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SECTION 22

DOCUMENTARY RESEARCH REPORT

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Introduction

This documentary research report was commissioned by Oxford Archaeology in April 2006, and relates to a series of excavations undertaken by Framework Archaeology in the western part of Heathrow Airport in 1998 to 2000, principally at Perry Oaks Sludge Works. Amongst the evidence uncovered there were elements of an early to middle Saxon settlement at Longford, a medieval settlement at Burrows Hill, and the ditches and ridge and furrow patterns of medieval open fields in several locations.

It was considered that the interpretation of the Saxon and medieval deposits, features and structures uncovered in these excavation projects was likely to be considerably enhanced by research into documentary sources. A documentary research assessment was therefore undertaken in March 2006, to identify the surviving and available evidence for the developing patterns of land ownership and land use in the area of the excavations, in order to determine the contribution of these sources to the post-excavation publication programme. This comprised principally a thematic summary of the historical background, and a research bibliography of printed, manuscript, and cartographical sources, and recommended a programme of research.

The present report is based on a more limited research programme into manuscript and cartographical sources at the Bodleian Library at Oxford, the British Library at Euston, London Metropolitan Archives at Clerkenwell, the National Archives at Kew, the Centre for Buckinghamshire Studies at Aylesbury, and Winchester College in Winchester. The report text is intended to form a component of the monograph publication of the excavation results, as a contribution to Chapter 5: Post-Roman Landscapes.

The wide extent of the excavations provides a rare opportunity to undertake a documentary study of the medieval landscape across a broader area than is normally possible in connection with archaeological investigations. The two parishes of Harmondsworth and Stanwell were selected as a study area for detailed research and analysis, and because of the limited time and resources available the research was focussed on the parts of the two parishes which had been subject to excavation. In the early medieval period the excavated remains within the study area have been set in the

historical context of a wider zone, comprising a further nine surrounding parishes (see Fig 1). In particular this was done in relation to the account of the area in the *Domesday Book* survey of 1086. From the medieval period types of document which were likely to be most informative about the landscape were identified for research; from the post-medieval centuries only a few selected items have been consulted

The arrangements between the lords of the manors and their tenants for utilisation of the landscape are recorded in custumals, such as those of Harmondsworth of the early 12th century, and West Bedfont in the 14th century, and an agreement between the lord and copyholders about the tenorial customs of Wraysbury in 1656. Manorial court records also provide evidence of the ways in which the land was organised and used for agriculture, and the activity of the local land market. Manorial accounts include evidence of crops grown and livestock kept on the demesne lands, directly managed by the lords and their officers. The balance is likely to have been similar on the holdings of the tenants, who had to pay their best beast as a heriot when inheriting a copyhold tenancy and a portion of their crops as tithes, grown in the same fields as the demesne crops. Recent studies of the 14th century suggest that the demesne sector was representative of the arable husbandry of the whole population (Campbell 2000, 402). These accounts provide a detailed picture of the practice of agriculture in the late medieval period. They survive sporadically for Harmondsworth manor from the late 13th century to the 15th century (BL Additional MS 6164; NA C270/17/7; SC6/1126/5, 6, 7; WC 11501-4), but there are none remaining for Stanwell manor.

Understanding the context of the excavated remains has required a process of landscape analysis to place the excavated sites in a sequence of landscape development. This analysis aims to identify areas of former settlement, common fields, meadows, assarts, woodland and heath (see Fig 3). Cartographical material of dates considerably later than the excavated evidence has been taken into account, because post-medieval boundaries often assist in elucidating medieval conditions. Some of the 18th-century estate maps show components of a landscape pattern surviving from the medieval period.

Various thematic strands have emerged from both the excavated evidence and the documentary sources. A concluding section briefly discusses these as a contribution to Chapter 6: Themes and Discussion. Weaving together these strands, a narrative of the developing relationship between the landscape and its inhabitants can be constructed, extending across the prehistoric and historic chronological periods.

Early Saxon Landscape

Middlesex emerged as an identifiable region in the 6th century AD, between the Rivers Colne, Thames and Lea, and the wooded hill country to the north, probably stretching further in this direction than the later county. The first known mention is as a province called *Middelseaxan* in a charter of 704. It never formed a separate kingdom, but was rather a loose confederation of peoples called the Middle Saxons. In the south-western part of the later county a widespread group called the *Wixan* appears to have fragmented by the 7th century into smaller units called the *Lullingas* in the Hayes area, the *Geddingas* in the southern part of the later Elthorne Hundred, and the *Stæningas*, occupying most or all of Spelthorne Hundred. One family of early Saxon leaders in western Middlesex may have included *Gislhere*, *Gilla* and *Geddi*, who gave their names to Isleworth, Ealing and Yeading respectively. There is no known royal burial in the Middle Saxon area, except perhaps the early 7th-century burial mound of Tæppa at Taplow in Buckinghamshire, opened in 1882. The artefacts which accompanied the body had Kentish or East Saxon parallels, perhaps reflecting an external overlordship of the province (Meaney 1964, 59).

In other parts of England the territories of these local groups formed the building blocks in the construction of the Anglo-Saxon kingdoms. Here they were dominated by the surrounding larger kingdoms who extended their influence from their original power centres into the political vacuum of the London area, which had followed the collapse of British authority in the former Roman city in the early 5th century. The neighbouring kings defeated the local leaders and their warriors in unrecorded encounters, or bought them off with gifts of land or money. The kings of Kent and Wessex were competing for control here in the 560s. Ceawlin of Wessex was active in western Middlesex between

560 and 580, and from this period may date the naming of Sunbury after his client Sunna of the Sunningas, a group which had its core lands in eastern Berkshire. The East Saxons were in control of Middlesex from at least the reign of Sæberht (590-616). Wessex and Mercia sought to dominate the region after 650. Wulfhere established Mercian overlordship north and south of the Thames after c665. The Thames served as a trading route in times of peace, but became a barrier and a boundary in times of unrest and political fragmentation (Bailey 1989, 108-14, 118-22; Cowie and Harding 2000, 177).

Early and middle Saxon cemeteries in the area may give some indication of where these Middle Saxon groups had settled. Early Saxon graves have been found at Twickenham, Shepperton and Hanwell on the gravel terraces of the Thames and its tributary the Brent (Meaney 1964, 167-8). At Oaklands Road in Hanwell TQ 159 798, ten skeletons were found with their weapons (Keene 1975, 5). To the rear of the King's Head Inn on the east side of Longford, early Saxon necklace beads and a possible cremation urn were found; these objects are now in the British Museum (Cowie and Harding 2000, 203). However, there is little evidence for early Saxon occupation on the claylands of northern Middlesex, or in the vicinity of London itself (Bailey 1989, 112). On the London Clays between the river valleys, Iron Age and Romano-British sites were later covered by medieval woodland and wood pasture (Williamson 2004, 109).

The earliest evidence of Saxon occupation on the northern claylands at Northolt is in the form of three graves found on a clay ridge, apparently pagan in character; two of them contained burials of c700, with grave goods. These may have formed part of a more extensive cemetery, other parts of which were destroyed when later medieval moats were dug. It is not known what relationship the cemetery may have had to the settlement of the period, which has not been found. Commonly early and middle Saxon cemeteries were located on the boundaries of settlement, and the remains of any houses of the period may therefore lie on the higher ground to the north-east. There may have been an interval in the occupation of the site before the houses of the late Saxon settlement were built over the graves.

It is not clear if these Middle Saxon land-units and groupings should be regarded as surviving Romano-British estates, Saxon tribal home-lands of the migration period, early

Saxon embryonic kingdoms, or middle Saxon multiple estates, or indeed all of them. The organisation of the landscape was partly based on pre-existing Romano-British land-units and partly on new tribal groupings, both of which can be suggested from place-names and 8th-century charter evidence. There was therefore an element of continuity from the period of Roman dominance, and perhaps even from the Iron Age. Middlesex may be related to the earlier *territorium* of Roman London, the land allocated for the support of the city. In the grain-producing lands on the gravels of south-west Middlesex, the existing post-Roman agricultural units and their slave populations are likely to have been taken over by incoming Saxon leaders and tribes. Some of the locations of early Saxon groupings straddling Roman roads may suggest the installation of mercenary bands, with land allocated for their support (Bailey 1989, 108, 121).

On the southern and eastern fringes of the Greater London area some 5th-century cemetery and settlement sites have been found close to Roman villas, as at Beddington, Keston and Orpington, Darenth in west Kent, and Rivenhall in Essex. Early Saxon settlements at Rainham, Mucking and Mortlake were established within Roman field systems. Some estates to the north-west may also have survived from the Roman period, as they used Watling Street as a boundary (Cowie and Harding 2000, 178, 183).

In other parts of England landscape patterns have been detected as surviving from *centuriation*, the Roman setting out of the arable fields within the *territorium* on a surveyed grid. These alignments have been seen around Lincoln, Colchester, Brancaster and Ripe in Sussex, and Cliffe near Rochester (Muir 2000, 120-1). In south-eastern England some co-axial field systems represented in the furlongs of medieval open fields appear to pre-date the construction of Roman roads, and some of these can be dated to the Iron Age. Other grid-like frameworks may be Romano-British or middle Saxon in date (Williamson 2004, 43, 81, 114).

In 1919 Montague Sharpe interpreted Middlesex and its six hundreds as the surviving elements of the Roman *territorium* of London, the interior elements of its component *pagi* laid out in rigid grid patterns “like a gigantic chequer board”. Each *pagus* or *semi-pagus* became a hundred by the time of *Domesday Book* in the 11th century. The common assessments of vills in multiples of five hides in this survey were relics of Roman

decimal figures. Sharpe detected the grid-lines in the field lanes and boundaries recorded on Rocque's 18th-century map of Middlesex, the location of later churches and supposed Roman surveying mounds (see Fig 2). He used much mathematical ingenuity to determine the layout of Roman fields and lanes, considering that the "rude Saxons" were incapable of achieving this regularity. Although the precision of his system obviously contained an element of fantasy, in outline he appears to have discerned a real continuity in the framework of the landscape in parts of Middlesex from the Romano-British to the post-medieval periods. In Sharpe's system both the parishes of Harmondsworth and Stanwell lay within the south-western *pagus*, the lanes of its grid aligned from north by east to south by west, with other lanes at right-angles. The Roman road from Brentford to Staines lay at an irregular angle across this grid (Sharpe 1919, 64-8, 97-107).

This part of the Romano-British landscape framework around London centred on the river crossing town of *Pontes*, which later became Staines. Its territory probably equated to the later hundred of Spelthorne, and included settlements with surviving Romano-British place-name elements at Bedfont (from the Latin *fonta* for spring) and Ashford (whose earlier forms include *ecles* for church) (Bailey 1989, 114, 120). The status of the British people who remained in this area may be represented by the slaves recorded in *Domesday Book*, who formed 18% of the population in Spelthorne and Elthorne Hundreds, but less than 5% in Middlesex as a whole (Darby and Campbell 1971, 117-18).

In the middle and late Saxon periods Staines was probably the centre of a royal estate with a minster church, and occupation was focussed on the Binbury island. In the 10th and 11th centuries settlement shifted back to the site of the Romano-British town around High Street, as a market or administrative centre, but the tenurial arrangements still reflected the earlier territory. The manor was granted to Westminster Abbey by King Edward the Confessor in 1065, with four dependent estates at Ashford, Feltham, Teddington and Halliford. The *Domesday Book* survey of 1086 recorded Staines as the centre of a large and complex manor, with four unnamed berewicks (outlying farms) and an extensive soke (area of jurisdiction), which included estates in Laleham, Ashford and Charlton. Included in the soke was an enclosed area within the walled city of London called *Staningehaga*, mentioned in a charter of 1053 and probably centreing on St Mary

Staining church. The existence of the London property of the manor may have been connected with obligations in the military defence of the city, or with trading rights there. It is perhaps notable in this connection that Staines and Harmondsworth were also the only places in Middlesex with vineyards (Darby and Campbell 1971, 134; Williams and Martin 2002, 361-3, 366).

Parish boundaries in the study zone indicate the composition of late Saxon estates, and earlier land units. Analysis of these boundaries suggests primary, secondary and tertiary lines of division (see Fig 1). The River Colne, and the boundary between Harmondsworth to the north and Stanwell and the Bedfontes to the south, can be seen as early divisions of the 6th or 7th century, corresponding to the later hundreds and perhaps the separation of the *Lullingas* and the *Staeningas*. The latter boundary lay partly along the 16th-century Duke of Northumberland's River, which must have been preceded by an earlier watercourse or ditch (*VCHM* iii 33; iv 2). The Harmondsworth charter of 781 describes the southern boundary of the estate as running from Hounslow Heath to the River Colne by *le aldredenehawe* and along *badyndyche* (Gelling 1979, 100). To the west of the post-medieval watercourses the parish boundary was represented in the T5 excavations by ditch 148201.

The boundaries between Harmondsworth and Harlington, and between Stanwell, the Bedfontes and Feltham to the north, and Staines and Ashford to the south, follow stream courses and sinuous lines across the landscape, and partly the Roman road, and may represent the division of the landscape into multiple estates in the 8th or 9th century. The division of Harmondsworth and Harlington was marked by the mounds of Shasbury Hill and Fern Hill, shown on Rocque's map of 1754 and a plan by General Roy of 1784 (Sherwood 1999, 7, 19, 31).

The boundaries of West Drayton with Harmondsworth and Hillingdon, and of East Bedfont with Stanwell to its west and Feltham to its east, can be seen as tertiary, dating to the 10th or 11th century. They include lines of rectangular indentation, a pattern characteristic of the division of the strips of open fields and furlongs which had already been established before the formation of the parishes.

The areas of these later parishes probably formed components of large multiple estates in the middle and late Saxon period, incorporating a variety of landscape types for comprehensive agricultural exploitation, usually with a chief settlement and a minster church at the centre of each. This form of large terrain estate or *folkland* in England was similar to the *maenor* of early medieval Wales, and may therefore have derived from a Romano-British model (Sharpe 1919, 96; Muir 2000, 122-5). Shadows of the multiple estate arrangements can be traced not only in the later hundred and parish boundaries, but also the territories of 7th or 8th-century minster churches (*parochiae*), and medieval manorial structures. In the 15th century the men of Harlington and West Drayton had pasture rights on the Harmondsworth stubble fields, and the Harmondsworth tenants had right of beech-mast pasture in Drayton Woods (*VCHM* ii 88). In 15th-century Harmondsworth there was a furlong called *Mynstreweyforlong* (NA SC6/1126/7 m1; WC 11503-4). In 16th-century Stanwell there was a field called Minsters Haye (NA SC12/3/15). Hounslow Heath perhaps remained as an area of uncultivated pasture between three of these multiple estates, and therefore on the borders of the three later hundreds of Elthorne, Spelthorne and Isleworth.

The apparent continuity of some of the excavated field boundaries from the Bronze Age, through the Romano-British period to the medieval centuries should be seen in this context. Some of these in Stanwell parish were excavated in 1977 and 1979 (O'Connell 1991, 7, 60); others were investigated in the T5 excavations in the vicinity of the enclosures later called Borough Green, Borough Hill Closes, and Wheat or Long Closes. In contrast, the layout of late Saxon ridge and furrow fields across much of midland England commonly overlies the ditches of Iron Age and Romano-British fields, and is unrelated to them (Williamson 2004, 65-6, fig 24).

Within this continuously-occupied landscape a large timber-built hall of Roman or Saxon date was excavated in Area 58 within Harmondsworth parish, to the south of Longford. It measured 10m by 6m and had internal partitions. The construction of post-built timber halls appears to have been a late Romano-British innovation, which was later adopted by the Anglo-Saxons. At Wilderspool in Cheshire timber aisled halls dating to the late 1st or 2nd centuries have been excavated. They were based on post-holes measuring 14m by 10m, 12m by 9m, and 30m by 15m (Rogers et al, in prep). At Dunston's Clump in

Nottinghamshire, the excavation of a 3rd-century farmstead revealed a building of this type measuring 10m by 5.5m (Reynolds 1999, 41 and fig 10). Other possible early Saxon timber halls have been found in the Greater London area at East Lane and South Lane in Kingston, Old Church Street in Chelsea, and Bath Road and Prospect Park in Harmondsworth. Early Saxon halls in the Greater London area did not have aisles (Cowie and Harding 2000, 175, 180). However late 8th-century aisled structures have been found at Chalton in Hampshire (Hughes 1984, 70-4).

The distribution of early Saxon settlements in Middlesex is likely to have been less dense than its Romano-British predecessors. There was a retreat from the heavier clay soils after a dramatic fall in population, in favour of the more easily worked free-draining soils. Settlements lay across the brickearth and gravel terraces of the Thames basin in a dispersed pattern, each consisting of only a few households. The settlements in the study area are likely to have drifted within the same locality in the early Saxon period, and shifted to different sites in the middle Saxon period. These are common factors which have emerged in settlement studies, but are still little understood. It appears that all early Saxon settlements were regarded as temporary, and that they were necessarily deserted by their communities in favour of fresh sites. This implies that a shifting form of agriculture was practised, which periodically required new ground to be broken in, as old fields became exhausted or choked with weeds. The more permanent middle Saxon settlements probably operated a more stable and intensive form of agriculture, based on heavier ploughs able to cope with a wider variety of soil types. Communally-held tribal lands were replaced by the land-ownership of individuals. Society became more hierarchical, allowing the development of multiple estates and embryonic kingdoms. Tribute and taxation burdens were allocated amongst the new landowners (Cowie and Harding 2000, 178; Muir 2000, 192; Williamson 2004, 13, 29-33, 113, 118-19, 122). The movements of settlements are likely to have taken place within the boundaries of the existing land-units. At Harmondsworth and Stanwell these may have been Romano-British estates. The mechanism by which these shifts of settlement occurred is unknown, but in the context of the division of the landscape into a series of estates, they are likely to have been seigneurially directed.

Excavated early and middle Saxon settlement sites in the Greater London area include Aylands Allotments, Enfield (two sunken-featured buildings); Church Terrace, Hendon (a ditch); Winslow Road, Hammersmith (three sunken-featured buildings and associated post-holes); High Street, Mortlake (two sunken-featured buildings, one with a projecting oven, and ditches); Battersea (where re-analysis has concluded that no buildings were discovered); Tulse Hill School (sunken-featured buildings); and Barking. In Harmondsworth parish they have been found at Prospect Park (up to 11 sunken-featured buildings and two possible halls), Holloway Close (one sunken-featured building), Manor Farm (a rectangular ditched enclosure and a sunken-featured building), Holloway Lane (one sunken-featured building in a small enclosure on the edge of a Romano-British field system), and features at Home Farm and Wall Garden Farm. This scatter of sites at Harmondsworth probably represents a drifting settlement, similar to the extensively excavated site at Mucking in Essex. These places housed farming communities who grew wheat and barley, and kept cattle, pigs and sheep or goats, but little sign has been found of their field systems. At West Drayton wattle-lined pits are thought to have been used for retting flax and hemp for textile production (Thompson et al 1998, 56, 67, 80-3, 88; Cowie and Harding 2000, 175, 179-81, 183, 186, 195; Blackmore and Cowie 2001). Remains of flax processing have also been found in a Saxo-Norman ditch at Spitalfields to the north-east of the city of London (Thomas et al 1997, 18).

It is in this context that the components of early Saxon settlement of c450-750 excavated at Longford should be viewed. These remains lay within the enclosed tofts of the medieval and later village of Longford (LMA MRDE/HARM/1/1 and 2 nos 396-7). Several of the excavated boundary features appeared to have been used continuously into the late medieval period. This implies that the settlement was of the more permanent middle Saxon type, and became the ancestor of the medieval hamlet of Longford in the same close vicinity.

The excavated remains are perhaps most closely comparable to the 6th and 7th-century site at Cowdery's Down in Hampshire, where building C12 measured 22m by 10m in its latest phase, constructed around posts set in continuous narrow trenches. Sunken-featured building C18 lay to its north-west. Among other comparable sites, at Wicken Bonhunt in Essex substantial boundary ditches and 28 rectangular structures were found of a

settlement which began in c700. The structures were of a sequence of dates and employed a variety of construction techniques; their floor areas ranged from 36m² to 130m². The middle to late Saxon settlement site at Bramford near Ipswich consisted of a D-shaped enclosure ditch with internal divisions and buildings; building 1 was founded on a combination of post-holes and foundation trenches and measured 11.5m by 7m; building 2 was post-built and measured 9.3m by 5.5m (Reynolds 1999, 48, 140, figs 13, 62, 64).

The name of Harmondsworth means Hermond's farm. The name of Stanwell literally means 'stoney stream or spring', but it may have a relationship to the name of Staines to the south, reflecting an early connection between the two settlements within one estate boundary. The names Borough Field and Borough Hill Closes near the boundary between Harmondsworth and Stanwell suggest that there was formerly a barrow here, perhaps deliberately placed to mark the boundary (O'Connell 1991, 7).

The pottery analysis suggests that there was desertion of the study area in c750-970, from the middle to the late Saxon periods. However, the inclusion of settlements and estates in south-western Middlesex in the written evidence of charters dating from the 8th, 9th and 10th centuries implies that it remained an occupied and exploited landscape throughout this time-frame. Amongst the places mentioned in the charters is Harmondsworth in the study area. In 704 30 *cassati* of land at Twickenham were granted to Bishop Waldhere of London by King Swæfred of the East Saxons and the *comes* Pæogthath, with the permission of the Mercian king Æthelred, and the confirmations of his successors Coenred and Ceolred (Sawyer 1968, 87 no 65; Gelling 1979, 95 no 191). In about 781 King Offa of Mercia sold twenty *mansae* of land at *Hermondesyeord* (Harmondsworth) in the Middle Saxon province to his servant Ældred for a gold bracelet (Sawyer 1968, 102 no 119; Gelling 1979, 99-101 no 203; NA SC11/444). He was also alleged in a forged charter of 969 to have given Staines, Teddington, Feltham and Ashford to Westminster Abbey (Birch 1885, iii 548-55 no 1264; Sawyer 1968, 246 no 774; Gelling 1979, 110-11, no 224). In 831 Harlington was mentioned in the boundary clause of a charter granting land at Botwell in Hayes (Sawyer 1968, 119 no 188; Gelling 1979, 104, no 207). In about 939 King Athelstan gave ten *mansae* at West Drayton to St Paul's Cathedral (Sawyer 1968, 180; Gelling 1979, 107).

Late Saxon/Early Norman Landscape

By the 10th and 11th centuries the larger middle Saxon estates and the *parochiae* of the minster churches had been broken up, as land called *bocland* was taken out of them to grant by charters to bishoprics, monasteries and royal officials. This process probably took place relatively early in Middlesex, and consequently five of its six hundreds were named after the meeting places of their courts at mounds, prominent trees and stones in the landscape, rather than after their main estates (Sharpe 1919, 96; Bailey 1989, 122). The new smaller estates evolved into manors. Their lords established proprietorial churches as one form of manorial asset, and in the 11th and 12th centuries these became parish churches, the boundaries of their new parishes often co-terminous with those of the existing manorial estates (Muir 2000, 76-7, 123).

These late Saxon tenurial changes were accompanied by the concentration of settlements into large villages and the formation of open field systems, although the relative chronology of these various elements is uncertain. Settlement nucleation may have come first in c850-1050, transforming the pattern of settlement from dispersed hamlets to individual villages in each estate. These villages appear to have been created by the lords of the estates, and the rising numbers of the population were moved to them in order to make agricultural arrangements more efficient. The movement was most marked in areas with extensive meadow land and those most suited to grain production, already cleared of much of their woodland. In these estates it was necessary to mobilise large amounts of labour at short notice to mow the hay and harvest the corn while the weather was favourable. It was easier to organise the tenants for these labour-intensive operations when they lived in nucleated villages. The changes were facilitated by stronger lordship in the manorialised estates, and enabled them to respond to increased burdens of royal and ecclesiastical taxation (Muir 2000, 182, 184, 205; Williamson 15-16, 19, 174, 182-3). These criteria applied to the Harmondsworth and Stanwell estates, with their meadow lands along the Colne valley and their extensive level grain fields, which may have been in continuous production since the Romano-British period. Late Saxon settlements in the valleys of the Thames and its tributaries which have been archaeologically investigated

include some traces of a late 8th or 9th century occupation site within an oval enclosure at Stanwell (O'Connell 1991, 59); an 11th and 12th-century site at Manor Farm, Harmondsworth; and the houses on the claylands at the Northolt manor house site, which began in the 9th century (Cowie and Harding 2000, 192).

The move to nucleation was often accompanied by the development of common field systems, or closely succeeded by it in the early 10th century. These field systems consisted of large open fields divided into furlongs of cultivation strips, worked in common by the lord and tenants, whose strips were dispersed evenly in the fields. The fields were planted in sequences of crop rotation, and depended on manuring by communal sheep flocks during fallow periods. Stock enclosures developed at the same time. The common fields resulted in ridge and furrow patterns in the landscape, created by the use of the fixed mouldboard plough pulled by teams of up to eight oxen. Some of the open fields may have been formed within a pre-existing landscape framework, the location of their furlongs dictated by previous ditched enclosures. There may therefore have been an element of continuity from past infield-outfield systems, in which the infield was intensively manured and kept in constant production, while the outfield was ploughed only periodically, cropped until it was exhausted, and then abandoned to pasture for several years. By contrast, in other areas such as the north Middlesex claylands, the open fields overlay abandoned Romano-British farms, and the dispersed and shifting pattern of early and middle Saxon settlement. These developments have been linked to the processes of manorialisation and feudalisation, and more efficient estate management. They occurred earliest on royal, episcopal and great monastic estates. The changes may have been driven by a requirement to increase production to cope with greater taxation burdens imposed by royal authority, including the need to collect Danegeld (Reynolds 1999, 155-6; Muir 2000, 205-8; Williamson 2004, 6, 70, 119-22).

The particular version of common field agriculture which emerged in western Middlesex consisted of one very large field for each village, surrounded by a series of smaller peripheral fields. In these systems crop rotation was practised on an intra-field basis between the furlongs of the main field, and on an inter-field basis between the smaller fields. Stanwell had the enormous Stanwell or Town Field and the smaller Borough Field and West Bedfont Field, each divided into cultivation strips; part of Ashford Field also

lay within the parish. Harmondsworth had Harmondsworth Field, and also Longford Field, Sipson Field and Heathrow Field, which were based around subsidiary hamlets. The areas of excavated ridge and furrow, aligned approximately east-west, lay within Longford Field. There were similar patterns at Ashford, East Bedfont, Feltham, Hanworth, West Drayton, Harlington, and Northolt. In the bishop of London's manor of Fulham a pattern of dispersed settlement developed across the landscape, consisting of a series of nucleated hamlets mostly called *Green* and *End*, linked and serviced by a network of roads and paths. Each hamlet had its own small field system, on which crop rotation and strip cultivation were practised, but they all shared the large Fulham Field in the centre of the parish. It is not clear when the subsidiary settlements in the study area and the wider zone developed. They may have been the relics of a dispersed pattern of settlement which preceded nucleation, or they may have been early medieval secondary hamlets associated with assarting and the creation of sub-manors. There may have been elements of both.

The manorial structure of the tenurial landscape in the study zone can first be traced in detail in the *Domesday Book* survey of 1086, which also refers back to conditions at the end of the reign of Edward the Confessor in 1066 (Williams and Martin 2002, 360-6, 411, 415). In Edward's reign the manors had been held by Earl Harold Godwineson at Harmondsworth, Westminster Abbey at Staines, and the Canons of St Paul's Cathedral at West Drayton, with various thegns and housecarls of the king, the earl, and Archbishop Stigand in the other manors. By 1086 the Anglo-Saxon lay lords had all been dispossessed. William the Conqueror had granted Earl Harold's manor of Harmondsworth to the Benedictine Abbey of Holy Trinity at Rouen in Normandie, later known as St Catherine's, in 1069. The new dominant landowners in the area were Walter fitz Other at Horton, Stanwell and the two Bedfont; Robert Gernon at Wraysbury; and the Count of Mortain at Ashford, Feltham, and part of East Bedfont.

The frequent geld assessments of the Middlesex manors in *Domesday Book* in multiples of five-hide units probably reflects an earlier more regular arrangement of the landscape. All the manors in the study zone were assessed at multiples of five hides, except Feltham at 12 hides, and Staines and Ashford, which together made up 20 hides. The hide was equivalent to 120 acres and the virgate to 30 acres. The county may have been particularly

heavily assessed because of the capacity of parts of it for grain production. At Harmondsworth there is a discrepancy between the overall assessment of 30 hides, and the addition of its component parts, which totals less than 18 hides (Darby and Campbell 1971, 104-10; Sullivan 1994, 51-2).

In the study zone the arable land was not all being used to full capacity in 1086, as the number of available plough-lands in a manor often exceeded the number of plough-teams working, and this was often accompanied by a fall in annual value over the previous 20 years. Only Stanwell appears to have been overstocked, with 13 ploughs operating on ten plough-lands, but Staines, Ashford and West Drayton were fully stocked. It is not certain that the plough-land figures refer to the number of teams which had been operating in 1066 (Darby and Campbell 1971, 112-13, 119). The drop in annual value of most of the manors in the previous 20 years probably reflects the political dislocation of the period. Stanwell, Harmondsworth and Horton had been considerably reduced in worth when they passed to their new lords, but they were now recovering their 1066 values.

The survey indicates that there were still few settlements on the north Middlesex claylands, where there were still large tracts of woodland and wood pastures, which were used to feed great numbers of pigs during the pannage season from Michelmas (29th September) to Martinmas (11th November). Here the land was even more under-used for arable exploitation (Darby and Campbell 1971, 121-5; Cowie and Harding 2000, 192, 195; Williamson 2004, 54-6). However, in the study zone there were still woods which could feed 500 pigs at Harmondsworth and Wraysbury, 100 pigs at Stanwell and 30 pigs at Staines. The Harmondsworth woods may have been in a detached portion of the manor at Ruislip.

The manorial framework provided the context in which later medieval landscape changes took place. It was followed by the emergence of the parish framework which was based on proprietorial churches built on the manors in the 11th and early 12th centuries. Medieval agriculture was subject to advances and retreats. Some manors in the study zone were probably extending their areas of cultivation in the late Saxon period by clearing areas of woodland and heath. This process of clearance was called assarting. An increase in the annual values of some manors in the period 1066 to 1086 recorded in

Domesday Book, and the presence of a number of *bordars* settled on the land, have both been taken as indicators that the process of taking additional land into cultivation was active, but they cannot be regarded as definitive evidence. As indicated above, the annual value of most of the manors in the area had actually fallen in the twenty years since the Norman conquest. Bordars formed 17% of the population in the whole of Middlesex in 1086 (Darby and Campbell 1971, 17; *VCHM* ii 61). Bordars were present in all the manors of the study zone, numbering about 28% of the population, but mostly they are noted as holding only a few acres of land. Only at Staines is the pattern different, where 58 bordars held a virgate and 90 acres. Here there may have been reclamation of the marshy lands at the confluence of the Colne and the Thames, but extension of the area of cultivation does not appear to have been in an active phase in most of the study zone.

Over the two and a half centuries after the *Domesday Book* survey, the advancing frontiers of cultivation progressed at different rates within the tenurial framework of the different manors of the area, each manor taking its own direction on the initiative of the lord or the tenants, or of both. The general method of making an assart consisted of surrounding the chosen land with a ditch and clearing the trees and underwood within it. The land was then ploughed and sown with oats or rye. It was often allowed to lie fallow for several years. There was certainly some assarting in Ashford in the 1220s, when the abbot of Westminster ceded the manor for the support of his monks (*VCHM* ii 306). By the end of the 13th century the demands of the London market had pushed the areas of clearance and settlement into the clay uplands of north Middlesex, where small open fields and smaller enclosed fields had been established, and were mostly under the plough (Williamson 2004, 113).

Former assarts can be recognised on later maps by series of fields forming lobe shapes, or intruding into wooded or heathland areas, sometimes containing looped secondary settlements; and also by field names such as *Stocking*, *Ridding*, *Ley* and *Hayes* (Sloane et al 2000, 213). Fields in Stanwell in c1252 included *Savoriesrudinge* (*CAD* ii 75 no A2408). This was conveyed in 1471 as *Savereysrydyng*, enclosed with ditches and with an acre of arable land on its south side, by William and Alice Peryman of Borough (BL Additional Charter 27216). It may therefore have been one of the enclosed fields in the excavated area. The shape of Borough Field itself suggests that it may have originated as

an early and extensive assart into the heathland along the northern boundary of the manor. Arable furlongs in Stanwell in 1748 included Burn Bush Shot, Reddings Hill and Scrub Shot, all suggestive of former land clearances. Court Ley was to the south of Borough Field, east of the manor house, and several fields called Reddings close lay along the southern border of the manor on the Roman road to Staines (LMA Acc 809/MST/9B and 10A). In Harmondsworth parish the shape of the south-west part of Heathrow Field suggests that it was an assart into Hounslow Heath, with Heathrow established as a looped settlement on its fringe. The same may be true of the settlements at Perry Oaks and Sipson Green. At Perry Oaks in the 14th century there was a six-acre field surrounded by hedgerows called *le Ridynge* (LMA Acc 446/L1/15). An extent of the manor of Harmondsworth in 1324/5 mentions 26 acres of newly-broken land (*frisca*) in a place called *Wylkemere* (NA E142/83/2). This was near Longford (LMA Acc 446/EM/1; NA SC11/443 m2). A rental of 1450 refers to two pieces of land, both called *Stubbfurlong*, one at Sipson and one at Longford, suggesting that they were formerly cleared of tree-stumps (NA SC11/446 mm 1d, 3).

Early Medieval Landscape 12th and 13th centuries

The main manor of Harmondsworth was held by the Abbey of St Catherine's at Rouen from shortly after the Norman conquest until 1391, through its cell at Harmondsworth Priory. This was a small moated site, containing the manorial buildings and courtyard (Sherwood 1993, 3; *VCHM* iv 7). Throughout the medieval centuries the main manor of Stanwell was held by the descendants of William fitz Other, who took the surname of Windsor because of their office of Constable of Windsor Castle, which was at first hereditary. Most of the Windsor family probably lived at Stanwell in a manor house on the site of the later Stanwell Place to the west of the village (Collins 1754, 4-13; *VCHM* iii 37). Surviving medieval manorial barns have been surveyed in the Greater London area at Headstone Manor and Manor Farm in Ruislip, and excavations have taken place within the barn at Manor Court in Harmondsworth (Sloane et al 2000, 221).

The impact of the Norman conquest on the area resulted in the inclusion of several manors in a castle-guard system attached to Windsor Castle. This is comparable to arrangements at Dover Castle in Kent, on the Welsh frontier at Clun in Shropshire, and on the Scottish frontier at Richmond in Yorkshire. At Richmond about 30 knights owed guard duty for each two-month period; they were drawn from every county in which the lords of Richmond held land (Suppe 1994, 34-62; Peers 1953, 11-12; Clay 1936, 2-7). Stanwell manor was held from the Crown as half a knight's fee and owed 16sh 8d to Windsor every 40 days for castle guard. The sum was due from all the holdings in the Windsor family barony, of which Stanwell was the chief manor; the other manors included Horton in Buckinghamshire, East Bedfont, and the sub-manors of Stanwell at West Bedfont and Hammonds (*VCHM* iii 37-8, 40). In 1322 Ralph de Camoys, Constable of Windsor, had temporary custody of one of the Contrariant rebel's land at Stanwell (NA SC6/1146/20). In the 14th century the sub-manor of West Bedfont paid a fee of 6sh 8d every 24 weeks for castle-guard at Windsor, a burden that was distributed amongst the free and bond tenants (NA SC12/23/35). There were still echoes of this system in Charles I's reign, when castle guard fees were extracted by the Crown from various manors of the Windsor family in Middlesex, Buckinghamshire, Berkshire, Hampshire and Surrey, said to be previously belonging to Stanwell (NA SC12/26/36).

The population is thought to have been generally rising throughout the 12th and 13th centuries. Evidence of widespread plague epidemics is not known from 13th century England, but the most serious famine of the century occurred in 1258. Grain yields fell as a result of a period of bad weather, and prices consequently rose. This was coupled with sheep murrain, leading to heavy losses. However, there is no evidence that there was cattle-plague at the same time, and therefore the famine was not as severe as those of 1315–22 (Kershaw 1973, 29). Therefore settlements are more likely to have been founded than abandoned during this period.

Harmondsworth village lies in the north-west part of its parish. Longford was first mentioned in 1337, when it had 30 houses, but had probably had a continuous existence since the middle Saxon period. Sipson was first mentioned in 1214. Southcote or Southcoterow existed by 1265 but its position is uncertain. The name remained in use until the mid 15th century, when it appears to have been succeeded by the name Heathrow

(first mentioned in 1416), although both names were listed in a rental of 1493 (*VCHM* iv 3-4; LMA Acc 446/EM/1; Acc 446/ED/112, 118; NA E315/409 ff1v and 4; E326/9174; SC2/191/13; SC11/443; SC11/446; WC 11502 m1). A Harmondsworth survey of 1542/3 specifically refers to *Sowthecoterow alias Hetherowe* (WC 11451 m4). Perry Oaks probably existed by 1324, when Robert atte Pirie and Robert de Suthcote served on a jury (NA E142/83/2). Stanwell village centred on a small green and the parish church built in about 1200 on its south side. There were houses at Poyle and Rudsworth on the west side of the parish by the 13th century, and at Stanwell Moor by the 14th century (*VCHM* iii 34, 46). Most of these peripheral hamlets which appeared in the 13th century were probably secondary assarting settlements, established by extending the cultivated area into Hounslow Heath or the marshy lands of the Colne valley. Some of them were associated with the formation of sub-manors.

In Harmondsworth the royal way crossing Hounslow Heath (the Bath Road) was mended by digging in 1386/7 (WC 11501 m1). The main routes through the study area were the Bath Road running westward through Harmondsworth parish to cross the various channels of the Colne west of Longford, and the road from Brentford to Staines on the south-eastern side of Stanwell parish. Between them a series of mainly north-south by-roads gave access to the settlements and the fields, such as Hatch Lane, Long Lane, Tithe Barn Lane and Heathrow Road in Harmondsworth; and in Stanwell they included “the Green Way leading from Stanwell to Stanes” in 1677 and another route leading south from West Bedfont, while another route ran irregularly east-west to link East and West Bedfont, Stanwell village, the mills of Stanwell Moor and Horton. These were probably all established in the medieval period (*VCHM* iii 35; iv 3-4; LMA Acc 132/24).

The largest holding in each manor was the lord’s demesne or home farm, consisting of arable land in the open fields, meadows in the Colne valley and pasture on Hounslow Heath and elsewhere. In the 12th century demesne lands were often leased out by their lords, but in the late 12th and 13th century there was a movement to the direct management of demesnes to grow agricultural produce for a cash market (Galloway and Murphy 1991, 6; Williamson 2004, 46). In Stanwell the demesne arable was estimated at 124 acres in 1279 and 200 acres in 1328, and thereafter at 230 to 280 acres. The demesne

meadow measured about 50 acres in the 13th and 14th centuries, and increased to 90 acres by the early 16th century (*VCHM* iii 36).

The villein tenants of the manors had holdings which each consisted of a series of cultivated strips in the common fields, allotted doles of meadow land and rights of pasture, in return for services performed for the lord of the manor on his demesne lands. In 1086 their holdings ranged from one hide to half a virgate (Williams and Martin 2002, 362, 364). They appear in rentals and conveyances of the 13th to 16th centuries at Harmondsworth and Stanwell holding virgates of about 30 acres, or half-virgates, or smaller landholdings around cottages. In Harmondsworth there was a great deal of subdivision and sub-letting of tenant holdings. Tenants paid a fine called a heriot to the lord when they inherited their holdings, normally consisting of their “best beast”. At Harmondsworth when the tenants had no animals, they sometimes paid in clothing, tools or furniture (Collins 1754, 12; *VCHM* ii 66, 72-3; NA E315/409 ff1-9v; SC12/11/20 m2; WC 11451 mm2-6). The descendants of the villeins became customary tenants, their title to their lands being registered in the manorial court as copyhold land. There were 539 acres of copyhold land in Stanwell manor in 1796 (*VCHM* iii 36; LMA Acc 809/MST/12). The inhabitants of the manors were divided into geographical associations called tithings. These tithings originated in groups of ten householders who stood security for each other’s conduct; they were each represented by an elected tithingman, and their actions were reviewed at the view of frankpledge which was normally held at the same time as a manorial court. The fines of the court and the right to impose a tallage on the villeins were also sources of annual profit to the lord of the manor. At Stanwell the lord did not claim view of frankpledge (*VCHM* iii 45). At Harmondsworth the tenants also paid tithes to the Prior, because he was rector of the parish church.

The work services due from the tenants to a lord on his demesne lands were regulated by customs which varied from manor to manor. In the late Saxon and early Norman period there was a tendency by manorial lords to impose heavier burdens on their tenants and to reduce the status of those who were counted as free (Williamson 2004, 45). In 1066 there were sokemen at Harmondsworth, Harlington and East Bedfont, but they had been downgraded to villeins by 1086 (Williams and Martin 2002, 362-4). The arrangements between the lords of the manors and their tenants for utilisation of the landscape were

sometimes recorded in writing in custumals. At different times in different manors the tenants' services came to be changed into cash payments, but this was done relatively late in Middlesex as a whole (*VCHM* ii 73). Services which were commuted when demesnes were leased in the 12th century, were re-imposed when they were directly managed in the 13th century (Williamson 2004, 46). No details are known of the works required from the tenants of Stanwell manor, but by the late 14th century these had all been commuted to money payments (*VCHM* iii 43).

At Harmondsworth there is a custumal said to be of the year 1110/11, which is preserved in a copy of the reign of Richard II (1377-99), which is the earliest known custumal for Middlesex and very detailed. It records the sworn verdict of twelve jurors about the services owed by the tenants to the Abbot of Rouen. Each villein was obliged to plough and harrow one acre to sow corn, and one to sow oats. Those who had no ploughs were the thresh in the grange instead. Each villein had to do one day's mowing on the hay meadow, although the lord would provide two mowers to help complete the meadow. In the evening the tenant was to receive as much hay as he could lift on his scythe, but if the scythe broke he lost the hay and was also fined. At the completion of the mowing the lord provided the tenants with a ram. All the villeins and the cottars had to help stack the hay and carry it to the grange. They also had to attend at three boon-works during the corn harvest: the water-bedrippe, the great boon-work and the love-bedrippe. The first two involved reaping and were rewarded with loaves of bread and a substantial meal in the hall. The third involved binding and carting, with a meal in the hall for each man. There were also duties relating to weeding the fields, cleaning the ponds and fencing the boundaries of the manor. The tenants were only allowed to place boundary marks on their own lands in the fields under the supervision of the lord's servants. Only seven of the tenants were obliged to do work on the demesne every week from Michelmas to Martinmas; perhaps these were the descendants of the six *Domesday Book* slaves here. All the animals of the manor were allowed to graze on the stubble after the harvest, and the tenants were entitled to pannage in the woods at the rate of 1d a pig and ½d a piglet, the lord providing a pig-herd. The smith held his tenement in return for repairing the ironwork of the demesne ploughs, shoeing the plough horses, and sharpening the tenants'

scythes at mowing time (Sherwood 1993, 3-5; *VCHM* ii 66-8; NA SC11/444 m2; SC12/11/20).

A custumal of the reign of Edward III (1327-77) lists the services due from each of the free and customary tenants of Newark Priory's manor of West Bedfont in Stanwell parish. They are similar to those of Harmondsworth, although less elaborate, and specifically include the carriage of dung from the manor courtyard to spread on the demesne land (NA SC12/23/35).

The Harmondsworth customs were fairly typical of south-western Middlesex, but they were the cause of repeated disputes between the Abbot and the tenants. The tenants brought unsuccessful court cases against the Abbot in 1227, 1233 and 1275. On the last occasion the tenants claimed that the manor was Ancient Demesne and that therefore they were free sokemen, free of tallage and bond services. Ancient Demesne was land that had formerly belonged to the Crown, and these claims were generally settled by reference to *Domesday Book*. The claim was rejected and the tenants embarked on a campaign of violent protest against the Abbot for the next four years, carrying off his muniments, chopping down his trees, killing his officials and burning the Priory buildings. The king intervened through the Sheriff of Middlesex and the Constable of Windsor Castle, and twelve tenants were in gaol in 1281 for burning the buildings. Further disputes arose in 1289, when the Abbot prosecuted 25 tenants in the manor court for withholding their services, and in 1293 the Prior was accused of causing the murder of one of the tenants (*VCHM* ii 69, 80-2; iv 12; NA SC8/203/10143; SC11/444; WC 11339). Although the extraction of labour services was not without costs or difficulties for the lords, they were often economically advantageous. The use of carrying services was certainly cheaper than the commercial carriage of grain in the 13th century (Galloway and Murphy 1991, 7).

At Wraysbury an agreement was made between the lord of the manor and the copyholders about its customs in 1656. In return for additional rents and fines, the copyholders obtained the ending of heriot payments; general licence to demolish buildings and cut down trees on their holdings, and to plant willow trees on the commons; and a fixed rate for entry fines to holdings and manorial court fees, with access

to the court rolls. Half the proceeds of fines in the courts were to be spent on the court dinners. No mention was made of boon-works, which must have disappeared long before (CBS D97/113/5; copy at D/BASM/86/11).

Almost all the arable land in Stanwell and Harmondsworth lay in open fields divided into cultivation strips or selions, which occupied a large percentage of both parishes. In Harmondsworth in 1293/4 there were 241 arable acres in the demesne (BL Additional MS 6164 p98), and in 1324/5 there were 240 acres “in divers perches in the common fields” (NA E142/83/2). Strips of both demesne and tenant land were intermingled in the fields of both manors, grouped in numerous furlongs (LMA Acc 132/1 and 2; Acc 446/L1/15; NA SC11/445; SC12/11/20 m1). The positions of most of these cannot now be traced. Those in Stanwell are detailed in a survey of 1748 (LMA Acc 809/MST/9B). In the 17th century the tenants of the open field land at Stanwell met at one of the village inns on four *staking days* each year to make the division of the strips (*VCHM* iii 34, 44). The ridge and furrow strips excavated in the T5 project lay in Longford Field in the manor of Harmondsworth. A medieval strip-field system has also been excavated at Pinner, and field ditches at Stanwell (Sloane et al 2000, 221). In 1404 tenants were fined in the Harmondsworth manor court for removing hedges and allowing their animals to enter the lord’s meadows and corn (LMA Acc 446/EF/1/1 m2). In 1544 and 1545 about 144 acres of the demesne arable of Stanwell lay in enclosed fields around the perimeter of Town Field, including Great and Little Parks, East Park, Dunstables and Court Ley (NA E315/384 f7; SC12/3/15).

Manorial accounts show what crops were grown on the demesne land in particular years. Since the demesne arable strips were mostly intermingled in the common fields with the strips of the free and bond tenants, they must also have grown the same crops in similar proportions. At Harmondsworth the accounts of tenants’ crops paid as tithes also indicate what they were growing. These details can be compared to the assemblages of seeds recovered during the excavations. Relatively little attention was paid in medieval agriculture to weeding crops, and environmental samples of plant remains from medieval sites normally contain a rich weed flora.

Grain yields were low in the medieval period, averaging about eight bushels per acre for wheat, about four bushels of which was surplus available for sale. At the end of the 13th century the manors along the Thames were supplying the London market (Galloway and Murphy 1991, 11). Between 1250 and 1350 many demesnes in the Thames valley grew rye as the dominant crop, followed by barley, oats and wheat in that order of importance (Campbell 2000, 267, 470). Harmondsworth in 1293/4 was growing more wheat and oats than other crops, and wheat was accelerating in importance by 1337 (*VCHM* iv 11; BL Additional MS 6164 p98; NA C270/17/7; 1126/5; see Tables 1 and 2). The tenants must have been growing oats in 1301, as Robert Cridde took four sheaves from the house of Roger Pellyng (NA SC2/191/13).

Raising a variety of crops gave some insurance against the failure of a particular crop in any one season. As barley and oats were normally sown in spring, and wheat and rye in autumn, the work of ploughing, manuring and sowing was spread more evenly over the year. This made the utilisation of tenants' services and the rotation of crops easier. The leguminous crops of peas and vetch were cultivated extensively in England from the 13th century onwards to replace nitrates in exhausted soils, suppress weed growth and improve fodder supplies. There is insufficient evidence to discern crop rotations in the study area. There was evidently rotation between a large number of furlongs at Harmondsworth, but they are not usually identified in the accounts. Only a small portion of the demesne land was left fallow in each year (see Table 1). In 1367 only 104 demesne arable acres of Stanwell manor were sown, out of a possible 269, the remainder lying fallow (*VCHM* iii 43-4).

Manuring fallow fields by folding sheep on them was an integral part of the open field system of agriculture, especially on the lighter soils, the sheep acting as mobile muckspreaders within moveable folds made from hazel hurdles. The sheep of whole villages were controlled in this operation by communal shepherds (Williamson 2004, 79, 133-4). At Harmondsworth 13 hurdles were bought for the lord's sheep-fold in 1386/7 (WC 11501). The sub-manor of Padbury had 14 hurdles for its fold in 1476 (WC 11473). A conveyance of 1488 included two free folds amongst other property in Harmondsworth, Longford and Stanwell (NA E328/412). Dung cart and dung forks formed part of Harmondsworth manor's equipment in the 15th century; muck and rubbish

from the manor courtyard was spread on the fields as part of the services owed by the tenants (NA SC6/1126/7 m2d; WC 11502 m4d; 11504 m3d). In the 17th century the copyholders of Wraysbury established their right to take silt from the rivers for manuring the fields (CBS D97/113/5).

The *Domesday Book* survey implies that teams of oxen were used to draw ploughs in the 11th century, although only demesne teams may have used eight oxen, the tenants ploughing with smaller teams. In the 12th and 13th centuries work horses called *stots* or *affers* replaced oxen as the main draught animals in Middlesex; they were present on more than a third of the Middlesex demesnes in the century 1250-1350. They were faster and more adaptable than oxen, but more expensive to keep as they ate a diet of oats and hay, whereas oxen could be fed hay alone. The introduction of horses depended in part on the amount of meadow land available (Campbell 2000, 123, 126, 133; Williamson 2004, 158, 196). Manors to the south and west of London sold pigs, geese and chickens to the London market, and sometimes luxury items to richer customers (Galloway and Murphy 1991, 11). In 1293/4 and 1324 Harmondsworth was keeping swans and peacocks (BL Additional MS 6164 p98; NA SC6/1126/5; see Table 3). These details can be compared to the assemblages of animal bones recovered during the excavations.

It was necessary to move much of this stock around from common grazing to enclosed pasture fields to fallow grazing on the stubble after the harvest. Small greens and grazing areas were linked by a network of hedged lanes and wider driftways (Williamson 2004, 176). In Stanwell the linked grazing areas of Farther Moor, Hither Moor, Spout Moor and Borough Green formed a stock movement route from the meadow lands of the Colne valley, between the open arable fields of the manor and the enclosed fields of its northern edge, to the pasture lands of Hounslow Heath (*VCHM* iii 35; see Fig 3). The excavations discerned patterns of ditches near Borough Green which could be interpreted as stock funnels. In the 16th century the demesne pasture included hedged fields at Mynsters Haye, Leylands, Busshylease, Cowardes Hall, Benclose and five enclosures called the Warren (NA E315/384 f7; SC12/3/15). In the 17th century Stanwell manor court appointed drivers for Stanwell, Stanwellmoor, West Bedfont and Rudsworth (*VCHM* iii 45).

Stanwell manor had substantial amounts of meadow land along the River Colne and its various branches, but Harmondsworth had rather less (*VCHM* iii 35, 44; iv 11). There were 24 acres of demesne meadow in 1293/4 and 16 acres in 1324/5. In the 15th century they produced about 20 loads of hay each year, which was used for winter fodder (BL Additional MS 6164 p98; NA E142/83/2; WC 11504 m2d). The tenants received shares or doles of meadow in the form of broad strips. The Stanwell meadows were in Foul Haw, Runnings, Bone Head Mead and Blackengrove (LMA Acc132/2 and 24; Acc 809/MST/9B). The Harmondsworth meadows were called Wereyt (probably an island between branches of the Colne), Fotherheth, Longmede, Wydemede, Bury Mead, Testemedede, Shepemedede, Fayre Meade, Lord's Hay, Medehay, the Inning, Redmedede, Colbrookmedede, Scollaresmedede and next to Blackengrove, which lay across the boundary in Stanwell (LMA Acc 446/EM/1 m1; Acc 446/L1/15; NA E315/409 ff3, 9v; SC6/1126/7 mm1, 3; SC11/444 m4; SC11/445; SC11/449 mm2, 3; SC12/3/15; SC12/11/20; WC 11451 mm1, 3; 11501 m1; 11502 m1; 11503 mm1, 4; 11504 mm1, 2). The excavated hollow-way to the south of Longford may represent a stock route to the common meadows of the manor.

The eastern part of the study area was dominated by the heathland of Hounslow Heath, used for common grazing. By the 13th century these areas of manorial waste were regarded as part of the property of the lords of the manors, but the tenants had common grazing rights on them (Williamson 2004, 92). A keeper of the heath was appointed in the Harmondsworth manor court in 1377 (*VCHM* iv 15). Vegetation was also cut on the heath and regarded as a valuable asset; in 1404 John Spyke of Sipson was fined in the Harmondsworth manor court for cutting heather at Hethgoves, and in 1428 three Stanwell tenants were fined for trespassing and cutting thorns on the Harmondsworth demesne (LMA Acc 446/EF/1/1 m2; NA SC2/191/21). Thorns and heather were sold by the manor and rents were paid for turf-cutting by the millers of neighbouring parishes (NA SC6/1126/7 m1; SC11/449 m3; SC12/11/20 m1; WC 11451 m4; 11501 m1; 11502 m1; 11503 m1; 11504 m1).

At Harmondsworth the manorial officials included a woodward whose office was hereditary and connected with a particular tenant holding (*VCHM* ii 69; NA SC12/11/20 m1d). It is not certain where the manorial woodlands lay, but they may have been in a

detached portion of the manor at Ruislip, implying the previous existence of transhumance arrangements (*VCHM* iv 16). A 15th-century manorial account specifically mentions Ruislip Wood, and also ash and elm trees growing on various parts of the manor, whereas oak timber had to be bought in (NA SC6/1126/7 mm1, 2).

The multiple channels of the River Colne in the west of the area provided sites for mills from the early medieval period onwards, working both as corn and malt mills, and for industrial purposes. There were at least three or four in Stanwell parish, and two or three at Harmondsworth, one of which lay at Longford (*VCHM* iii 33, 42; iv 13-14). New waterwheels, cogwheels and other equipment were bought by Harmondsworth manor in 1388/9, extensive repairs were done to the mills in 1397/8, and two floodgates were made from boards in 1406/7 (NA SC6/1126/6 m2; WC 11502 m2; 11503 m4).

Late Medieval Landscape 14th and 15th centuries

Stanwell manor was owned by the Windsor family for the remainder of the medieval period. In 1542 Henry VIII forced Lord Andrews Windsor to exchange Stanwell and its appurtenances in neighbouring counties for Bordesley Abbey in Worcestershire and the office of Keeper of the Great Wardrobe. He abandoned Stanwell leaving behind the provisions he had laid in for the Christmas season, saying “They should not find it bare Stanwell” (Collins 1754, 16-46; *VCHM* iii 37). There was a manor house on the site of Stanwell Place by at least the 14th century, which most of the Windsors lived in. It had 32 hearths in 1664 (*VCHM* iii 38).

As a property of the Abbey of Rouen, Harmondsworth manor and priory was regarded as an alien priory during the Hundred Years War with France in the 14th and 15th centuries, and was periodically confiscated by the Crown, although the priors seem always to have kept custody of it on the payment of fees. In 1391 the main manor was purchased by William of Wykeham, bishop of Winchester, and passed to his foundation of Winchester College. At this time the manor was farmed out in several lots and increasing in value. The demesne lands were scattered amongst the hamlets of the parish. The College

retained ownership until 1543, when it too was subject to one of Henry VIII's forced exchanges. In 1547 Henry granted it to William Paget, Secretary of State to the Privy Council, who had already obtained West Drayton manor in 1546 (Himsworth ii 457-62; Sherwood 1993, 5; *VCHM* iv 7, 10; NA C270/17/7; SC6/1126/5). The manor house or priory had a courtyard, a garden and two pigeon houses in 1324, and later included a gatehouse and barns. Various buildings were re-roofed in 1386/7 and 1397/8 with tiles and lime bought at Watford, Burnham and Harefield. By 1388/9 a pig-sty, a stable, a press-house, a dairy and a bakehouse existed there, in 1397/8 a hall with the lord's chamber at its north end, and in 1406/7 a bridge, presumably over the moat. In 1433/4 the brewhouse and pig-house were thatched. There was a grange for the demesne produce and another for the crops collected as tithes. The College built several barns at Harmondsworth in the 15th century, probably including the 190-foot (57.9m) twelve-bay barn surviving to the west of the church (*VCHM* iv 8, 16; NA E142/83/2; SC6/1126/6 m2; SC6/1126/7 m2; SC11/449 m3; SC12/11/20; WC 11501 m1; 11502 m1; 11503 m4). Tiles were made from two clay-pits dug on the demesne and leased out in 1433/4 and 1450/1, but were also fetched from Ruislip in the latter year (NA Sc6/1126/7 m2d; WC 11504 mm3, 3d).

A common phenomenon represented in the study zone is the emergence of sub-manors in the late 13th and early 14th centuries, although it is not clear why this should have taken place. Sometimes these were established as secondary settlements within existing arable fields. Manorial lords appear to have created sub-manors by sub-infeudation to pass on the burdens of military tenure. They also added to their local political support and most immediately produced money fines (Muir 2000, 181; Williamson 2004, 46). The subdivision of manors to form sub-manors is often linked to the digging of rectangular moats, as at Poyle House in Stanwell. Some of these so-called manors may never have held courts of their own, and were therefore not true manors in the legal sense.

In Stanwell the manor of West Bedfont was already a separate estate in 1086, but the manors of Poyle, the Park, Hammonds or Shepcotts, Cleremunds and Knollers appeared between the late 12th and 14th centuries, mostly on the west and south sides of the parish. Some of them may have developed from the estates of two knights who held land in the manor at the time of *Domesday Book* (*VCHM* iii 36, 38-41, 45). The lord of Poyle paid an

annual rent of one hawk to Harmondsworth each midsummer for the use of a stream of water, a rent normally commuted to a cash payment of 3s 4½d, but paid as a hawk in 1406/7 (NA SC6/1126/7 m1; WC 11502 m1; 11503 m1; 11504 m1). At Harmondsworth the sub-manors of Perry Oaks, Padbury, Luddingtons and Barnards originated in the 14th century. The manor of Perry Oaks included 143 acres of heathland, most of which was called Perry Heath. This may point to its origin as a secondary assarting settlement of the early medieval period. In the 15th century it had a manor house with a gatehouse and two gardens, one containing a dovecote. Padbury included part of the hamlet of Southcoterow or Heathrow, and had a manor house in the 16th century; Luddington and Barnards lay in Sipson. In the second half of the 15th century Padbury, Luddingtons and Barnards were leased out by Winchester College to farmers (Himsworth ii 465-6; *VCHM* iv 8-11; LMA Acc 446/ED/111-118; Acc 446/L1/15; NA E326/9174; SC11/446 m3d; WC 11451 mm1, 2; 11473; 11504 m2).

At Harlington the manor of Dawley was already separate in 1086, and the manor of *Harlington with Shepiston* (ie Sipson) was created in the 14th century, apparently from the lands of Hounslow Friary (*VCHM* iii 263-6). At East Bedfont the sub-manors of Pates and Fawnes emerged in the 14th and 15th centuries (*VCHM* ii 311-12). At Feltham, which passed to the Crown in 1228, there were sub-manors called The Rye, and Haubergers or Lucyes by the 14th century (*VCHM* ii 316-17).

At Wraysbury the manor of Remenham appeared in the 13th or 14th century. There was also a manor called Cow or Cokke, but this was not mentioned before the early 17th century. The Benedictine nunnery of Ankerwyke Priory was established at the south end of the parish in the 13th century. At Horton the sub-manors of Pury and Berkin emerged in the 14th century, fragments of the main manor inherited by descent. There was also an Okehide manor on Horton Common, which existed by the 1290s. Colnbrook was a small borough on the west side of the River Colne, its territory lying mostly within the parish of Horton, of which it was a dependent chapelry (*VCHB* iii 323-4, 246-8, 283-4).

The manor of West Drayton was held by St Paul's Cathedral from the 10th century until the 1540s, and a sub-manor had emerged at Colham Garden by the 14th century (*VCHM* iii 191-4). The manors of Staines and Ashford remained in the possession of Westminster

Abbey until the dissolution of the monasteries in the 1530s. The subordinate manor of Yeoveney was probably included within Staines in *Domesday Book*, but had a separate manorial identity by the 13th century. It was also owned by Westminster Abbey throughout the medieval period, and retained until the 19th century (*VCHM* iii 18-19).

Several of the sub-manors and smaller estates were also held by religious houses.

From 1238 to 1415 West Bedfont was held by Newark Priory in Surrey; and from 1271 to the dissolution of the monasteries the Park in Stanwell was held by Ankerwyke Priory (*VCHM* iii 38, 41, 46). The tenant of the Windsors at East Bedfont was Hounslow Priory in the 14th and 15th centuries (*VCHM* ii 311). Ecclesiastical estates tended to retain conservative management policies in response to the economic challenges of the 14th and 15th centuries. Monasteries in particular stubbornly enforced their seigneurial rights, even when this resulted in inefficiency (Fryde 1996, 50).

The manorial economies of the study area suffered in a general agricultural decline in the 14th and 15th centuries. Like most manors in England the fortunes of Stanwell and Harmondsworth began to change with the transformation of climatic conditions and the increase in population late in the 13th century. The impact of famine episodes and the Black Death in the 14th century on settlement patterns and land-use can be traced directly in manors with surviving accounts of the appropriate dates, as at Harmondsworth. The shock to the agricultural economy often led to the shrinkage of cultivated areas and settlements, a retreat from marginal land, and the abandonment of direct exploitation of demesnes by manorial lords. Westminster Abbey's direct management of its estates at Staines and Yeoveney ended in the mid-14th century after the Black Death; they were then leased to farmers.

Throughout the 13th century the population of England had continued to rise until it reached critical levels. After 1280 the balance between population levels and food resources was delicate enough for the English to be described as 'calamity-sensitive'. It was the poorer sections of society that were likely to suffer high mortality in periods of bad harvests and high corn prices. The year 1294 was one of famine in East Anglia. Crops were destroyed in the fields by heavy rains and fungus, and the price of corn rose six-fold (Kershaw 1973, 37; Rawcliffe 1999, 14).

The most widespread famine of the period was in 1315-17, which resulted from a series of bad harvests and was accompanied in 1316 by an epidemic of an enteric type, which may have been typhoid. Contemporary chroniclers recorded the great mortality amongst the poor in this year, and the large numbers of burials in all cemeteries. There was an unprecedented inflation in grain prices, which lasted until a better harvest in 1317 halved the price levels. Alongside the famine was a sheep murrain, which was followed in 1319 by a disease which wiped out large numbers of cattle and oxen. Starvation was therefore compounded by epidemics of animal disease, which remained prevalent until 1322. As more cattle died, the price of livestock escalated, and the means of restarting arable production was lacking. There may have been an overall loss in the human population of about 10% in these years, and many peasant smallholders abandoned their landholdings, becoming vagrants and refugees. Over the next few decades the level of population was unable to recover fully, and it suffered a more lasting reduction in the greater mortality of the Black Death in 1348-9 (Kershaw 1973, 10-14, 29, 46, 49-50; Rawcliffe 1999, 14-15).

The wave of pestilence called the Black Death arrived in England in the summer of 1348, and devastated the population of the towns and countryside for the next 18 months. The Harmondsworth court roll of July 1349 and an accompanying list of heriots record deaths of at least 46 tenants in that year. While some of the larger holdings had passed to heirs, most of the cottages and smaller holdings were still in the lord's hands (WC 11437-8). There were later visitations of the plague in 1361-2, 1369, 1374-9 and 1390-3, which had more long-term effects on the capacity for recovery. Calculations from demesne grain yields suggest that there was a fall of about 40% in the English population between 1300 and 1375, a figure consistent with the estimates from the Poll Tax returns (Campbell 2000, 402).

In these circumstances many manors found it difficult to find tenants to work the customary holdings. Houses and lands were deserted. In 1402 and 1404 Harmondsworth tenants were being fined for allowing their tenements to become ruinous (LMA Acc 446/EF/1/1 mm1, 2; WC 11441). The more prosperous peasants took advantage of the shortage of tenants to increase their land holdings. At Harmondsworth and Longford in 1433/4 and 1450/1 there still some vacant holdings in the lord's hands, and a number of

cottages had been let at reduced rents. Some holdings had been incorporated into the demesne arable and the site of one cottage by the heath at Sipson had been lost. The bailiff Roger Hubard had taken over many of the tenancies to construct a larger composite holding (*VCHM* ii 74; NA SC6/1126/7 mm1, 2, 2d, 3, 4d; WC 11504 mm1, 2). A similar sequence of events took place at Malden in Surrey, where one of the Fellows of Merton College, the owners of the manor, bought up many vacant plots in the 1350s, following heavy local mortality in the Black Death. By the late 15th century there were only seven copyholders in the manor, each with several tenancies, and the village had shrunk away from its original core around the manor house and church (Andrews and Phillpotts 2001, 206-7).

In the general shortage of labour which followed the reduction of the population, the balance of advantage swung to the tenants against the lords. Hired labour was often substituted for customary works. The diet of the poorer sections of society improved and ale consumption *per capita* increased. Lords moved away from direct exploitation of their manors and began leasing out their demesnes in the second half of the 14th century, especially the major landlords with many manors. At first this was a temporary expedient, intended to be reversed when conditions became more favourable again. As the lease arrangements became more permanent, most labour services due from the tenants were abandoned. However, some manors continued with the direct management of their demesnes until the second half of the 15th century, relying on the customary labour of their tenants. This applied to the small ancestral estates of resident squires and the manors of religious institutions, which liked to retain demesnes as a means of household supply (Fryde 1996, 76, 113-14; Campbell 2000, 430-1, 436).

At Harmondsworth the tenants organised a campaign of obstruction and vandalism to undermine the manorial economy, a common course of tactics (Fryde 1996, 32). In 1358 they burned the buildings and goods of the Priory. They were fined in the manorial court in 1377 for not doing their services, sub-letting their holdings without licence and trespassing in the lord's woods. In 1378 a servant of one of the tenants opened sluice-gates in the Colne valley and flooded the lord's hay. At least five of the tenants were involved in the Peasants' Revolt of 1381, and had their holdings temporarily confiscated. The manor court rolls were probably burnt in the disturbances of this year. In 1391 there

were threatening groups of armed men assembling in the parish. Disputes over services and heriots continued into the early years of the 15th century. In 1402, 1404 and 1416 some tenants were fined for not attending the boon-works and refusing to perform carrying services. In 1414 the tenants encouraged the men of Drayton and Harlington to drive their animals into the Harmondsworth demesne fields to trample and eat the lord's hay and corn before they could be harvested. Between 1420 and 1436 there was a series of disputes between Winchester College and the tenants over timber and fishing rights, which involved armed raids on the manor's woods and heathland (*VCHM* ii 82-8; iv 12; LMA 446/EF/1/1 m1; Acc 446/M/98/5; WC 11441). In 1433/4 there was no longer anyone to perform the customary smith's services; his holding was in ruins and in the lord's hands (NA SC6/1126/7 m2d).

Harvest boon-works were still being demanded of the tenants and performed at Harmondsworth in the late 14th and early 15th centuries, although some works had been commuted in 1397/8 and 1433/4, and tallage from the tenants was pardoned in the latter year. Large amounts of food were provided from the stock of the manor and by purchase for the meals to which they were entitled at the boon-works. These included wheat bread and ale, cheese, milk, butter and eggs, salt and pepper, garlic, onions and peas, beef, pork, mutton and ducks, salt-fish, mackerel and herrings, and always a *reap-goose* (*VCHM* ii 71; NA SC6/1126/7 mm1, 3, 3d, 4d; SC12/11/20; WC 11502-4). In about 1450 five of the College's tenants at Harmondsworth refused to do *meteles works*, that is ploughing, harrowing, mowing and reaping services without the reward of meals, and were accused of taking part in Jack Cade's rebellion. They presented a petition about their case to Chancery (LMA Acc 446/M/98/1). There was more commutation of works in this year, mostly because the tenants refused to do them. They also refused to pay their duty of *tolcestre* on making ale and *multure*, the fee paid to the lord's mill for his monopoly of grinding the tenants' corn (WC 11504 mm1, 1d, 2). But the College continued to demand the performance of services, even when this no longer made economic sense. Tenants were still being presented at the manor court for not doing their works in 1455 and 1471 (*VCHM* ii 75; iv 12). In the 16th century the buildings and lands of the manor were leased out (NA SC11/450).

In the period from 1350 to 1450 there was greater emphasis on growing wheat at Harmondsworth, followed in importance by barley, oats and legumes. Some of these crops were grown in the form of *harascum*, a mixture of oats and legumes designed to be fed to horses and therefore sometimes called *horsemeat*. This was an innovation of the mid 14th century in demesne agriculture, partly substituting for grain in crop rotations. At the end of the 14th century a substantial proportion of the Harmondsworth demesne wheat and barley crop was sold, partly to the tenants; in the 15th century wheat sales decreased but barley sales rose. The acreages of demesne wheat and barley grown in the open fields were remarkably consistent. Oats were not grown much, and sometimes had to be bought in. Demesnes were becoming more dependent on selling to the market, particularly those owned by religious houses and colleges (Campbell 2000, 166, 227-8, 435, 470; *VCHM* iv 11; NA SC6/1126/6 m1; SC6/1126/7 mm1, 1d; SC12/11/20 m2; WC 11501 m1; 11502 m2; 11503 m1; 11504 m1; see Tables 1 and 2).

In the last quarter of the 14th century and the 15th century manors in the Greater London area and elsewhere kept more pigs, sheep and cattle, supporting them by increasing the area of pasture at the expense of arable, and growing more fodder crops (Campbell 2000, 166, 431; Sloane et al 2000, 222). Pigs were now more likely to be transferred within the different manors of an estate than other animals; they were often sent to the lord's household for slaughter (Campbell 2000, 167). In 1397/8 a boar, two sows and 37 pigs were taken from Harmondsworth to Winchester College in two batches; in 1433/4 twelve pigs; and in 1450/1 one boar and 47 pigs were taken, also in two batches. Pigs and cattle were also sold; cattle were bought at Drayton, Kingston and Reading. A bushel of wheat was given to the keeper of Kingston Bridge in 1406/7, presumably to facilitate access to the market in the town. A herd of between 100 and 140 pigs was kept by the manor, and the servants included a pig-keeper; in 1394 the tenants paid pannage fees for 350 pigs. Pigs were not allowed on the common land of the manor between March and September. The manor also had about 25 cows. Sheep were grazed on Hounslow Heath but the demesne had only about 200 in the late 1390s, and none at any other time. It must have relied upon the sheep of the tenants. Thirty stones of wool were sold in 1397/8. In 1411 and 1416 the tenants had at least 140 sheep which they had grazed on the lord's land. In the late 15th and early 16th centuries 120 sheep were also kept on the sub-manors of

Padbury, Barnards and Luddingtons. The manor also kept cart-horses, draught-horses and stable horses, oxen, goats, geese, pigeons, chickens and swans. Twenty-five geese were sent to the lord's household in 1388/9 and nine swans in 1406/7. In 1450/1 a payment was made to a horse doctor to attend a wounded horse (*VCHM* iv 11; NA SC6/1126/6; SC6/1126/7 mm1, 2d, 4; WC 11473, 11501-4; see Table 3). In 1349 the tenants owed heriots of horses, draught-horses, oxen, cows, calves, piglets and chickens, besides cloth and clothing in a few instances (WC 11437-8).

The T5 excavations identified a series of medieval stock enclosures in the area of Borough Hill Closes, between the Borough Green stock route and the northern boundary of Stanwell manor. It is not clear if this was an area of habitation in the late medieval period. In 1471 William and Alice Peryman were described as "of Borough in the parish of Stanwell" (BL Additional Charter 27216), but no other references to inhabitants have been found. It seems more likely that the later excavated buildings were field barns which held winter fodder for cattle and other livestock, although the earlier buildings may represent an undocumented hamlet abandoned in the contraction in agriculture in the early 14th century. There are references to the cultivated selions of Borough Field to the south in 1545 and 1677 (LMA Acc 132/24; NA SC12/3/15), and Grigg's Close on the south side of the Field in 1366 and 1486 (LMA Acc 132/1, 2). There are descriptions and plans of the Field and the Closes in the Stanwell estate surveys of 1748 (LMA Acc 809/MST/9B, 10; see Figs 4 and 5), the enclosure award of 1792 (LMA MR/DE/S'WELL/1, 2, 3; see Fig 7), and the tithe survey of c1840, when some of the closes were arable and others were meadows (NA IR29/21/50; IR30/21/50).

The increased emphasis on livestock in the 15th century led to the enclosure of some common field land in Stanwell. Between 1488 and 1517 Edward Bulstrode enclosed 140 arable acres in the west part of the parish and converted them to pasture, making three ploughs redundant. Andrews Windsor, the lord of the manor, also enclosed a smaller area at this time, comprising half a ploughland (*VCHM* ii 89; iii 44).

Post-Medieval Landscape Elements

The parish boundary between Stanwell and Harmondsworth runs partly along the Duke of Northumberland's River, an artificial cut dug in about 1530-43 to run from a branch of the River Colne upstream of Longford to supply Isleworth Mills with water. Yet this boundary must have been established as early as the middle Saxon period, and therefore the new river is likely to have run along the course of an established watercourse or boundary ditch. The name of Longford suggests that it was at a river crossing, and this river may have been the predecessor of the Duke's River on a similar alignment (Sherwood 1999, 31; *VCHM* iii 33, 42; iv 2, 3, 7; see above).

The Longford River was cut to the south of the Duke's River by Charles I (1625-49) to improve the water supply to Hampton Court. It was also known at various times as the New River, the King's River, the Queen's river, the Cardinal's River, the Hampton Court Cut and the Hampton Court Canal (*VCHM* iii 34; iv 2).

A valuation of the manor of Harmondsworth was made in the reign of Richard II (1377-99: NA SC12/11/20), and another of the possessions of Syon Abbey there in the reign of Henry VI (1422-61: NA SC11/445). A survey and rental was made of Winchester College's manor there in 1542/3 (WC 11451). Surveys of the demesne lands of the manor of Stanwell were made in 1544 (NA E315/384 f7) and 1545 (NA SC12/3/15), measuring them at 268 acres and 273 acres respectively. The earl of Dunmore, lord of the manors of Stanwell and Sheepcot alias Hammonds, ordered a survey of the parish of Stanwell in 1748, accompanied by a series of plans. This was partly based on earlier surveys of 1642 and 1721, which have not survived (LMA Acc 809/MST/9B, 10, 10A; see Figs 4 and 5). Another map was made in c1771 (copies at BL Map 3465(4) and Bod Lib Gough Maps 18 f6; see Fig 6). Another survey of the copyhold land of these manors was made in 1796, with plans showing old and new enclosures (LMA Acc 809/MST/12; see Fig 8). The Stanwell enclosure map and award were drawn up in 1792 (LMA MR/DE/S'WELL/1, 2 and 3; see Fig 7). The Harmondsworth enclosure map and award were drawn up in 1819 (LMA MR/DE/HARM/1/1 and 2). There is a tithe map and

apportionment of c1840 for Stanwell (NA IR29/21/50, IR30/21/50), but not for Harmondsworth.

This sequence of surveys records the enclosure of the common field land of the two parishes between the 15th and the 19th centuries. The enclosure of open fields, common meadows and heaths took place in the study area in a series of episodes ranging across this date-span. Most of the meadow lands in the western parts of Stanwell parish around Stanwell Moor and Hammonds were enclosed before the mid 18th century, and there was a failed attempt to enclose the rest in 1767. Borough Field, Court Ley and Griggs Close were enclosed in 1771 to form Sir William Gibbon's Park of more than 300 acres, attached to his house at Stanwell Place. In 1792 (under an Enclosure Act of 1789) Stanwell enclosed its portion of Hounslow Heath and 1,600 acres of open field arable land, increasing its annual value from 14s to 20s per acre. Artificial grasses and turnips were sown in the new hedged fields, which were allotted to the landowners of the parish in lieu of their strips in the common fields, lammas lands in the meadows and common rights of grazing (*VCHM* ii 98-9; iii 35, 38, 44). There was piecemeal enclosure in the north-west and south-west parts of Harmondsworth parish in the second half of the 18th century. Full enclosure of 1,100 acres of common fields and meadows, and 1,170 acres of heath and moor in 1819 (under an Enclosure Act of 1805 and an amending act of 1816) resulted in the usual landscape of straightened roads and small hedged fields (Sherwood 1999, 7, 9; *VCHM* iv 4, 13).

Conclusion: multi-period themes of landscape evolving under human agency

Some recurrent themes have emerged from comparing the archaeological excavation evidence and the historical evidence relating to the study area, and are briefly discussed below.

Continuity of agricultural and administrative frameworks

The T5 excavations have demonstrated an apparent continuity of land boundaries and field patterns across chronological periods ranging from the Bronze Age to the post-medieval centuries. The co-axial alignments of this pattern appear to underlie and pre-date the establishment of the Roman road from Brentford to Staines.

There may also have been a continuity of estate organisation in south-west Middlesex from the Romano-British to the middle Saxon periods. There was a fragmentation of the large terrain estates in the late Saxon period, leading to the development of manorialisation, but the field-systems appear to have been laid out within a framework of existing boundaries. This multi-period continuity can only have taken place on the basis of the perennial prosperity of the grain-producing lands of the region.

Shifts in settlement patterns

The pattern of settlement in the study area altered at certain pivotal points. The early Saxon pattern was sparser than its Romano-British predecessor, and was subject to drifting in connection with the form of agriculture practised. In the middle Saxon period there was a wholesale shift of settlement to more stable locations, associated with technological changes in agriculture and the development of multiple estates. In the late Saxon period there was settlement nucleation in the context of the emergence of smaller manorialised estates and the establishment of open field systems. This resulted in the villages familiar in the landscape until recent times.

The pattern was extended in the early medieval period by the founding of secondary hamlets associated with assarting. The late medieval period witnessed the shrinkage of settlement as the population was reduced by a series of famines and plagues. In the study area agriculture probably remained sufficiently prosperous to avoid any complete abandonment of the early medieval settlements.

Agricultural advance and retreat

The cultivated area was extended and reduced in each period in response to population changes. In the study area there was probably enough continuity in agricultural practice to avoid episodes of the abandonment of fields, but there are likely to have been changes in their usage. The area of the open fields was increased by campaigns of assarting from the 10th to the 13th centuries. In the late medieval centuries some of arable land was converted into enclosed pastures, and this may have repeated a pattern of change from the Romano-British period to the early and middle Saxon periods.

Power balance between landlord and tenant

The large grid-patterns of fields of the Romano-British period, and their successors in the same framework in the medieval period, suggest an association with a centralised estate structure. More irregular enclosures on the boundaries of estates are more likely to have resulted from piecemeal expansion of the cultivated area by assarting at times of population pressure.

Settlement nucleation in the late Saxon period probably resulted from pressure by landlords on their tenants. It was more marked in areas controlled by single lords. Saxon thegns and their successors the Norman knights, and the medieval minor gentry, were always concerned to make the most profitable use of their limited landed resources (Muir 2000, 188-9, 200).

The reduction of the population in the Black Death and the subsequent outbreaks of plague altered the balance of power between landlord and tenant. This led to better standards of living for the surviving tenantry; more variation in prosperity and the size of

peasant landholdings as the most successful increased their stake in the land; and the ending of direct management of demesnes and the extraction of labour services from the tenants. Nevertheless there was a tenacious conservatism in the manorial management of Harmondsworth by Winchester College, leading to some violence and sabotage.

Regional context

The continuity and stability of the study zone depended at root on the geology of its underlying soils. It therefore stands in contrast to the neighbouring areas on the claylands of north Middlesex and north Surrey, which experienced the regeneration of woodlands in the Saxon period, the development of dispersed patterns of settlement in the early medieval period, and the desertion of marginal hamlets and fields in the late medieval period.

Metropolitan influence from the Roman period to the modern period

The proximity of London was a factor in the prosperity of the study area and the intensity of its cultivation from the Romano-British period onwards. After the departure of the Romans and the collapse of British authority in London in the 5th century, the focus of the area must have changed to more local centres. After the Norman conquest the system of castle-guard at Windsor Castle suggests a more westward focus for the study area, at least in Stanwell and its dependents. This may have continued a pattern of attraction established during the domination of the kingdom of Wessex in the late Saxon period. From the 13th century onwards the manors of the Greater London area and the upper Thames valley were organised to supply London with grain and fuel (Sloane et al 2000, 213). This dominance of the capital city over the study area has continued until modern times, the landscape now providing London with its main airport.

Table 1 Harmondsworth: acreage of demesne crops sown

Reference	BL Add MS 6164	NA SC6/1126/	NA C270/17/7	WC 11501	NA SC6/1126/	WC 11502	WC 11503	NA SC6/1126/	WC 11504
Date	1293/4	1324	1337	1386/7	1388/9	1397/8	1406/7	1433/4	1450/1
Wheat	56	50		107	108	110	108	106	108.5
Rye	40								
Maslin (wheat/rye)		46	59						
Barley	39		49	88		82.5	72	80	82
Oats	50		16	23	15.5	9.5	12	11	6
Harascum (oats/legumes)						39	41	40	40
Peas/Pulses	24		34	33.5	30.5				
Fallow			20			19.5			

Table 2 Harmondsworth crops in bushels

Reference	BL Add MS 6164	NA SC6/1126/ 5	NA C270/17/7	WC 11501	NA SC6/1126/ 6	WC 11502	WC 11503	NA SC6/1126/ 7	WC 11504
Date	1293/4	1324	1337	1386/7	1388/9	1397/8	1406/7	1433/4	1450/1
Wheat in stock	20	400		1560		1458	676	1468	1499
Wheat from tithes						12	300	149	382.5
Wheat sold		48				1198	482	824	955.75
Maslin in stock (wheat/rye)	50	168							
Barley in stock		516		1414		1026	1319	1249	1362
Barley from tithes								250.5	244
Barley sold		16				960	1362	960	1034
Dredge in stock (barley/oats)				175					
Oats in stock		208.5		208		51	187.75	166	172
Oats sold								9.5	12
<i>Harasum</i> in stock (oats/legumes)		64				146	276	482	169
<i>Harasum</i> sold						51	171	298	34
Peas/Pulses in stock		32		527					

Table 3 Harmondsworth: livestock on the demesne

Reference	BL Add MS 6164	NA SC6/1126/	NA C270/17/7	NA SC6/1126/	WC 11502	WC 11503	NA SC6/1126/	WC 11504
Date	1293/4	1324	1337	1388/9	1397/8	1406/7	1433/4	1450/1
Horses	3	2	1		6	5		6
Plough-horses	7	4	4	4	4	4	4	5
Cart horses		4	2	4			6	
Oxen	14	12	8	14	15		16	14
Bulls	2	1	1	1	1		1	1
Cows	20	9	8	24	34		26	24
Bullocks	23	5	12	2	2		3	
Calves	8	5	4	4	1		1	
Boars		3	2		2	2	3	4
Sows		5		4	3	3	3	3
Pigs	24	92	3	23	14	18	30	41
Hoggets	40		27	28	45	43	45	42
Piglets	20	30	20	18	45	45	45	45
Ewes					202			
Hogasters					2			
Lambs					2			
Goats			5	2				
Ducks		20						
Geese		30		26	5	5	5	4
Swans	2				2	4	11	9
Peacocks	12	4						21
Capons		10		15	12	2	6	5
Chickens			13	4	6	6	6	6
Pullets					24	24	24	24

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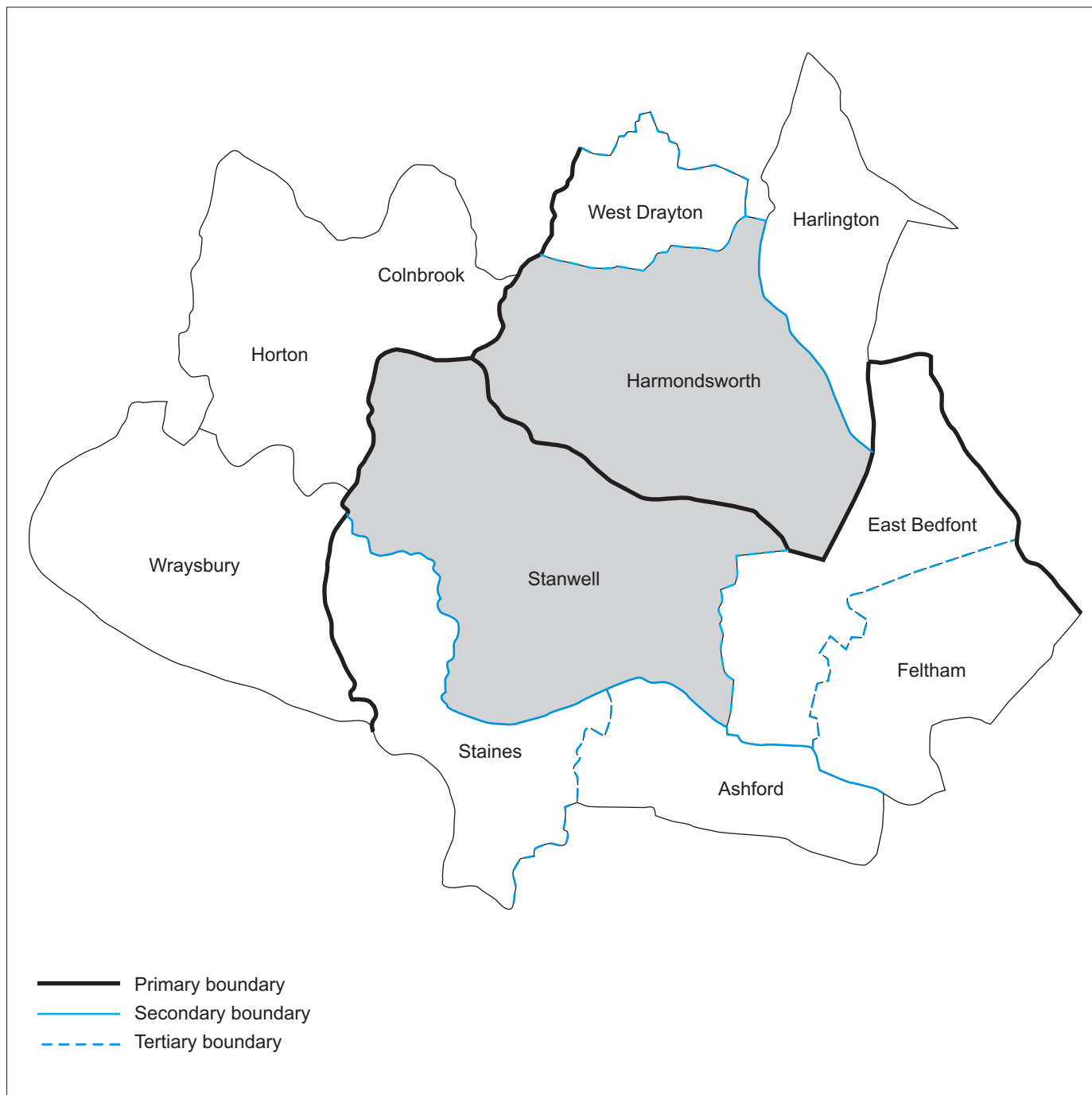


Figure 1 - The study area and the wider study zone

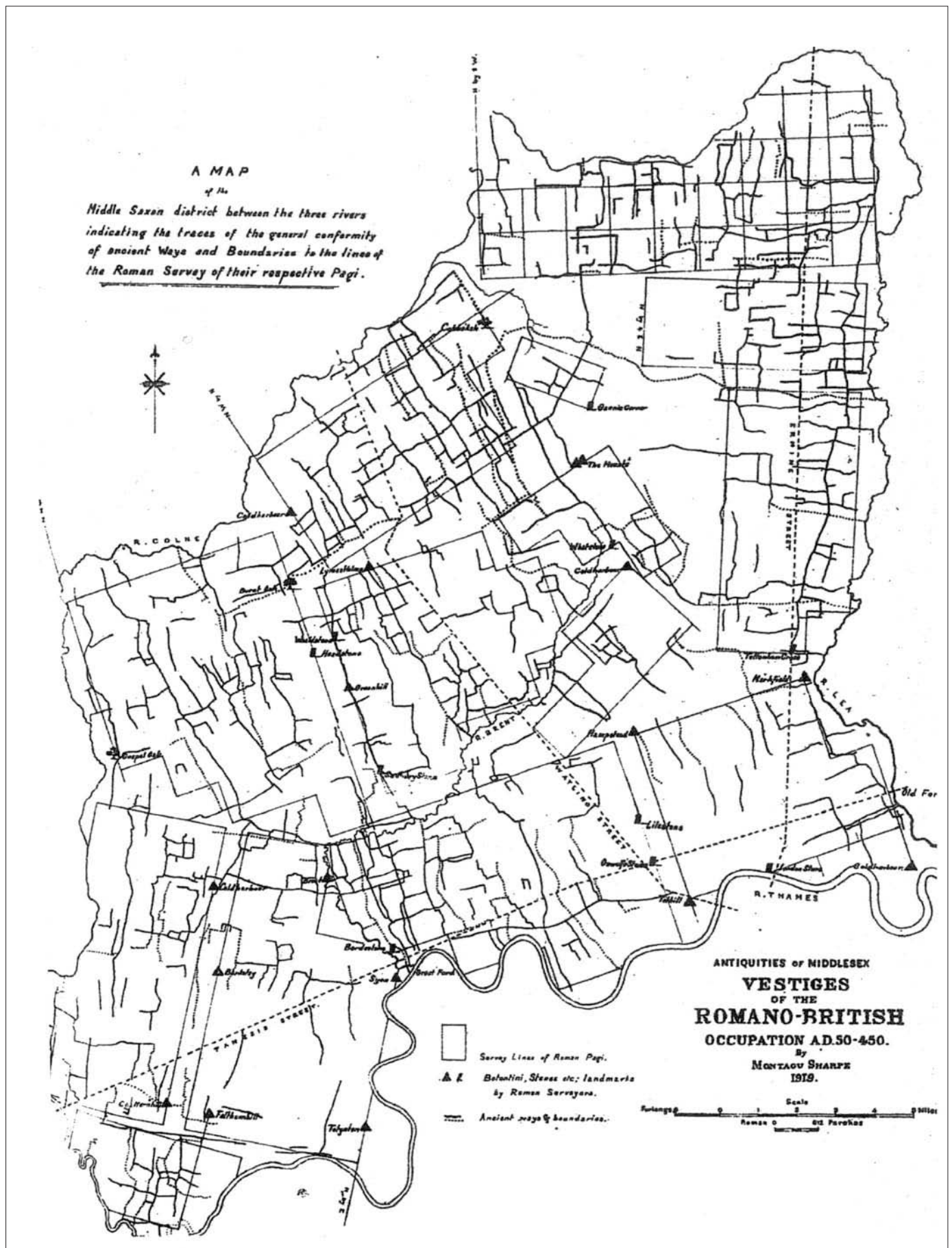


Figure 2 - Montagu Sharpe's interpretation of Roman to Saxon continuity in Middlesex

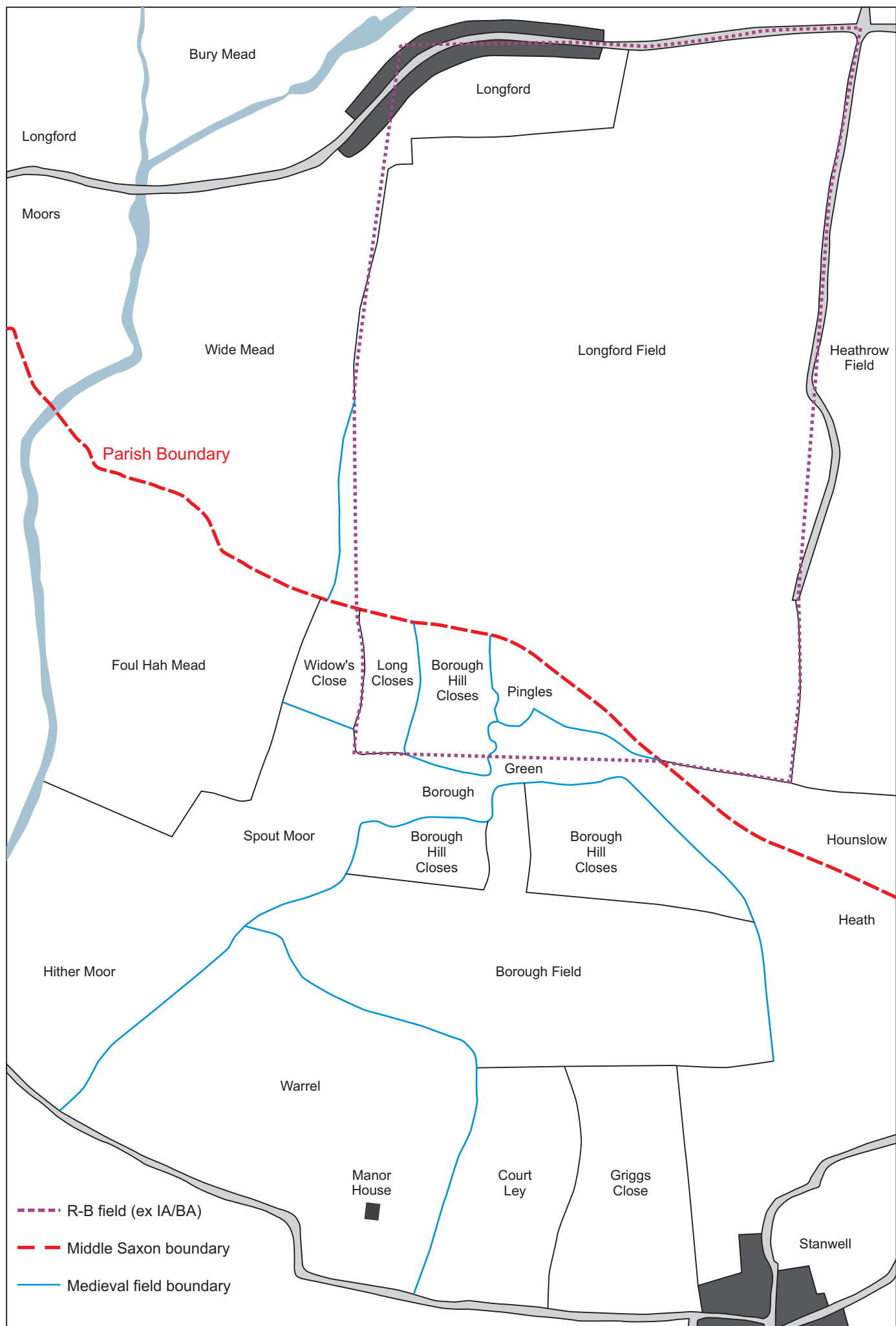


Figure 3 - Elements of the medieval landscape in the excavation area



Figure 4 - Plan of Stanwell parish 1748, from LMA Acc 809/MST/10A



Figure 5 - Detail of 1748 survey of Stanwell, showing Borough Hill Closes, from LMA Acc 809/MST/10A

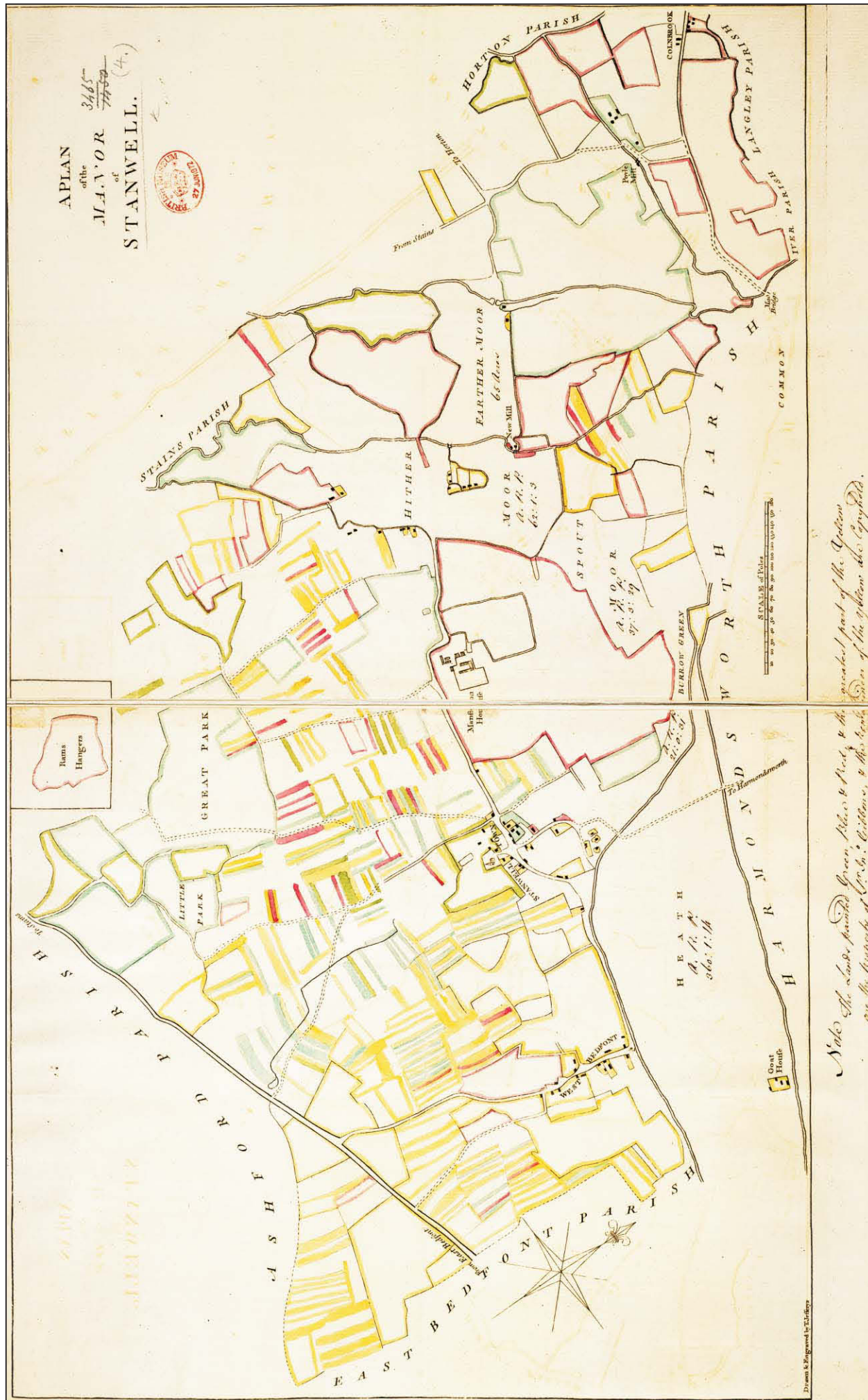




Figure 7 - Detail of Stanwell enclosure map 1792, from LMA MR/DE/SWELL/3

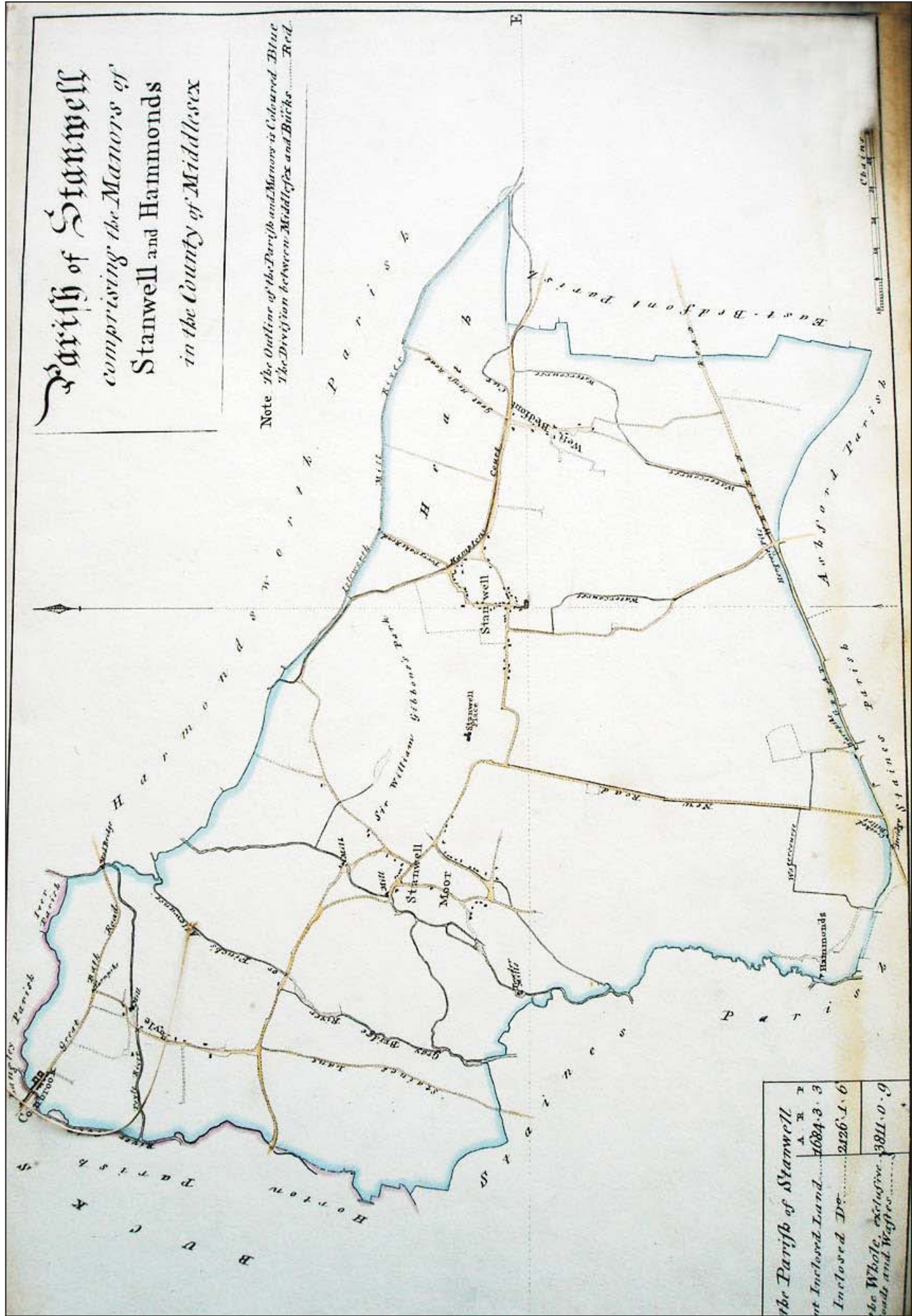


Figure 8 - Plan of parish of Stanwell 1796, from from LMA Acc 809/MST/12

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