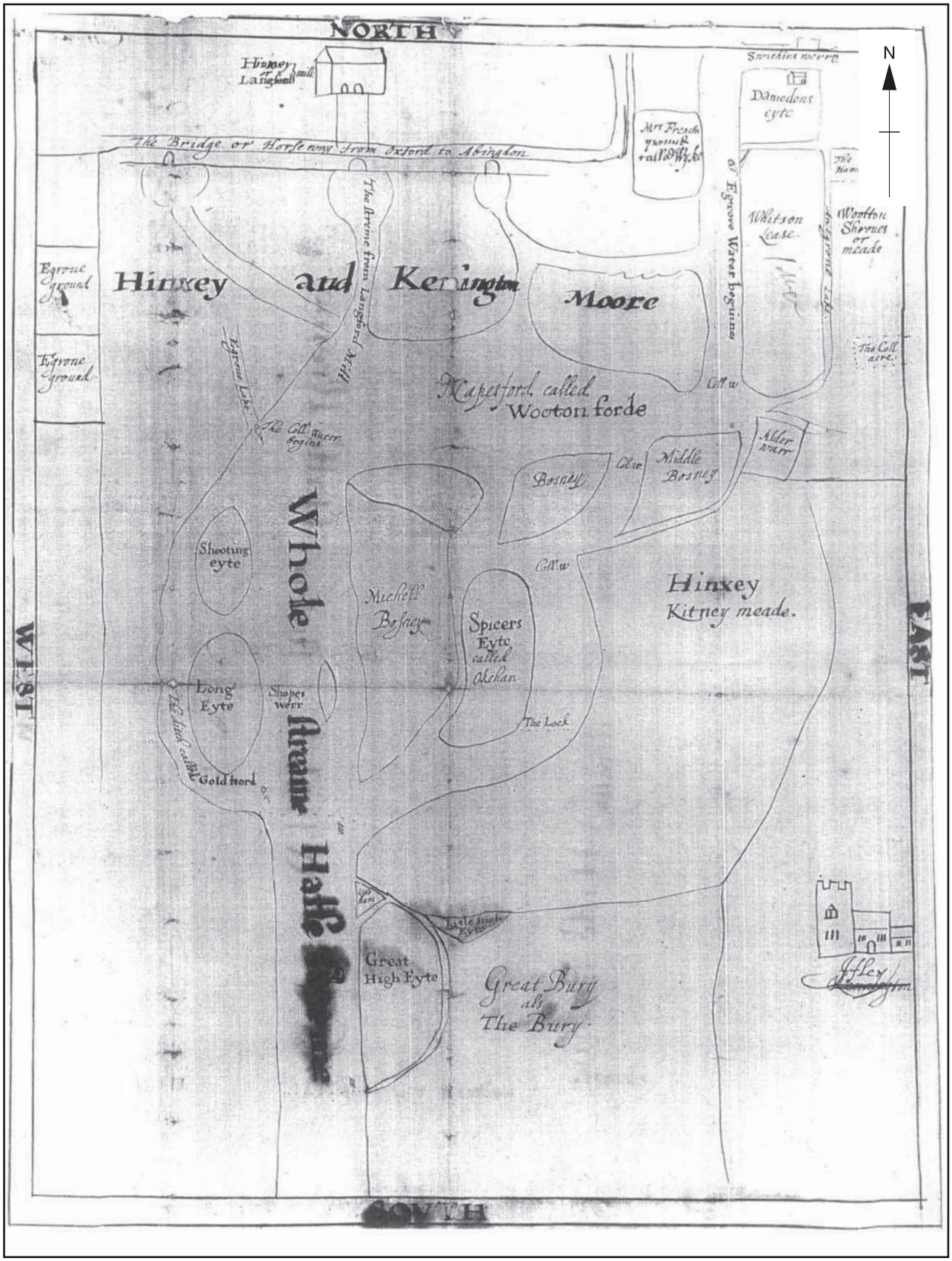


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Figure 3: 16th - 17th century map, New College

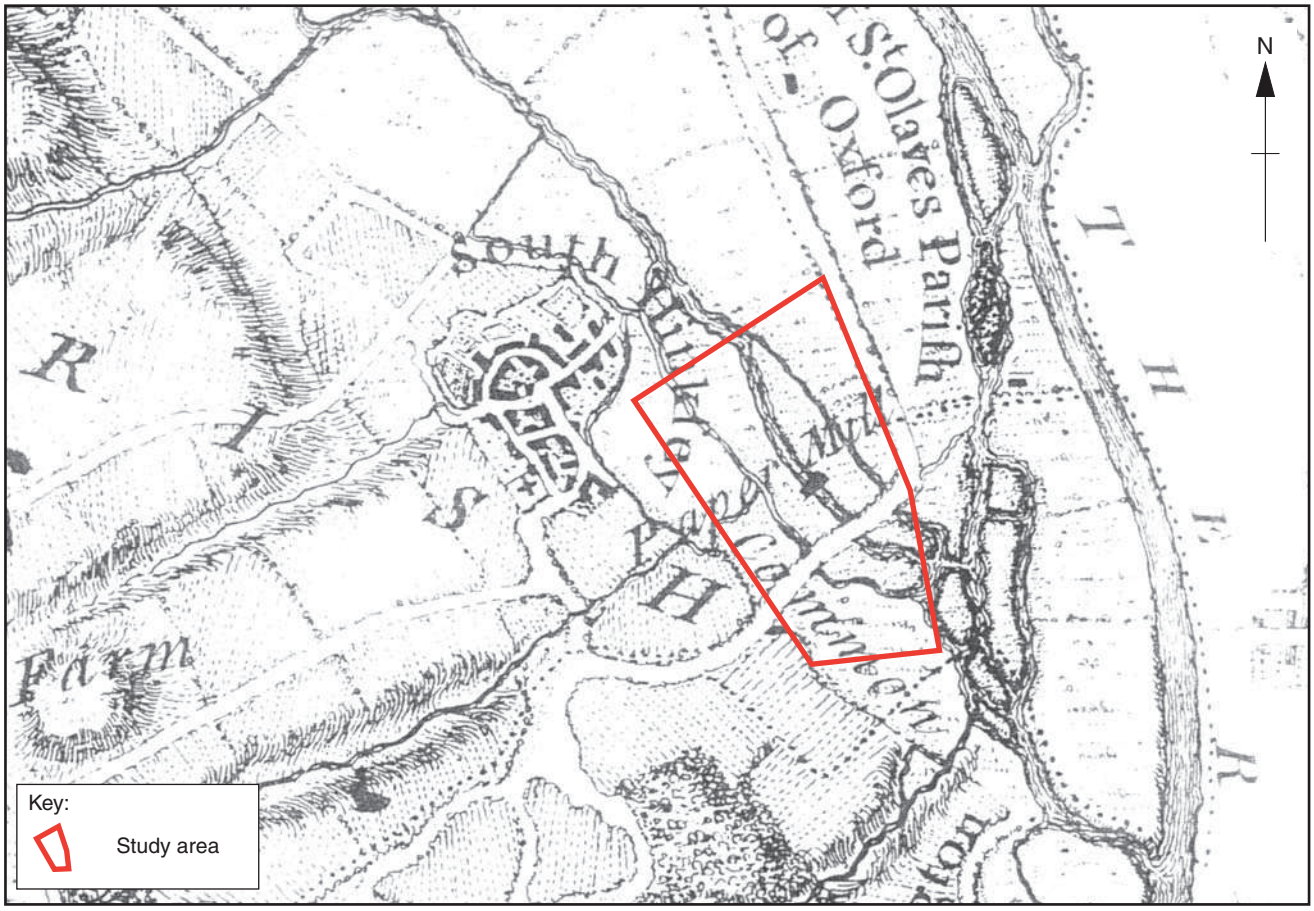

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Figure 4: Rocque's map of Berkshire 1761

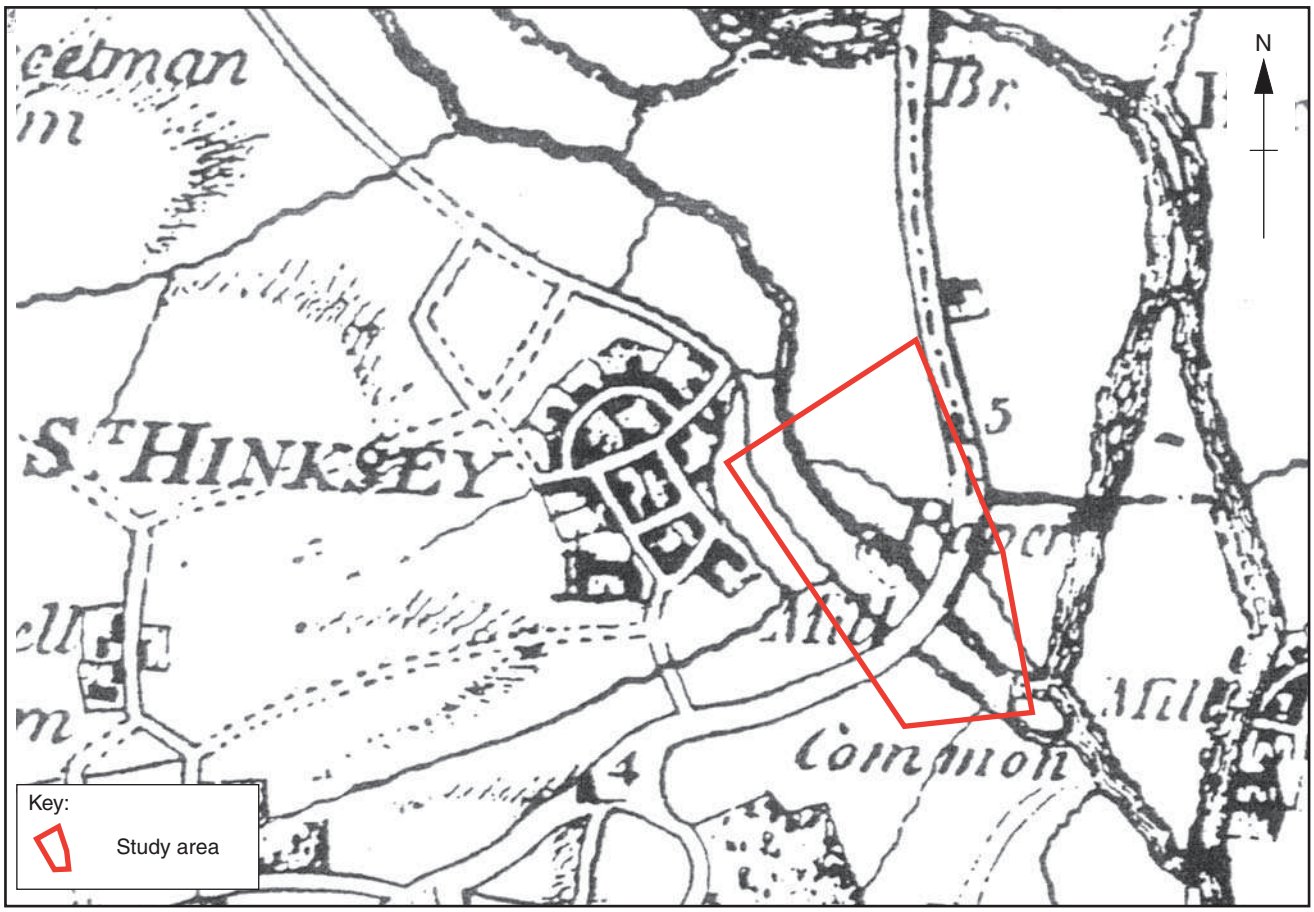

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Figure 5: Andrew's and Drury's map of the country around London 1777

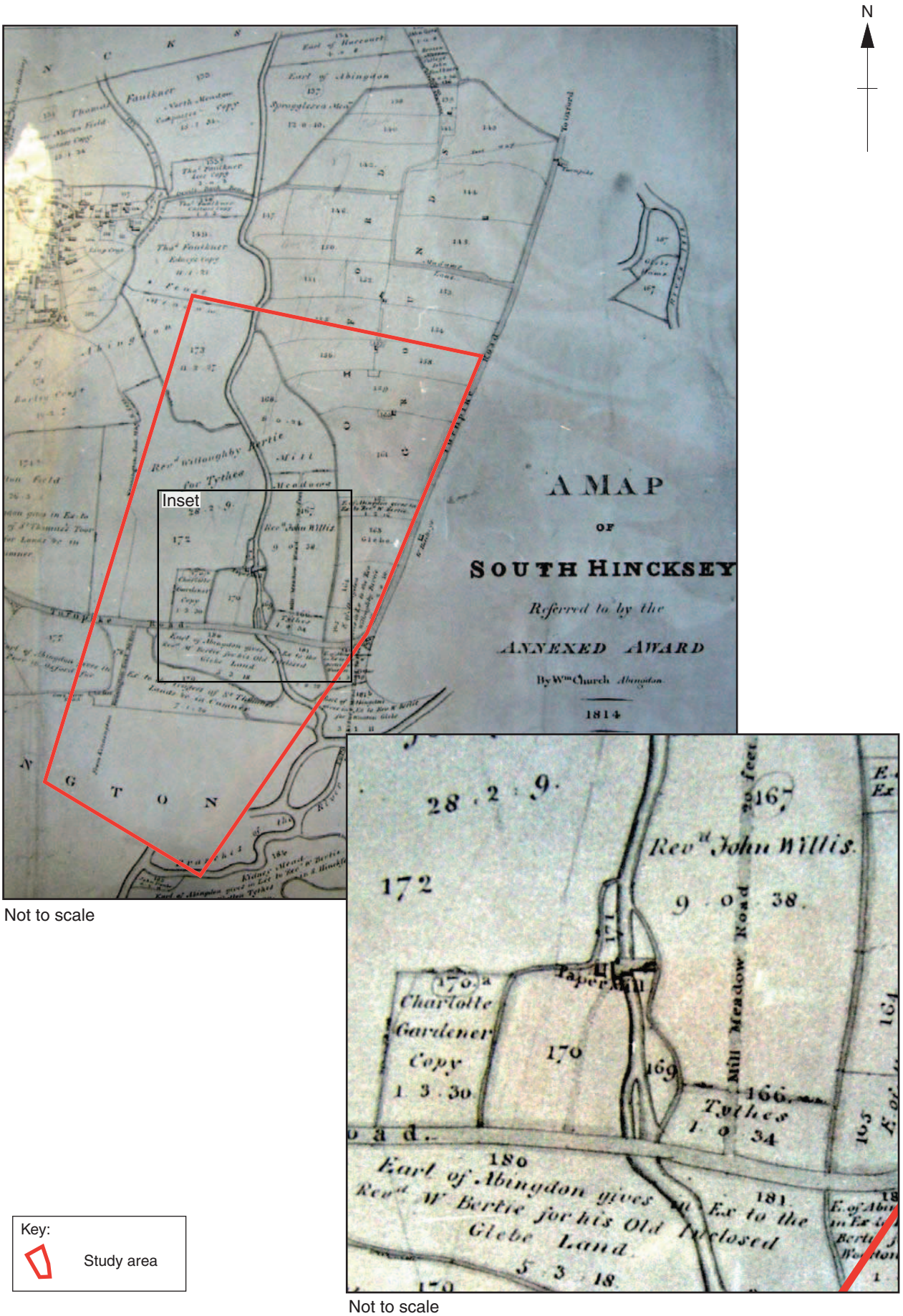

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Figure 6: Enclosure map 1814

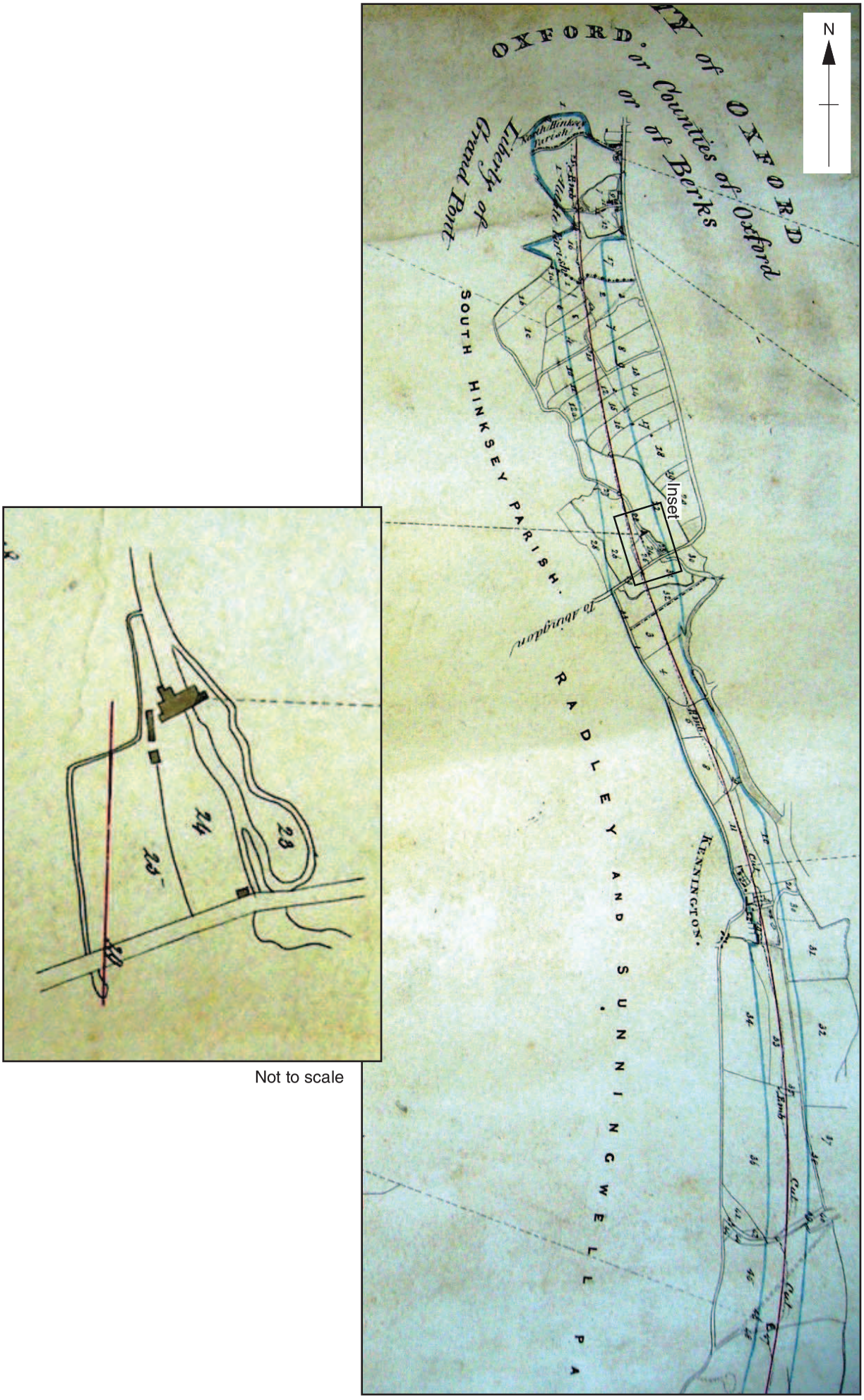

Figure 7: Oxford and Great Western Railway plan 1842

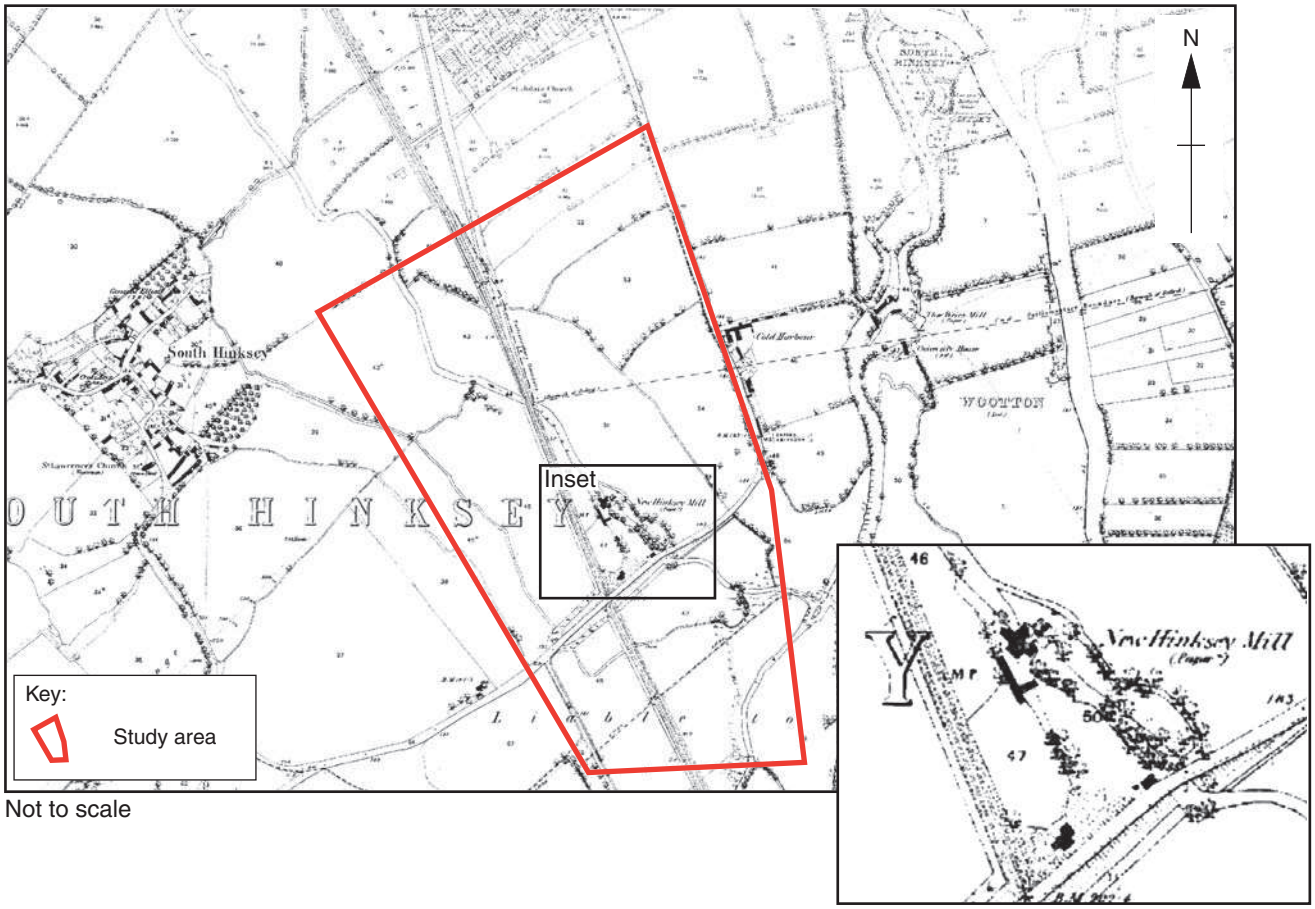

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Figure 8: Ordnance Survey 1st Edition 25" map of 1875

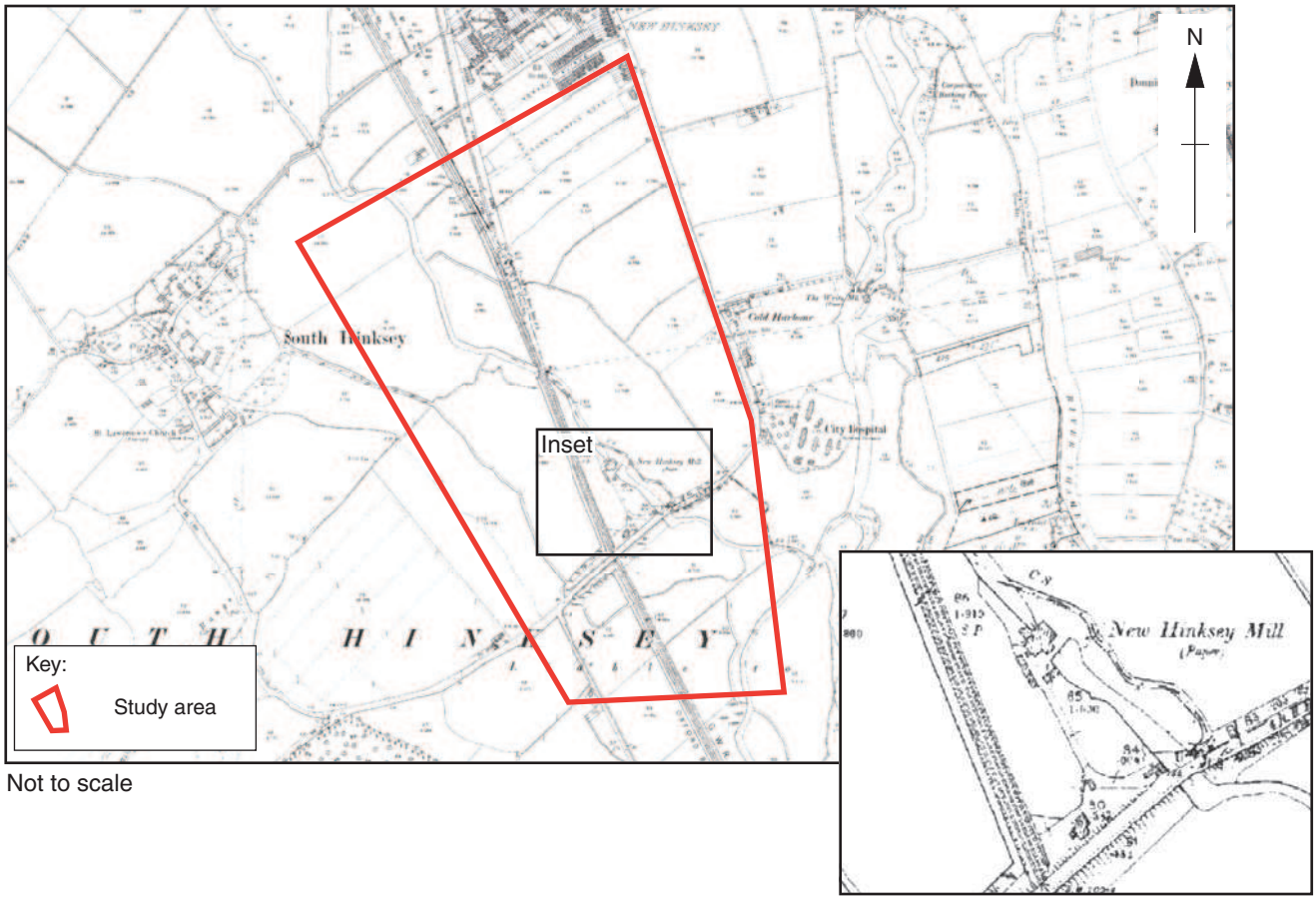

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Figure 9: Ordnance Survey 2nd Edition 25" map of 1899

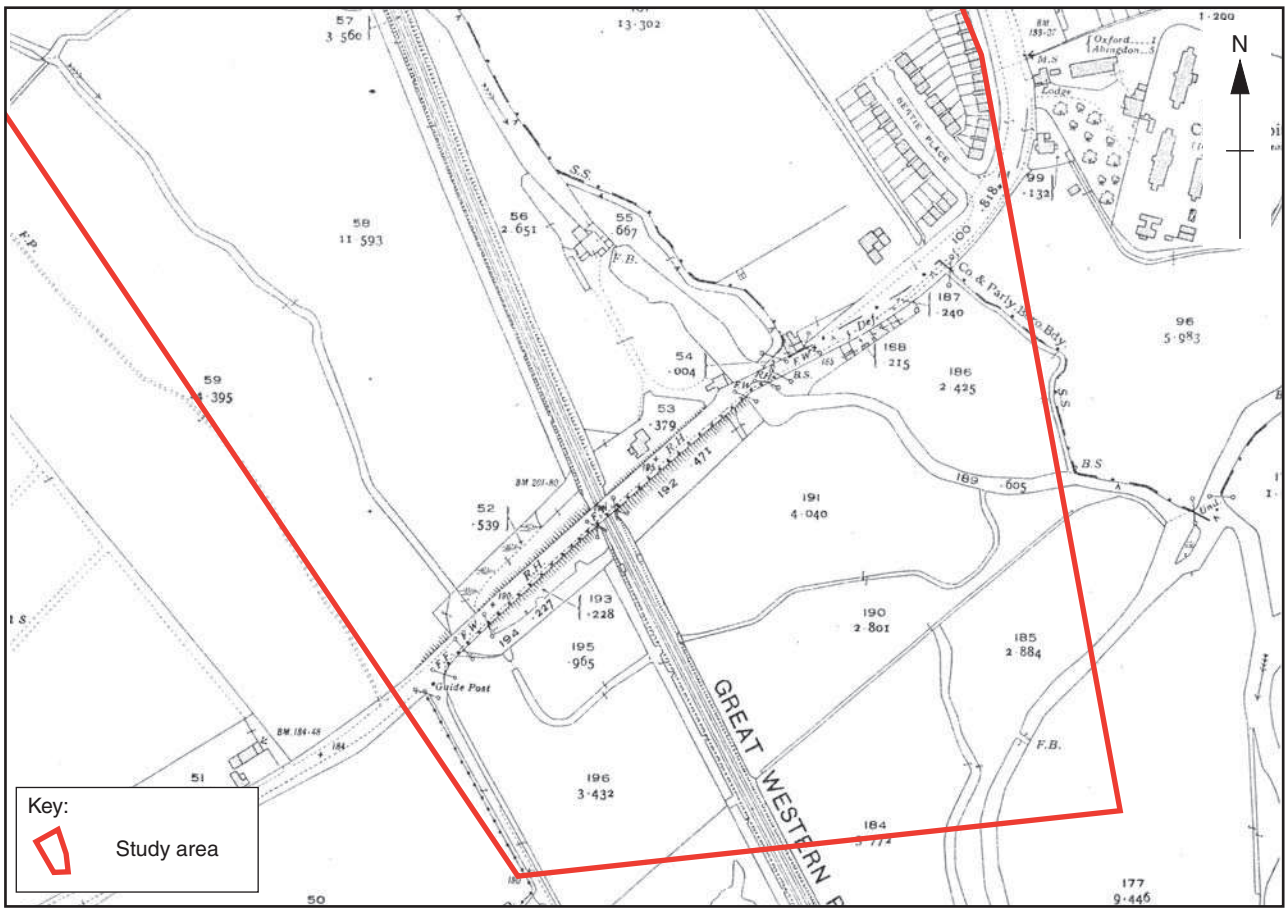

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Figure 10: Ordnance Survey revision 25” map of 1936

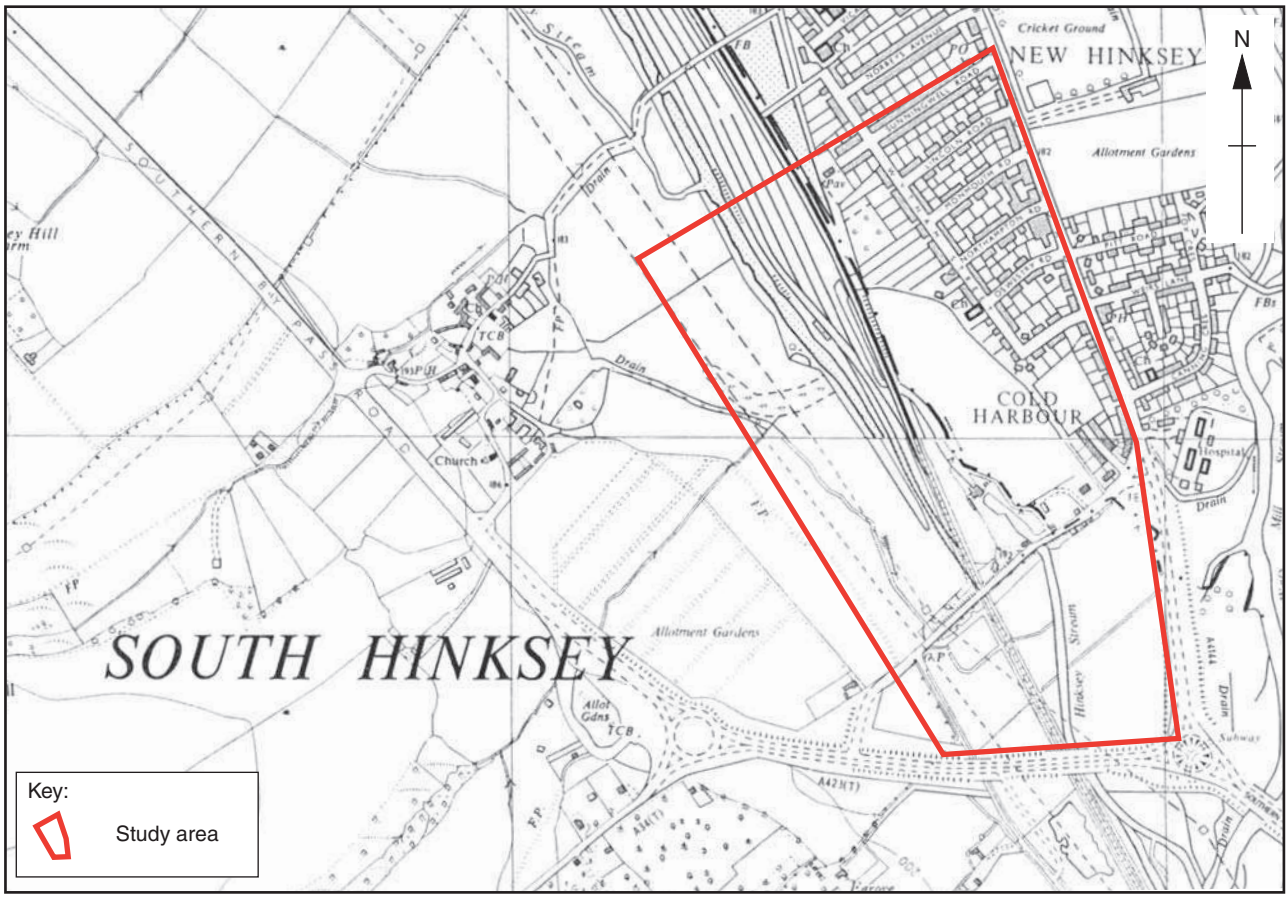

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Figure 11: Ordnance Survey 6” map of 1961, surveyed 1956

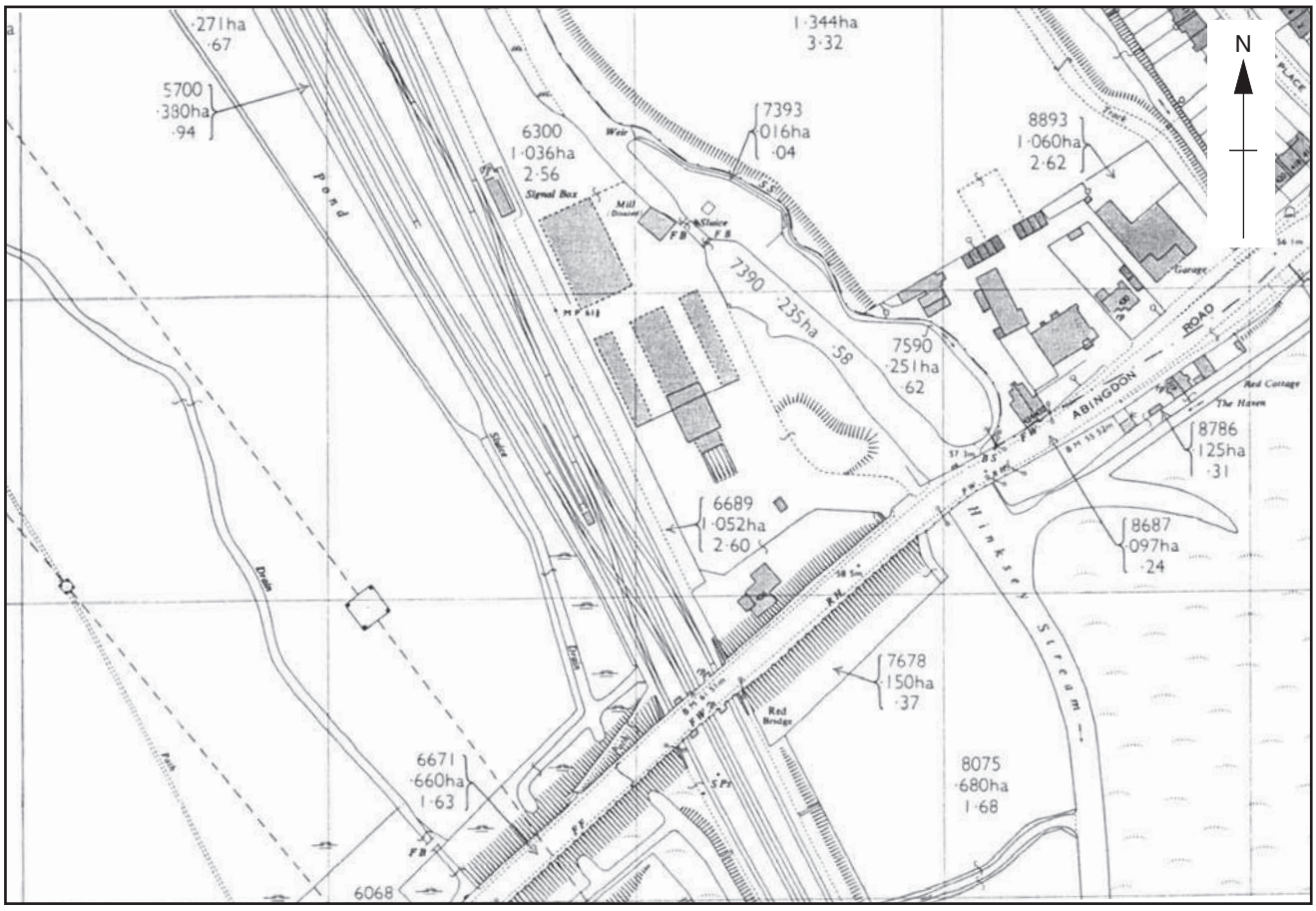

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Figure 12: Ordnance Survey 25” map of 1971, surveyed 1960

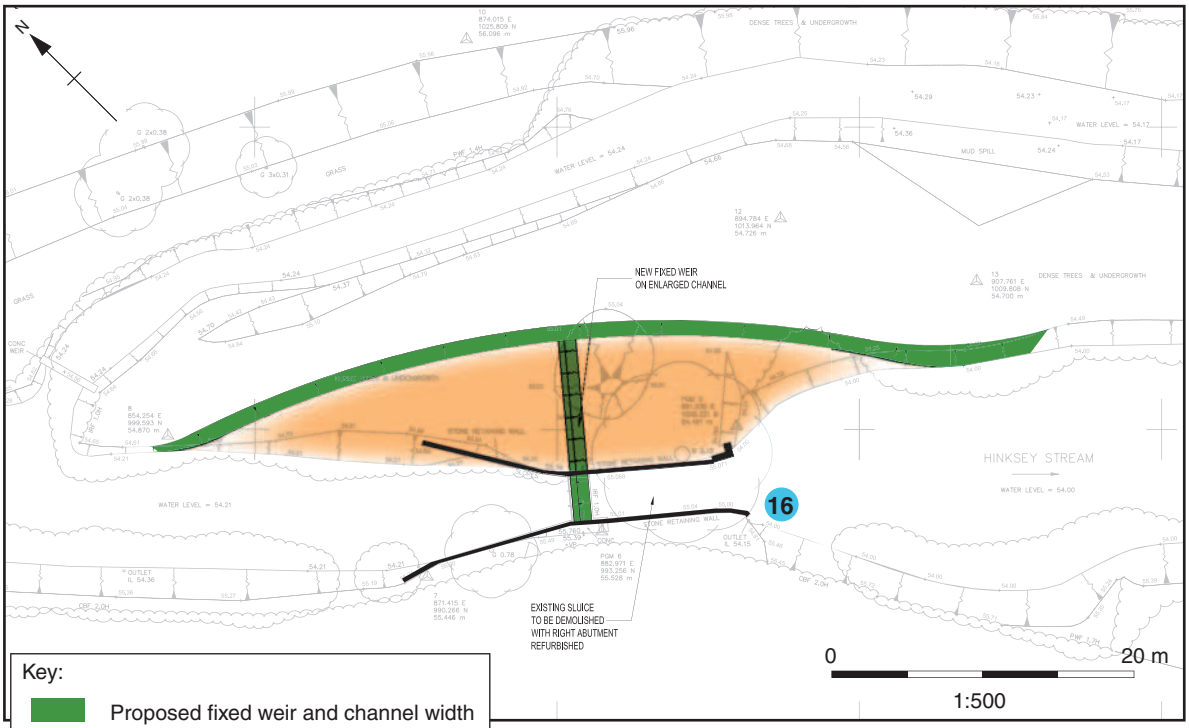


Figure 13: Atkins Oxford Feasibility Study, Towles Mill Sluice Improvements, Option 3

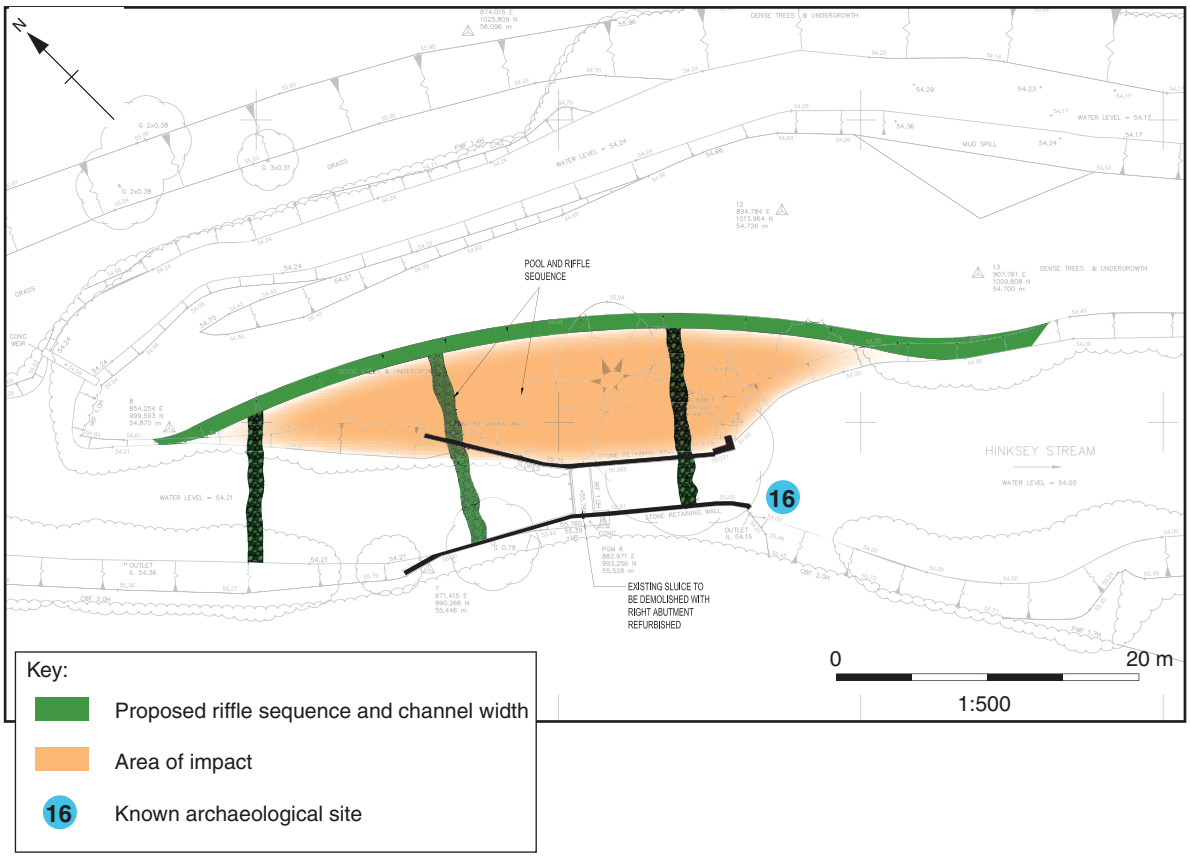


Figure 14: Atkins Oxford Feasibility Study, Towles Mill Sluice Improvements, Option 4

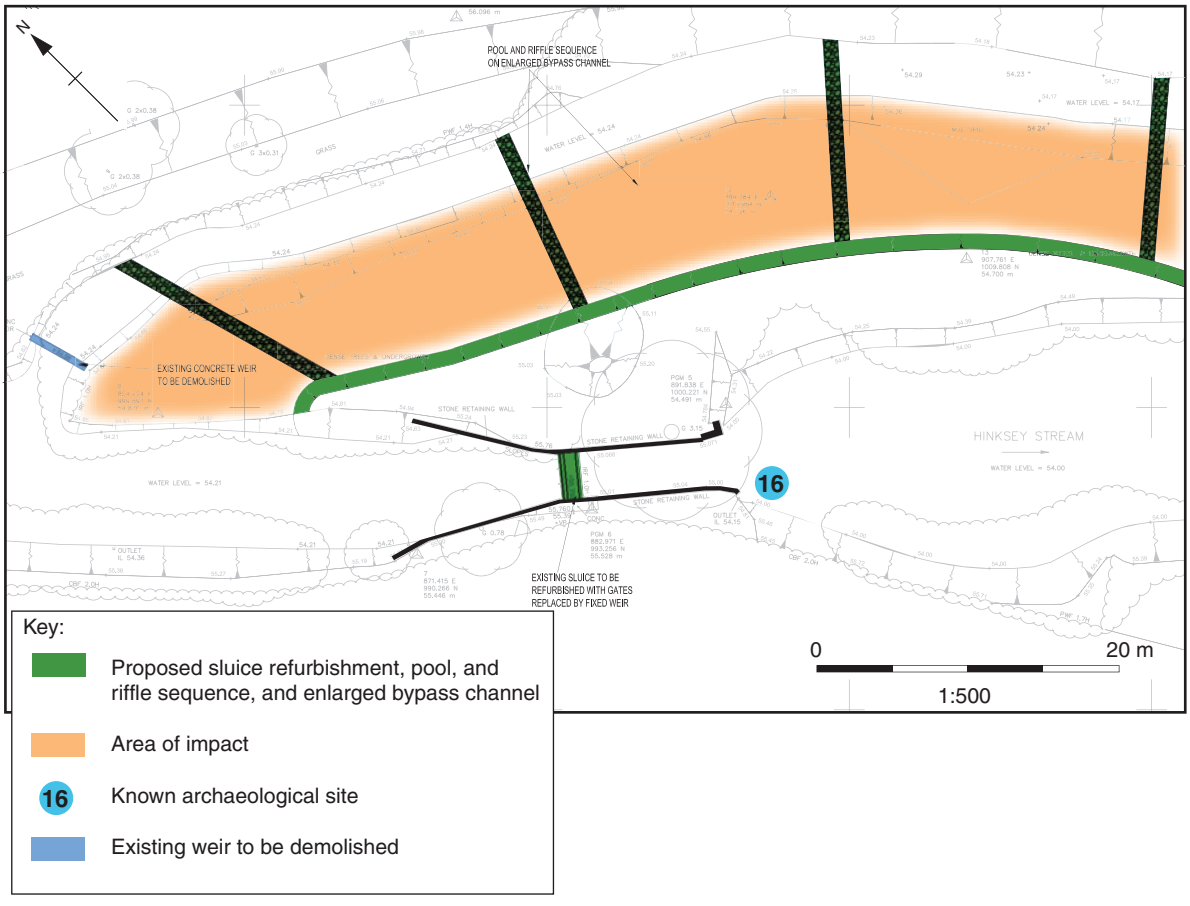
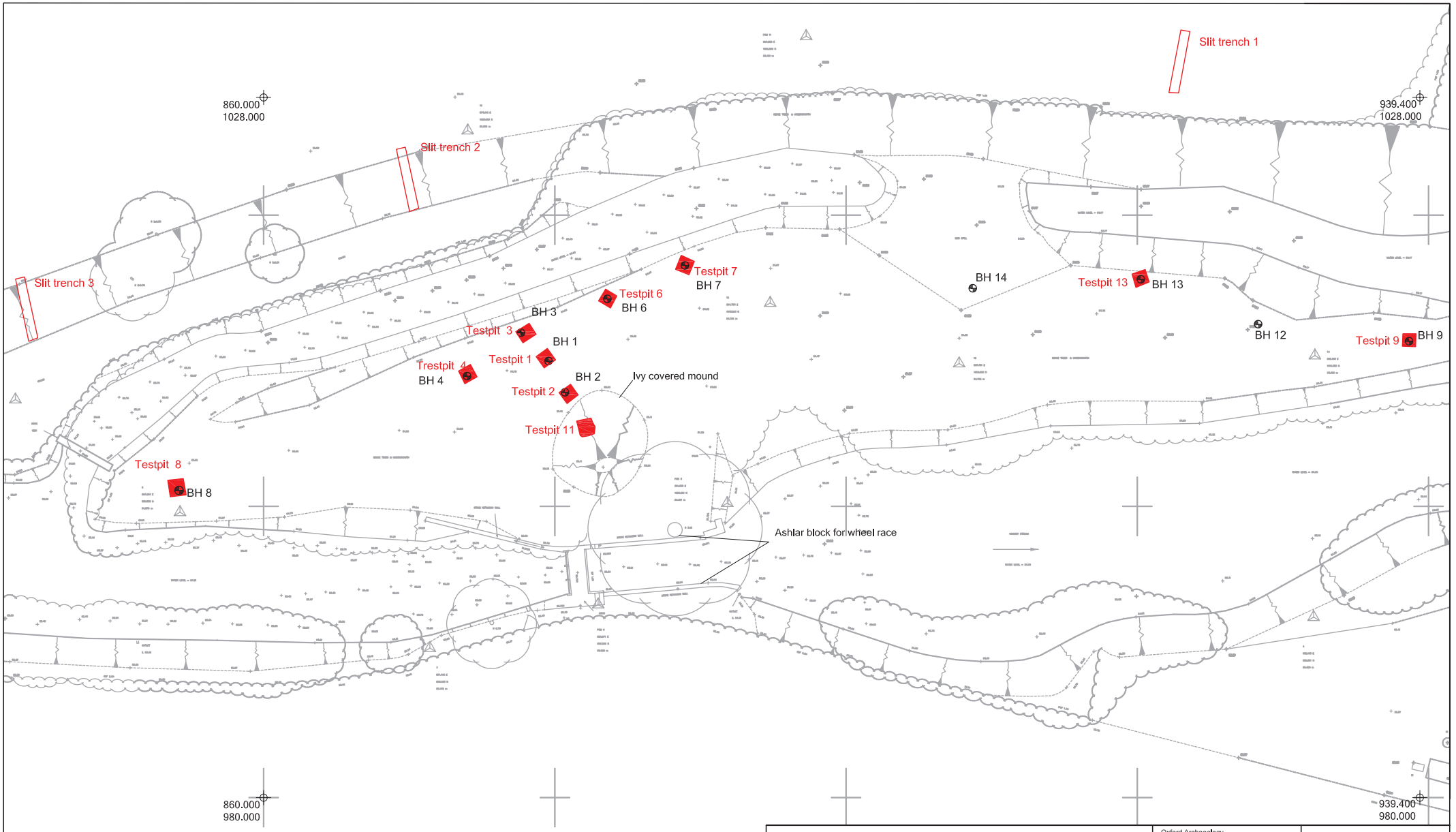


Figure 15: Atkins Oxford Feasibility Study, Towles Mill Sluice Improvements, Option 5



OA Evaluation Trenches

Slit trench

Borehole

Local grid point

Survey Data supplied by :

Oxford Archaeology
Janus House,
Osney Mead,
Oxford,
OX2 0ES.
Tel: 01865 263800 Fax 01865 793496
email : mail@oxfordarch.co.uk
web : www.oxfordarch.co.uk

N

0 5 m

Scale at A3 1:250

Drawing No.	
Date printed	25 Jul 2006
Drawing title	

Figure 16: Test-pit and Geoarchaeological borehole location plan

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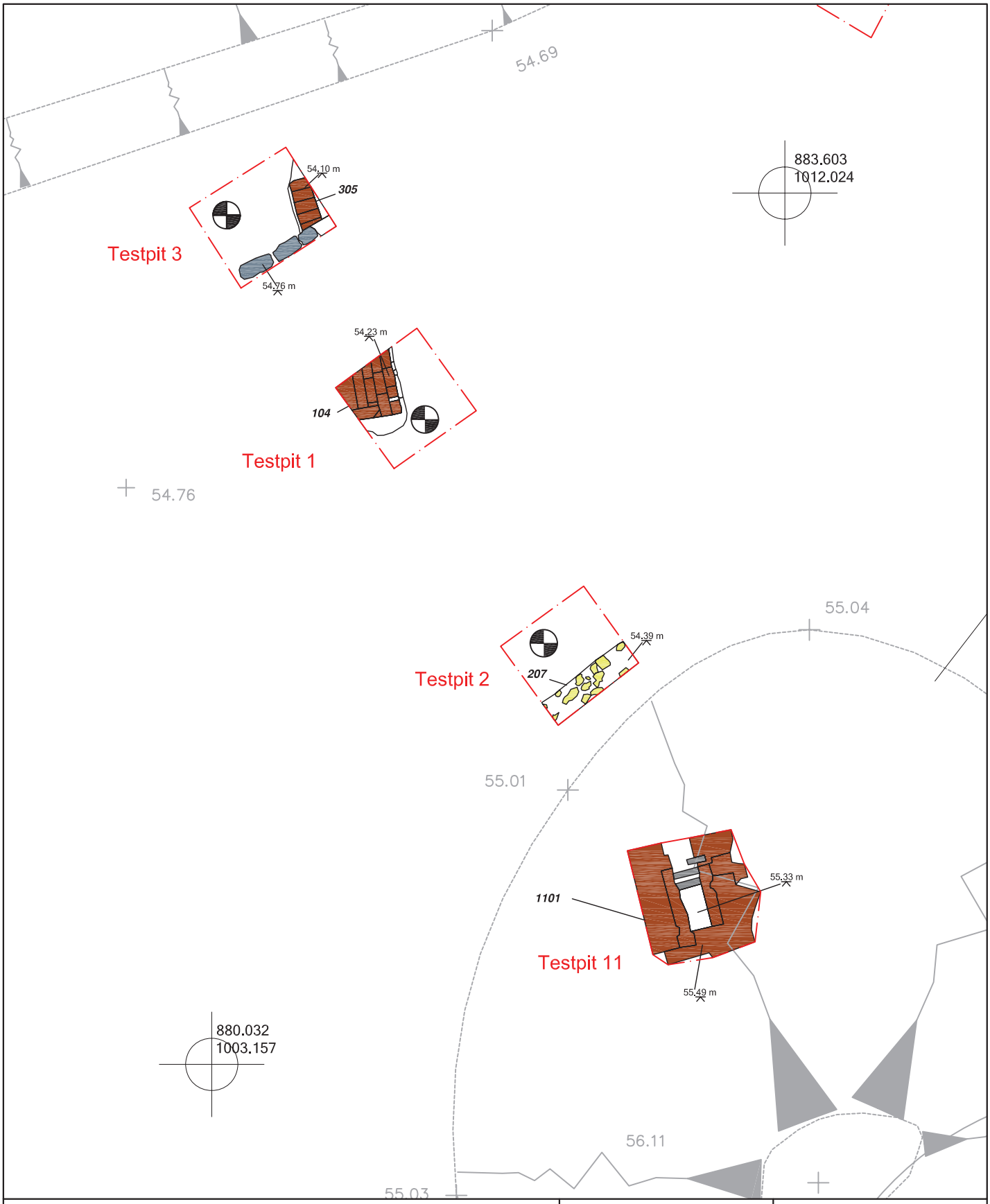

Limit of excavation
Borehole
Brick
Iron fitting
Limestone
Granite curbing
55.33 m Level
Basemap
880.032 1003.157 Local Grid Coordinates

Survey Data supplied by :

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Osney Mead,
Oxford,
OX2 0ES.
Tel: 01865 263800 Fax: 01865 793496
email : mail@oxfordarch.co.uk
web : www.oxfordarch.co.uk

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Figure 17: Detail Plan of Test-pits on the historic footprint of the mill building

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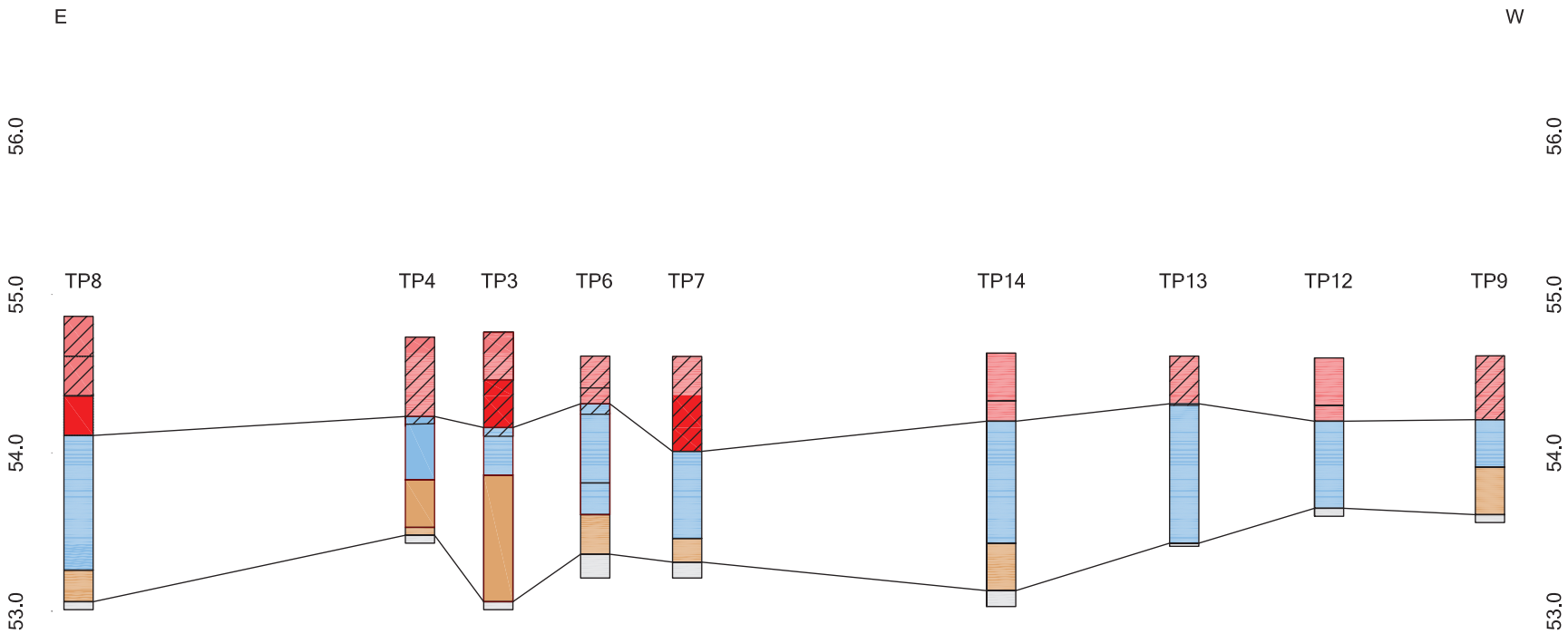

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Towles Mill, Oxford

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Date printed	24 July 2006
Drawing title	

Figure 18 Stratigraphy and correlation of boreholes at Towles Mill

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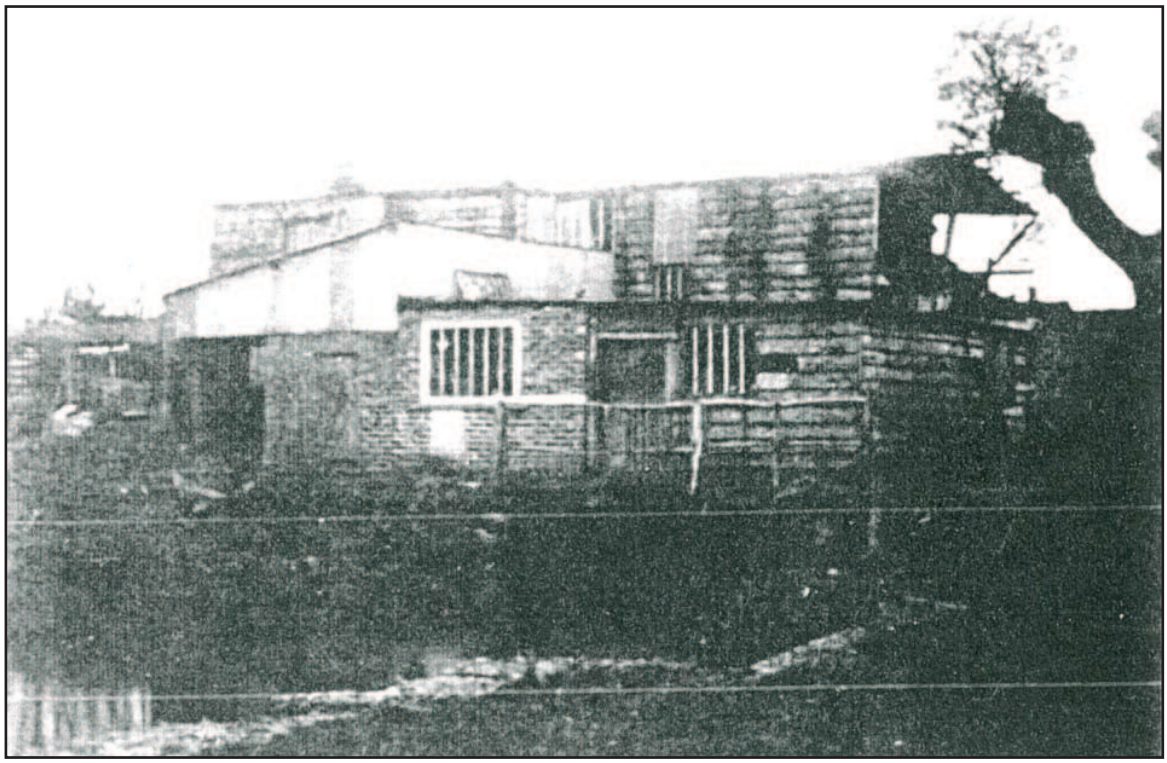

Plate 1: Hinksey Mill in a derelict state, 1930s

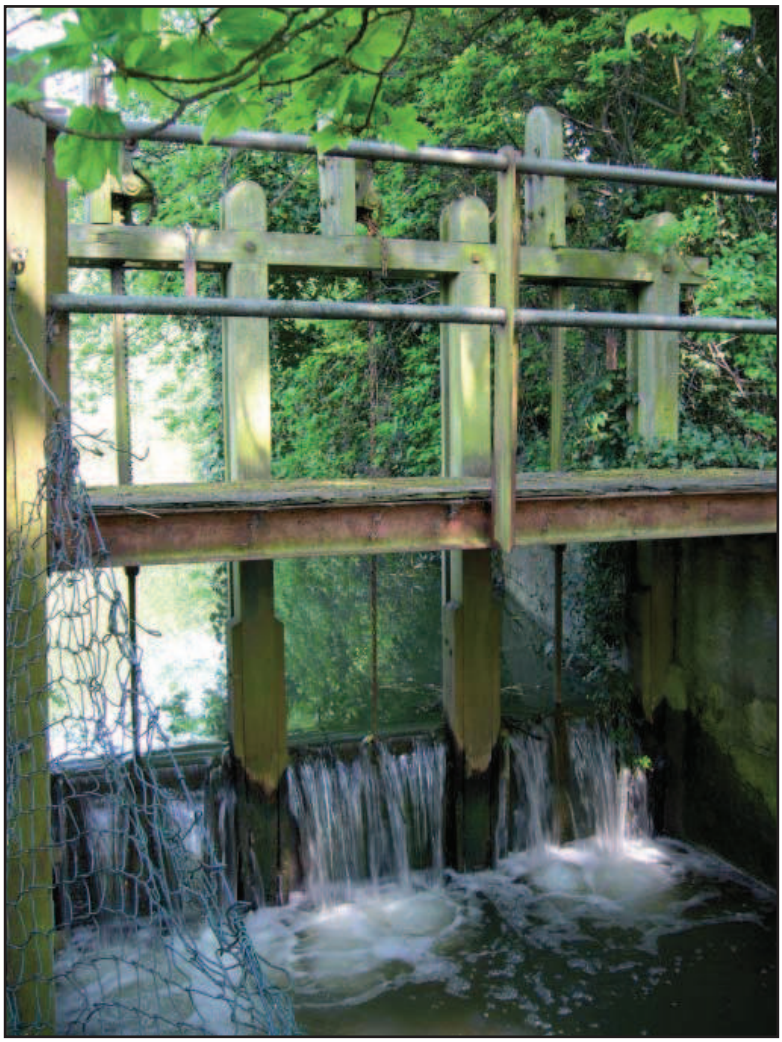

Plate 2: Towels Mill sluice (OA15)

Plate 3: High quality historic ashlar watercourse retaining walls (OA16)

Plate 4: Mound indicating possible building remains (OA17)

Plate 5: Length of historic railing at north end of island (OA18)

Plate 6: Weir crossing eastern mill leat at north end of island (OA7)