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Archaeological Evaluation Report – Document 1: Main Text

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Summary

The Oxford Flood Alleviation Scheme (FAS) is located to the west and south of Oxford (from just north of Botley Road to the south of Old Abingdon Road, and takes in areas to the east of Abingdon Road). The FAS crosses two administrative districts; the Vale of the White Horse (Oxfordshire County Council) - the southern section, and the City of Oxford (Oxford City Council) - the northern section. It comprises the construction of a principal two-stage relief channel, designed to look and function as a natural living river, containing water all year round. Associated elements of the FAS include drainage ditches, flood bunds, culverts and temporary works such as construction compounds.

Following on from previous heritage asset focused work (Desk-based Assessment, bespoke and reactive geoarchaeological surveys, geophysical surveys, and an archaeological evaluation on Old Abingdon Road), Oxford Archaeology (OA) was commissioned by CH2M to undertake an intrusive trench-based archaeological and geoarchaeological evaluation along the route of the Environment Agency's proposed Oxford Flood Alleviation Scheme (FAS). The scope and design of the evaluation took an iterative approach with results from the previous studies. The fieldwork and report writing took place between August 2017 and January 2018.

The results, build upon previous work, and have been organized into thirteen Geoarchaeological Zones (numbered I – XIII), which relate to the underlying topography of the area, and offer a framework for a coherent understanding of the full range of archaeological and geoarchaeological discoveries.

Although there was a general paucity of artefactual evidence, and many features remain undated, an extensive and targeted programme of soil and sediment sampling from both archaeological features and geoarchaeological palaeochannels and alluvial sequences was undertaken and allowed for a comprehensive set of radiocarbon dates (28 No.) to be obtained, giving an almost unbroken c 8,000 year chronology spanning the Mesolithic to the Modern periods.

Archaeological results included:

- *Late Mesolithic – Early Neolithic hunter-gatherer activity areas both in the valley floor and on the western slopes (where possible in-situ stone tool preparation was identified);*
- *an isolated Middle Bronze Age human cremation, and flint tool findspots on the lower western valley slopes;*
- *a Late Bronze Age timber post alignment/structure perhaps contemporary with the start of Late Bronze Age – Early Iron Age round-house occupation on the lower western slopes associated with a hint of land division – perhaps agrarian/pastoral field-systems;*
- *Middle – Late Iron Age roundhouse occupation on the lower western slopes (interdigitated with episodes of colluviation), and the suggestion of the development of rectilinear field systems extending into the valley floor;*

- *a Roman trackway and square enclosure within the valley floor – perhaps developing earlier Iron Age land use and division;*
- *Late Saxon – early Medieval stone causeways;*
- *Later Medieval stone causeways across the floodplain, one associated with a documented principal route into Oxford from the west via North Hinksey village, and the other associated with South Hinksey village. These should be considered in context with the previous discovery of the Medieval causeway, and associated stone structures under Old Abingdon Road (and leading to the Grandpont. The suggested survival of channels associated with Botley Mill. Ridge and Furrow to the east of Abingdon Road.*
- *Post-medieval renewal and maintenance of the Old Abingdon Road routeway. The continued relevance of Botley Mill and its' associated channels should also be considered.*

The geoarchaeological results identified palaeochannels with organic silts and peat deposits from the Mesolithic through to the Modern periods allowing for the broad temporal range of human activity listed above to be placed within the context of contemporaneous evolving and shifting riverine environments and the wider valley landscape.

The low lying riverine topography, the apparent consistent lowest level of the water table, and the nature of the clay alluvial blanket within the valley floor (up to c 1.5m thick in places) has created a waterlogged buried environment where preservation of organic remains below c 1.0m BGL is good, with excellent potential for the preservation of animal and plant ecofacts, plant remains of agricultural practices, as well as man-made objects and structures (both utilitarian and ritual) from the last 8,000 years.

Colluvial episodes during the later prehistoric period on the lower western slopes also present the potential for unusually well-preserved occupation evidence for the Late Bronze Age – Late Iron Age settlement identified in this area.

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The project was managed for Oxford Archaeology by Ben Ford MCIFA (Senior Project Manager) and Elizabeth Stafford (Head of Geoarchaeological Services and Project Manager). The fieldwork was directed by Tom Black (Acting Project Officer), who was supported by Team Leaders Lee Sparks, Tom Lawrence, Becky Peacock, Dan Sykes, Elizabeth Kennard, Natalie Anderson, Christof Heistermann, Jim Harriss, Chris Pickard, and Christine Milton. Along with site archaeologists Rachel Legge, Ines Matos Glover, Andrew Smith, Muhammed Qadir, Camille Guezennec, Robin Bashford, Charlie Cox, BJ Ware, Katie Ware, Emma Powell, Russell Henshaw, Emma Winter, Tamsin Jones and last but not least Chris Richardson.

Digital survey and data processing were carried out by Matt Reynolds, Caroline Souday and Aidan Farnan.

Thanks are also extended to the team of OA staff that cleaned and packaged the finds under the management of Leigh Allen (Finds Manager). Sharon Cook processed the environmental remains under the management of Rebecca Nicholson (Environmental Manager). The archive has been prepared by Nicola Scott (Archives Manager).

1 INTRODUCTION

1.1 Background

1.1.1 In August 2017, and following on from previous heritage asset focused work (see below), Oxford Archaeology (OA) was commissioned by CH2M Hill Inc. (now Jacobs CH2M, but referred to as CH2M throughout this report) to undertake an intrusive trench-based archaeological evaluation along the route of the Environment Agency's proposed Oxford Flood Alleviation Scheme (FAS). The Oxford FAS is located to the west and south of Oxford, from just north of Botley Road to the south of Old Abingdon Road, and taking in areas to the east of Abingdon Road (see Fig. 1) and comprises a principal two-stage relief channel, designed to look and function as a natural living river, containing water all year round. Associated elements of the FAS include drainage ditches, flood bunds, culverts and temporary works such as construction compounds.

1.1.2 The Oxford FAS crosses two administrative districts; the Vale of the White Horse (Oxfordshire County Council) - the southern section, and the City of Oxford (Oxford City Council) - the northern section. The divide follows the course of two extant watercourses of the Thames, the Hinksey Stream and the Hogacre Ditch. This division runs through the middle of the wider landscape of the Thames Valley floor, or Land Characterisation 'Zone B - The Thames floodplain and 1st terrace gravel islands' (OCC, 2013). To the west, within the Vale of the White Horse, the scheme also encroaches on the lower and upper slopes of the hills on the western side of the Thames Valley floor (Fig. 1).

1.1.3 Previous heritage asset focused work, is summarized below, but in brief comprised:

1. an archaeological desk-based assessment (DBA) (OA, 2017) - which identified all the known heritage assets (including crop-marks) and presented the broad potential for archaeological sites within the study area and its immediate surroundings;
2. bespoke and reactive geoarchaeological work (OA, 2017a) - which produced a reliable 'baseline model' for the buried topography of the Northmoor (Floodplain) Gravel and addressed the character of the overlying alluvium, including the location of palaeochannels and organic/peat sequences;
3. extensive geophysical work (Bartlett-Clarke, 2016 in OA, 2017a) - which produced significant information on the extent of the alluvium, locating palaeochannels and buried gravel 'islands' (although it had limited success in identifying archaeological features).
4. an archaeological trenched evaluation within the carriageway of Old Abingdon Road – which identified Medieval and Post-medieval remains of a principal route / causeway into Oxford from the west and south, leading to the Grandpont and the Medieval South Gate of the City (OA, 2017b)

1.1.4 This evaluation was the final pre-determination requirement by the Local Planning Authorities archaeologists (David Radford for Oxford City, and Richard Oram for Oxfordshire /Vale of the White Horse), intended to provide ground-truth evidence for the presence of non-designated archaeological heritage assets, as well as an enhanced understanding of non-designated geoarchaeological heritage assets along the route. This information will feed into

the wider Environmental Impact Assessment which is being carried out by Jacobs CH2M (2018) in support the Environment Agency's Planning Application for the Oxford FAS.

1.1.5 A Written Scheme of Investigation (WSI) for Archaeological Evaluation was produced by CH2M (in collaboration with OA), detailing the how the Local Planning Authorities' requirements for the evaluation would be implemented (CH2M, 2017).

1.1.6 The design of the scheme, its' boundary and impact depths, as shown on Figure 1 reflect the design at the time of drawing up the WSI. These parameters informed the rationale behind the design of the evaluation and contributed to the number, position, length and depth of trenches (see Section 1.2 below). The finalised scheme design is contained within the Environmental Statement.

1.1.7 This report details the results of those works and for ease of reference it has been divided into three sections:

1. Document 1: Main Text (background, methodology, results, summaries of specialist reports, with a discussion and conclusion)
2. Document 2: Appendices (trench data tables and specialist artefactual, environmental and scientific dating reports)
3. Document 3: Figures and Plates

1.2 Scope and design of the evaluation work

1.2.1 A total of 206 archaeological evaluation trenches were proposed in the WSI, with a combined area of approximately 18,409m², equal to a c 2% sample of the available land within the proposed scheme boundary (CH2M, 2017).

1.2.2 The trench positions and design were a deliberate and direct result of an iterative and sequential approach to understanding the landscape and potential heritage assets within the area of the scheme. They took into account assets identified in the DBA (including the Hinksey Causeway, Botley Mill, extant ridge and furrow, areas of worked flint findspots, and NMR crop marks). They also considered the topography of the buried Northmoor Gravel surface (indicating the positions of palaeochannels, channel edges and possible islands), derived from the geophysics and the geoarchaeological work. These trench locations were refined by careful consideration of LIDAR data and aerial photographs, which identified anomalies within the modern surface topography (carried out during the production of the WSI). It was decided to use a shorter trench length and therefore increase the number of individual trenches and the variation in their orientation within the Chiswell Valley, Zone XII, as this type of trench array are more likely to identify diffuse archaeological evidence, such as flint scatters.

1.2.3 The geoarchaeological model of the buried Northmoor Gravel surface was compared to the various impact depths of the scheme design at the time, which fell into four categories of ground reduction below ground level (BGL); 0.00 – 0.30m, 0.30 – 1.29m, 1.30 – 1.49m and 1.50 – 2.00m depths (Fig. 2). Trenches fell into two broad categories; those up to 50m long excavated to a maximum depth of 1.00m BGL, and those up to 27m long excavated to a maximum depth of 2.00m BGL (with a step at 1.00m BGL requiring a double-width trench). The aim was to reach either the first significant archaeological horizon, the surface of the gravel topography, or to excavate to the impact of the scheme with an additional buffer of 0.50m depth; whichever was reached first. Where the Northmoor Gravel was not exposed in

the base of excavation, the buried surface could be probed or hand-augered to provide additional data points for the geoarchaeological model.

1.2.4 The initial trench positions also had to take into account the presence of all known services, the proximity of extant water courses, field boundaries, geotechnical installations and ecological constraints such as invasive plants and mature trees. However, during the fieldwork stage some of the trenches had to be moved short distances, generally 10m or less in order to avoid obstructions that only became apparent at that stage, this applied to Trenches 9, 10, 11, 13, 16, 28, 33, 119, 120, 125, 136, 138 and 141. Trenches 196 and 25 had to be moved significantly in order to avoid such constraints.

1.2.5 A total of 189 of the proposed 206 trenches were excavated. Trenches 8, 82, 164 – 176, 205 and 206 were omitted due to the fact they were located in areas removed from the overall scheme during the fieldwork programme.

1.2.6 It should be noted that some areas of the current scheme were not subject to evaluation trenching (Figure 2);

- i. parts of Zone Ib – where the design boundary has changed slightly;
- ii. all of Zone III, although a small element has been reintroduced to the scheme;
- iii. the southern part of Zone IV which had significant ecological constraints;
- iv. additional small elements to the east of Zones Vb, Vc, VII, VIII;
- v. all of Zone X (except for the carriage way of Old Abingdon Road). Note: to the south of this road and west of the railway the area is covered by modern landfill;
- vi. some parts of Zone XIIIa and b – where the design boundary has changed slightly.

1.3 Location, topography and geology (Figure 1)

1.3.1 The proposed flood alleviation channel lies to the west and south of Oxford, with the northern limit of the scheme to the north of Botley Road and Botley Bridge and the southern edge of the scheme to the south of Old Abingdon Road, with a linear length of c 5km. There is an additional area southeast of Oxford, which lies between the current Thames channel and the A483, with a linear length of approximately 1km. An area of proposed land-raising is located west of the A34, on the hillslopes adjacent to Chilswell Valley.

1.3.2 The majority of the scheme is located in areas of low-lying floodplain meadow, dissected by several watercourses that bifurcate and carry flow from the main Thames channel north of Botley (Seacourt Stream, Hinksey Steam, Bulstake Stream, and Hogacre Ditch). These are joined by small calcareous streams, draining down onto the floodplain from the slopes of Boar's Hill and Hinksey Hill to the west.

1.3.3 The bedrock geology underlying much of the scheme is the Oxford Clay Formation and West Walton Formation Mudstone, with sediments deposited as mud, silt, sand and gravel. There are some areas of Kingston Formation Sandstone and Stanford Formation Limestone on the slopes of Hinksey Hill. In low-lying areas, the bedrock is overlain by a Quaternary sequence comprising the Northmoor (Floodplain) Sand and Gravel Formation and Alluvium (clay silt,

sand and gravel). The higher areas adjacent to Chilswell Valley do not have any superficial deposits mapped by the British Geological Survey, although Head deposits (including colluvial ploughwash) are likely to be present.

1.4 Archaeological and historical background

1.4.1 A desk-based assessment (DBA) was undertaken for the scheme area. The following is a summary of the archaeological and historical baseline. The asset numbering below (e.g. no. 1) is taken from the DBA (OA 2017).

The Thames floodplain

1.4.2 The following is a summary of the Holocene development of the floodplain of the Upper Thames area, much based on the seminal work of Robinson in Dodd (2003) and Robinson and Lambrick (1984), derived from work on numerous archaeological excavations since the 1970s.

1.4.3 In the Late Devensian (at the end of the last Ice Age, c 12,000 years ago), minor and rapidly shifting channels reworked part of the first Thames terrace and lowered it to create the undulating gravel surface beneath the modern floodplain. There is no evidence of significant Holocene (post-glacial) reworking of the floodplain gravels which, together with evidence of major Late Devensian channels at Farmoor and Yarnton, suggests that river flow became restricted to channels eroded to their greatest extent before or during the Early Holocene. Recent and ongoing investigations by OA at the Westgate Centre (E. Stafford pers com) and Luther Court (OA 2015), however, suggest locally in-channel gravel mobilisation occurred periodically, possibly during periods of high river discharge. Both sites are located immediately adjacent a steep rise in the second gravel terrace which may have been vulnerable to some undercutting and erosion.

1.4.4 The early changes on the floodplain are almost certainly related to climatic change, and the timing and duration of snow-melt at the end of the last glaciation. Initially, as the annual volume of melt-water increased, erosion outstripped accumulation of the floodplain gravels. The surface of the first gravel terrace which became the floodplain was therefore lowered. As the climate warmed and the snow melt was increasingly concentrated in the spring, the high volumes of melt water incised major channels within the gravels. When the climate had warmed further, melt-water discharges reduced, leaving excess channel capacity for the warmer temperate climate. As a result, many underused channels silted up or were cut off from the main channel flow.

1.4.5 Organic and peat deposits dating to the earlier prehistoric period are rare in Thames floodplain locations and are mostly restricted locally to abandoned former channel courses, backwaters and tributary valleys. In the Oxford area peat has been recorded filling a deep E-W palaeochannel of the Thames in the vicinity of St Aldates (BT Tunnel and Luther Court) dating to the Mesolithic period (Dodd 2003; OA 2015). To the south Late Glacial and Early Holocene peat sequences have been recorded at Minchery Farm, adjacent to the Northfield Brook which drains into the Thames at Sandford (Parker 2001; Parker and Anderson 1996; Parker and Preston 2015). Further afield early channel and peat sequences have been analysed at Thrupp, Abingdon (Aalto *et al* 1984), Farmoor (Robinson 1992) and Mingies Ditch in the Windrush Valley (Allen and Robinson 1993).

1.4.6 Hydrological changes during the Early Holocene are difficult to establish due to the general lack of sedimentation during this period. It is clear that water levels may have been significantly lower than present day due to factors like greater woodland coverage and a lower sea-level. The floodplain may therefore have been relatively dry throughout much of the early prehistoric period with only areas of localised flooding. This would help to explain the extensive prehistoric landscape features that have been identified on the floodplain at Port Meadow (Atkinson, 1942) and Binsey (Rhodes, 1949). This activity was based on dry land soils that developed on top of the floodplain gravels and were preserved under later accumulations of alluvium.

1.4.7 The original soils of the floodplain were a combination of alluvium, loess and weathering products of the gravel. By the Neolithic period, pedological processes of soil formation seem to have predominated over alluvial accretion for much of the floodplain, and only a thin soil, not necessarily of alluvial origin, covered the gravel on most of these sites. Most of the pre-Iron Age soils are ungleyed and non-calcareous; it is difficult to prove that flooding without alluviation was not taking place, but observations have been recorded of man-made dumps of limestone gravel sealing the pre-Iron Age surface of the floodplain, which would have buffered any later phases of decalcification.

1.4.8 Excavations at Port Meadow also revealed a lack of preserved organic remains or gleying in Neolithic and Bronze Age ditches, which suggests, at least, a seasonally low water-table on the floodplain. However, ditches of similar depth dating between the Late Bronze Age and the Middle Iron Age are known to contain both a high degree of organic preservation and gleying. This suggests that there was a rise in the water table of the floodplain from the middle prehistoric period, and this may represent the onset of regular seasonal inundation of much of the area covered by the modern floodplain.

1.4.9 Sites such as Gravelly Guy, Farmoor and Drayton, show that this alluviation was well under way in the Roman period, and organic preservation at Mingies Ditch and Port Meadow suggest a continuing rise in water table after the Iron Age occupation. Similar evidence at Drayton shows that the Roman water-table was much higher than it had been in the Late Neolithic. This theory is supported by excavations at Yarnton (Hey 2004; in prep; Hey *et al* 2011) but it is uncertain whether alluviation or flooding continued in this area into the Early Saxon period.

1.4.10 Many of the Late Devensian/Early Holocene channels were reactivated during the late prehistoric period. The excavations at Yarnton and more recently at the Westgate Centre (OA, 2007), have shown that many of these silted-up channels were re-incised. The accumulation of organic deposits overlying the gravels during this period have been shown to represent a period of rising water levels on the floodplain. Environmental analysis of these deposits has shown that they represent a reed swamp that developed within a drowned floodplain environment. These deposits continued to accumulate within areas of the floodplain into the Saxon period, whilst other areas at the lower elevations showed the first signs of clay alluviation in the post-Iron Age period.

1.4.11 The natural channel sequences of the Oxford floodplain were extensively remodelled and managed during the Early Medieval period. Channels became canalised and interconnected, most likely in response to the development of a network of water mills at the

edges of the Oxford floodplain. At the Westgate Centre these channels were clay lined and revetted with wooden stakes.

1.4.12 The main phase of clay alluviation accumulated after the early Medieval canalisation of the various streams that run through Oxford. Much of the sedimentation on the floodplain occurred during the Medieval and Post-medieval periods. The depth of organic preservation in later archaeological features shows that the water-table on the floodplain remained high to the present day, and historical records show that seasonal flooding continued throughout the Medieval and Post-medieval periods. Alluviation, however, may have decreased from the Late Post-medieval period onwards.

Prehistoric

1.4.13 The route corridor contains some evidence of prehistoric activity in the shape of a number of chance findspots of prehistoric material and the identification of a number of areas of cropmarks, which suggest the presence of areas of prehistoric settlement and burial activity.

1.4.14 A large collection of Palaeolithic handaxes was recovered from a gravel pit near New Iffley Lane to the west of Donnington Bridge (no. 163), and Palaeolithic implements are also reported from South Hinksey near the rail line (no. 154) and New Hinksey near the Park and Ride (nos. 171 and 172). Other prehistoric findspots include Neolithic (no. 124) and Bronze Age (no. 129) flint tools from North Hinksey. Dredging of part of the Minster Ditch (at the south edge of Osney Mead Industrial Estate) between 1895 and 1898 produced one of the more important groups of prehistoric metalwork from the Thames. This included three Late Bronze Age spearheads, a socketed axe and an extremely fine Iron Age dagger sheath with engraved 'Celtic' decoration (no. 125).

1.4.15 The area crossed by the proposed channel alignment and its surroundings contain a number of areas of cropmarks which are likely to represent areas of prehistoric or Roman activity. These include an area containing evidence for enclosures, ditches and pits (644) suggesting settlement activity and a number of areas of probable ring ditches (ploughed out prehistoric or possibly Roman burial mounds) (nos. 643, 647). The area also contains a second area of cropmarks of possible enclosures (no. 642).

1.4.16 The area crossed by the channel has been the subject of no archaeological investigation or excavation but there have been a small number of excavations carried out on sites along the eastern edge of the corridor and these have identified some areas of prehistoric settlement. These include an Early to Mid-Bronze Age settlement site (no. 122) located on Osney Mead Industrial Estate to the east of the scheme and a small Middle Iron Age settlement on a floodplain island at Whitehouse Road (no. 638), located during excavations in advance of a new housing development on the eastern edge of the study area. At least two sites of presumed dwellings with pits and ditched enclosures were uncovered during this work. The amount of domestic debris from hearths and the presence of loom weights and slag among the finds suggest a pattern of typical Iron Age crafts such as metalworking and weaving.

Roman

1.4.17 Although there is no evidence for a Roman town at Oxford, the area was the focus for a major pottery industry, mostly located on the higher ground of Headington/East Oxford located to the east of the scheme. Other Roman activity, primarily small scale agricultural settlement, is known from the Central Oxford area. However, a cluster of Roman deposits and artefacts have been found within the central area of this scheme, including an inhumation burial at South Hinksey (no. 169), pottery (nos. 161, 167 and 179), a possible ford on Weirs Mill Stream (no. 168), and the previously discussed areas of prehistoric or Roman ring ditches (nos. 643, 647).

1.4.18 There is some evidence for activity at the south-eastern end of the corridor. A Roman quernstone has been found to the east of Weirs Mill (no. 162) and further Roman material is known to the west of the mill (nos. 167, 168), but there is little direct evidence for any ford here.

Medieval

1.4.19 The FAS route is located immediately west of Oxford, and a possible alignment for the route of the Medieval western approach to Oxford and its possible Roman predecessor has been suggested as running through this section of the study area (no. 119). The existence of, date for, and significance of this potential alignment has been the subject of much academic debate over the past fifty years. A current suggested alignment follows an existing footpath/causeway (the 'Hinksey Causeway') running north-east – south-west across the line of the indicative channel.

1.4.20 Two Saxon iron spearheads and a bone draughtsman were found close to the Minster Ditch at the edge of Osney Mead (no. 130), possibly indicating the location of an early crossing point.

1.4.21 To the east of Minster Ditch lies the modern Abingdon Road; the site of the main southern approach to Oxford, first mentioned by name in AD 911-912. The town developed as a fortified burgh around the turn of the 10th century and is recorded as such in the Burghal Hidage. There is increasing evidence that the town was developed to guard the strategic crossing of the Thames on the boundary between Wessex and Mercia. The area known as Grandpont to the south of the historic centre of Oxford is named after the Magnum Pons (Great Bridge), of which a fragment remains, protected as a Scheduled Monument. The first documentary evidence for the existence of a stone built causeway on the southern approach to the city occurs in the 12th century charters of Abingdon Abbey. However, recent excavations in St Aldates have shown that this monumental structure was the successor to several phases of man-made causeways and crossing points which had begun to be constructed along the modern day line of Abingdon Road and St Aldates at least as early as the 9th century. This southern route, which was formed by natural islands, causeways and fords, was the main route across the Thames into Oxford, completely superseding what may have been the previous crossing at North Hinksey (no. 119) which also may have existed in the Roman period.

1.4.22 The southern end of the route corridor is crossed by the Old Abingdon Road, which forms the southern end of the Grandpont causeway, at the point at which the line of the road diverts to run roughly east-west to cross the originally braided streams of the Hinksey Stream.

This section may have used the western half of a prehistoric and Roman routeway running east-west from the known area of Roman activity at Headington across the floodplain and west towards the higher ground.

1.4.23 The presence and survival of Norman and Medieval culvert structures was demonstrated by a programme of archaeological recording and prospection carried out in 2006-7 and they were further investigated during a programme of archaeological recording during road repair works in 2008-9. The culverts were scheduled by English Heritage (now Historic England) in October 2012 (List entry no: 1408790). As with the section immediately to the south of Folly Bridge, there is evidence for Medieval stonework within the later bridge and culvert structures and selected elements of the road line (representing the Medieval works) are Scheduled (no. 2).

1.4.24 To the western side of the route corridor there are number of small Medieval settlements, running from Botley in the north to South Hinksey in the south. Botley ('Bota's clearing' or possibly 'wood') is first recorded in c AD 1170. Historically it was a small secondary Medieval settlement with a mill and farm. The chief features of interest now are the small number of Listed Buildings, a farmhouse of c AD 1800 (no. 8), an early 17th century house (no. 9) and the 17th century Manor house, which lies just to the west of the corridor. These historic remnants are virtually all that survives amidst much intrusive modern development.

1.4.25 North and South Hinksey are recorded as Hengestesie' ('Hengest's Island' or the 'Island of the Stallion') in late Saxon charters, and as separate places from the 13th century. Both villages lie on the slightly higher ground overlooking the line of the indicative channel alignment. Both contain Medieval churches dedicated to St Lawrence. The church at North Hinksey is early 12th century with a 13th century tower and the churchyard also contains a Grade II* Listed Medieval churchyard cross. The church at South Hinksey (no. 5) is early to mid-13th century. The area to the east of South Hinksey village contains evidence of ridge and furrow (Medieval arable cultivation earthworks) (nos. 646, 647). Evidence of Medieval activity (206) was recovered from a geotechnical test-pit (OA, 2016, TP 284) close to South Hinksey village during the archaeological Watching Brief carried out on the Ground Investigation survey in 2015 (OA, 2016). This represented a dumped occupation layer containing Medieval pottery sherds dating from between the mid-12th and 15th centuries. The proposed channel alignment crosses the line of the Devils Backbone (no. 170), a probably Medieval causeway (now followed by a metalled track and footpath) running across the floodplain between South Hinksey and Oxford.

1.4.26 There were a number of mills in Oxford mentioned in documentary sources from the Medieval period. The Chronicle of Abingdon Abbey reported a lawsuit in 1088 when the men of the neighbouring hamlet of Seacourt (whose lord of the manor was Anskill) damaged a watercourse in Botley called the lake. The lake referred to may have been the later named Shirelake which later became Seacourt Stream, which remained unchanged until the 20th century and ran to the east of a known mill – Botley Mill. The presence of a Medieval mill at Botley is mentioned in the Osney Abbey cartulary, which records the presence of a mill in Botley in the early 13th century when it records the sale of two acres and four butts of meadow between 'Bolestake' and Botley Mill. There is some documentary evidence to suggest a possible second Medieval mill site next to Kings Mead (south of Osney Mead).

Post Medieval to Modern

1.4.27 The Post-medieval archaeology of the study area is dominated by an array of 19th and 20th century infrastructure. The main Oxford-Didcot railway line lies to the east of the study area and the Botley Road lies to at the northern end. The present day landscape appears to be largely the result of development that was undertaken the latter part of the 18th century and the first half of the 19th century.

1.4.28 The suburbs of Grandpont (no. 632) lie to the east of the proposed scheme and the settlements of North and South Hinksey lie at the western side. The Medieval and Post-medieval settlements of North and South Hinksey contain concentrations of Listed Buildings and the core of the historic settlement at North Hinksey is contained within a Conservation Area (33).

1.4.29 There are a number of causeways and trackways which cross the proposed scheme including, Willow Walk, Ruskin' Walk, the Devils Backbone (no. 170) and the Hinksey Causeway. Willow Walk dates from the Victorian period and was constructed by Aubrey Harcourt, a local landowner between AD 1876 – 77, but it was not open to the public until 1922. Ruskin's Walk was a road which lay between the villages of North and South Hinksey and which was developed by John Ruskin, the leading art critic of the Victoria period, and some of his students and contemporaries, including Oscar Wilde. The Devils Backbone (no. 170) is likely to be a Medieval causeway which is now followed by a footpath.

1.4.30 The Hinksey Causeway, a raised path flanked by two ditches, lies between the modern village of North Hinksey and Osney Mead, crossing the Bulstake and Hinksey Streams. The line of the Hinksey Causeway may follow part of a Roman road, possibly as part of the line between North Hinksey and Besels Leigh. There is also suggestion that the Hinksey Causeway may have been part of the western approach road to Oxford during the Medieval period. People travelling west from Oxford may have crossed the river at Ferry Hinksey (the previous name of North Hinksey). This suggestion was based on two 14th century documents, one of which, an AD 1352 charter, details a property grant of a tract of land south of the meadow of the Prioress and Convent of Studley, where a ford, called Oxenforde", and a bridge could be crossed on the way to North Hinksey. The presence of a ferryman at the crossing of the Hinksey Stream is mentioned in several Medieval documents and the presence of the ferry into the mid-19th century can be seen on the 1878 OS map. John Leland described reaching Hinksey Ferry by crossing a causeway from Osney in the first half of the 16th century. Other sources suggest that the main route for heavy traffic from Oxford on the south side of the Thames crossed over the Grandpont. The line of the Hinksey causeway is shown on the Hinksey 1842 estate map and subsequent maps.

1.4.31 Ruskin's Road was a road between the villages of North and South Hinksey, constructed under the supervision of art critic, John Ruskin in 1874. Ruskin gathered a group of undergraduates and contemporaries to remake the trackway between the two villages to aid the local population. The most notable of the team was Oscar Wilde. The project was abandoned after Ruskin suffered a personal tragedy. Ruskin's workforce appears to have followed the line of the 18th century road which may have been visible, if not in use, at the time. The current trackway abruptly ends in a field on its way to South Hinksey.

1.4.32 The study area also contains the site of Botley Mill on Seacourt Stream, which once stood in the village of Botley. Although the date of its establishment is uncertain, a mill was

recorded in the area in the 11th century. The mill building was demolished in the 1920s due to widening of Botley Road to the north. The first map found which shows the mill was John Rocque's 1761 map of Berkshire. There were a number of bridges to cross the watercourse, some of which are extant. The mill contained associated watercourse management features, including a weir and leat (millrace) to the north of Botley Road, the mill pond to the south of the mill and a cut to the south of the mill. The original course of Seacourt Stream may have been the narrower, meandering waterway immediately to the east, suggesting that the straighter course which ran directly to the mill was a leat which may have been constructed during the Medieval period or Early Post-medieval period.

Undated

1.4.33 There are a number of undated sites identified as cropmarks on aerial photographs in the area. These include rectilinear enclosures and possibly associated ditches and pits (nos. 642, 644), ridge and furrow (nos. 646, 647, 648) and potential ploughed-out ring ditches (no. 647).

1.5 Previous fieldwork (Oxford FAS)

Geoarchaeological Survey

1.5.1 In Autumn 2016, OA undertook a geoarchaeological survey of the footprint of the proposed route options for the Oxford FAS, focused on flood meadows between Botley Road and the Old Abingdon Road. Ninety-one interventions were carried out, including hand auger transects and boreholes (OA, 2017a). This work built on an initial stage of deposit modelling associated with a programme of geotechnical works in 2015 (OA, 2016). The 2016 investigation identified ten differing geoarchaeological zones (Zones I-X) along the route (OA, 2017a, Fig. 30). These zones addressed the perceived archaeological and palaeoenvironmental potential of the sediment sequences, illustrated with a 3d model of the Early Holocene land-surface (for the most part the surface of the Pleistocene Northmoor or Floodplain Gravel) and various cross-sections.

1.5.2 The observed sediment sequences were correlated into seven broad stratigraphic units. The Holocene sequence comprises topsoil, made-ground (recent), floodplain alluvium and a complex of organic channel deposits. This sequence overlies Pleistocene Gravel, Head and Bedrock (mostly Oxford Clay). Assessment of pollen, plant remains and molluscs, together with a programme of seven range-finding radiocarbon dates, allowed initial comment to be made on the environments of deposition and provide an indicative chronology for the sequences. Overall minerogenic silt clay alluvium over gravel was recorded at most locations averaging 1.0m to 1.5m in thickness, although shallower deposits at 0.50m to 0.70m were noted, particularly at the western edge of the floodplain between the Hinksey villages (Zone VII). It was suggested most of this this alluvium is likely to be of historical date. No extensive floodplain peat deposits were recorded. However, localised organic units were noted at several locations, the deepest and most complex of which generally coincide with areas adjacent to current watercourses such as the Seacourt-Hinksey and Bulstake streams (Zones I, IV, V and VI). Here, relict channel courses reach c 2.50m to 4.00m in depth. Radiocarbon dating suggests these channels were active at least from the Mesolithic period at c 6000 cal BC (if not earlier) and deposition continued into the Late Bronze Age.

1.5.3 Of note was the frequent occurrence of coarse-grained facies eg. gravelly sands and silty sands, suggestive of episodes of moderate to high energy flow, particularly in the lower parts of the channel sequences. The palaeoenvironmental signature strongly suggested the presence of sedge-fen and alder carr locally, with more open conditions developing in the later prehistoric period coinciding with evidence for agricultural activity. Previous archaeological investigations in the region have found that some extant watercourses linked to the main Thames channel may be located within the footprint of earlier wider silted up channels, perhaps dating back to the end of the last glacial period and beginning of the Holocene (c 12,000 years) eg. the proto- Trill Mill Stream and proto- St Aldates channel in Oxford City, the latter of which also produced Mesolithic dates at c 6300 cal BC.

1.5.4 Thin organic deposits at the base of the alluvium over Pleistocene gravel were noted at a few locations on the general floodplain between North and South Hinksey (Zone VII). These did not appear to be associated with extant channels, were recorded at shallower depths than described above and may represent seasonal pools or channels.

1.5.5 No significant thicknesses of modern made ground were recorded across the floodplain, although extensive deposits are known to be present around Redbridge. South of the Old Abingdon Road these are associated with historical landfill sites where ground elevations have been raised by 2-3m above the floodplain surface. Although not included in the survey, it was thought made ground may be present in Zone II associated with the demolition of Botley Mill in the early 20th century and installation of the electricity pylons.

1.5.6 The original geoarchaeological zone descriptions are repeated below:

1.5.7 **Zone I: North of the Botley Road.** This Zone is characterised by a deep complex channel system associated with the Seacourt Stream. An Early Bronze Age radiocarbon date was processed from sands at the base of the sequence in Borehole OA111. A high degree of erosion and reworking of archaeological remains is anticipated, although *in situ* remains may be preserved locally associated with units of organic silt deposited in lower energy conditions. There is the potential for waterside structures such as bridges or jetties, particularly abutting the high ground on the western bank of the Seacourt Stream. The potential for preservation of palaeoenvironmental remains for landscape reconstruction is considered moderate to high.

1.5.8 **Zone II: Site of Botley Mill.** The mill was demolished in the early 20th century but has its origins in the Medieval period. This area was not included as part of the 2016 survey, but structural remains of the mill and associated managed channels may be preserved at depth.

1.5.9 **Zone III: Great Meadow.** This area is characterised by a relatively shallow alluvial cover over the surface of the Pleistocene gravel and is marginal to a deep channel complex related to former courses of the Seacourt Stream. The potential for *in situ* archaeological remains and cut features to be preserved within and beneath the alluvium is considered to be high. There is the potential for waterside structures such as bridges or jetties across this edge environment. The potential for preservation of palaeoenvironmental remains for landscape reconstruction is considered to be moderate to low given the general absence of organic sequences.

1.5.10 **Zone IV: The Seacourt (Hinksey) Stream in the Great Meadow.** Similar to Zone I, this zone is characterised by a deep complex channel system associated with the Seacourt Stream.

Two Mesolithic radiocarbon dates were processed from organic silts at the base of the sequence in Borehole OA106. A high degree of erosion and reworking of archaeological remains is anticipated, although *in situ* remains may be preserved locally associated with units of organic silt deposited in lower energy conditions. There is the potential for waterside structures such as bridges or jetties, particularly abutting the high ground in Zone III. The potential for preservation of palaeoenvironmental remains for landscape reconstruction is considered high.

1.5.11 Zone V: Bulstake Stream. This Zone is characterised by complex topography associated with the current watercourses. It is anticipated there will be areas of channel erosion and areas along the margins where waterside structures and activity may be anticipated. The alluvium thins to the north against the rising topography of the underlying gravel surface.

1.5.12 Zone VI: The Long Meadow. Similar to Zone I, this zone is characterised by a deep complex channel system associated with the Hinksey (Seacourt) Stream. Radiocarbon dates were processed from organic silts in Boreholes OA104A and OA104B suggesting deposition during the Neolithic and Bronze Age. A high degree of erosion and reworking of archaeological remains is anticipated, although *in situ* remains may be preserved locally associated with units of organic silt deposited in lower energy conditions, particularly towards the top of the channel sequence. There is the potential for waterside structures such as bridges or jetties, particularly abutting the high ground. The potential for preservation of palaeoenvironmental remains for landscape reconstruction is considered high.

1.5.13 Zone VII: South Hinksey. As with Zone III, this zone is characterised by a relatively thin alluvial blanket, dissected by a few minor channels. This is a key area for cropmarks. The potential for *in situ* archaeological remains and cut features to be preserved within and beneath the alluvium is considered to be high. The potential for preservation of palaeoenvironmental remains for landscape reconstruction is considered to be low given the general absence of organic sequences. However, some potential may be contained within the mapped minor channels which are currently undated.

1.5.14 Zone VIII: The Devil's Backbone. Similar to Zone VII but with a thicker alluvial blanket.

1.5.15 Zone IX: North of the Old Abingdon Road. This Zone is characterised by thin deposits of alluvium with colluvial ploughsoils and ridge and furrow. As such a degree of reworking and disturbance is anticipated. *In situ* archaeological remains and cut features may be preserved at depth. The potential for preservation of palaeoenvironmental remains for landscape reconstruction is considered to be low.

1.5.16 Zone X: Old Abingdon Road. This is the alignment of a Medieval or earlier causeway with scheduled culverts forming a continuation of the Norman Grandpont from St Aldates (OA 2017, no. 2). This Zone has been subject to a recent trench evaluation to assess the archaeological potential of the complex stratigraphy which includes multiple road surfaces and masonry structures (OA, 2017b). Assessment of samples has demonstrated excellent preservation of waterlogged palaeoenvironmental remains associated with a Medieval roadside ditch (*ibid.* 4.3.28).

Geophysical Survey

1.5.17 Geophysical survey was carried out in Autumn 2016 by the Bartlett Clark Consultancy, and included a magnetometer survey and an electromagnetic conductivity survey (EM) (Bartlett-Clarke, 2016 in OA, 2017a). The magnetometer survey was conducted in order to help identify the extent and character of any buried archaeological remains capable of producing a magnetic response. This may include features such as ditches and pits, as well as occupation areas where high temperature burning occurred eg. hearths, ovens or burnt mound activity. As this type of survey is not generally capable of identifying remains beneath significant depths of floodplain alluvium (ie. $> c 0.80$), it was anticipated features may be located, truncating the underlying Northmoor Gravel, only where the alluvial blanket was relatively thin. It was also anticipated the survey may be able to identify later features within the alluvium at shallow depths. The magnetometer survey employed a Bartington fluxgate gradiometer and was carried out over the majority of the footprint of the proposed channel options with a total combined area of $c 125$ hectares. The survey did not include an area of dense scrub immediately north of Botley Road, or the Nature Park to the south. Oatlands Recreation Ground was added to the Scheme after the survey had been completed.

1.5.18 Overall the magnetometer survey identified only a very small number of anomalies considered to be of archaeological significance that could be targeted for evaluation trenching. At the time of the survey it was not certain whether this was a true representation of the distribution of archaeological remains across the scheme, or whether the geological conditions were simply not conducive to this type of survey. The fact that the survey was unable to detect features in areas where the alluvium was thin and cropmark features had been identified on aerial imagery, suggests the latter.

1.5.19 The EM conductivity survey was carried out using a CMD Explorer in tandem with the geoarchaeological survey (see below), in order to help validate the results of the previous deposit modelling in select areas and to target purposive auger and borehole locations. EM survey characterises the bulk geoelectric properties of near surface sediments and has been used successfully on many similar floodplain sites to produce a spatial map of different sediment zones. This may include areas of deep alluvium, channel belts and areas where the surface of the Northmoor Gravel lies at relatively high elevations beneath shallow alluvium. The latter may be considered a potential focus for occupation in the past, remaining relatively dry for much of the year, but adjacent to wetland riverine areas with an abundance of natural resources available for exploitation. For this survey the equipment was set to measure three depths - shallow, 2m and 4m BGL. The method is relatively rapid to carry out in the field and can cover a much greater area than auger and boreholes alone. EM survey was carried out over $c 73$ hectares of the proposed channel options and proved to be very successful in identifying sub-surface topographic features. In particular, the survey was successful in identifying areas of deep alluvium and channel zones, consistent with the results of the geoarchaeological deposit modelling, albeit providing much greater spatial detail.

Old Abingdon Road Trial Trenching

1.5.20 Oxford Archaeology undertook an evaluation by trial trenching at the Old Abingdon Road between October and December 2016. The evaluation consisted of a 36m long borehole transect (at 1m intervals) and four trenches within the modern carriageway of Old Abingdon Road. The evaluation was undertaken in order to clarify if remains relating to the Scheduled

Monument are located within the scheme area. The trial trenching revealed evidence for the truncated remains of 13th – 14th century Medieval road surfaces. It also identified an associated, although earlier, roadside ditch, along with early and later Post-medieval road surfaces. The latter included an early 17th to 18th century phase of major rebuilding. The remains of a stone structure, probably a bridge/culvert abutment of Medieval or Post-medieval date may be associated with the historic southern route to and from Oxford via the Grandpont (OA, 2017b).

2 EVALUATION AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The project aims and objectives were as follows:

- i. To identify the presence or absence of any buried archaeological remains.
- ii. To identify, investigate and record any such archaeological remains including condition and extent.
- iii. To establish the state of preservation of any buried remains and provide a chronology of the archaeological phasing.
- iv. To determine (so far as possible) the stratigraphic sequence, character and dating of the deposits or features identified.
- v. To assess the significance of any archaeological remains found.
- vi. To analyse, conserve and store any artefacts or ecofacts recovered.
- vii. To disseminate the results through reporting taking the regional research agendas into consideration.
- viii. To integrate the results into the wider historical and archaeological context.

2.2 Methodology

2.2.1 The 189 trenches were excavated across the scheme over a ten-week period using up to five 360 degree tracked excavators equipped with toothless grading buckets.

2.2.2 The size of the trenches varied depending on the impact of the proposed scheme design (see Fig. 2 and Section 1.2). To this end, out of the 189 trenches excavated, 81 were designed to be deep trenches (>1m in depth to a maximum of 2m and c 27m x 4m at surface), 79 were designed to be shallow trenches (<1m in depth and c 50m x 1.8m at surface) and 29 were of various other sizes.

2.2.3 All topsoil, subsoil and alluvium was removed in spits under the supervision of a trained archaeologist down to the first significant archaeological horizon, the natural gravel terrace or the proposed scheme impact depth with an additional 0.5m buffer, to a maximum excavated depth of 2.00m BGL, whichever was encountered first.

2.2.4 Where encountered, a representative selection of archaeological features and deposits were sample excavated by hand to establish their nature, extent, date, complexity, state of preservation and horizontal and vertical limits within the trench.

2.2.5 The stratigraphy of each trench was recorded, with at least one representative section of the sediment sequence drawn in each trench.

2.2.6 All archaeological features and deposits were planned and recorded to standards in line with current best practice. The work included the recording of individual contexts on appropriate proformas trench plans at no less than a 1:50 scale; plan and section drawings of appropriate single contexts and features (at 1:20, 1:10 scales as deemed appropriate). A photographic record was made for each trench.

2.2.7 Selection of trenches for detailed geoarchaeological recording and sampling was based on the perceived spatial, stratigraphical and chronological significance of the strata under investigation. In particular, the selection aimed to add to the previous borehole work, rather than duplicate those results. Consequently, the focus of this work was to target organic

and alluvial sequences of assumed historical date (eg. Roman, Saxon and Medieval), those directly associated with archaeological remains and sequences from areas of the route where no borehole work had previously been carried out. The sampling included retention of monoliths and incremental bulk (10L) samples and intended for assessment of preservation of pollen, waterlogged plant remains (WPR), insects and molluscs. A range of 40L bulk samples were also collected from archaeological features, primarily for the recovery of charred plant remains (CPR) and charcoal.

Recovered artefacts were recorded and bagged by individual context with the exception of 'small finds' which were given a unique number and their location recorded accurately in 3D. *In situ* flint scatters were also recorded accurately in 3D.

3 RESULTS

3.1 Introduction and presentation of results

3.1.1 The ten Geoarchaeological Zones (I-X), defined during the 2016 survey (OA, 2017a and repeated in Section 1.5), have been retained during the current evaluation in order to provide a framework for presenting the results in a consistent manner. The zones largely remain unaltered, although the boundaries have been modified slightly to reflect the results of the trenching and some have been divided into subzones (e.g. Zones Ia, Ib, Ic and Va, Vb, Vc).

3.1.2 Three additional zones, to cover areas not previously surveyed, have been added. Zone XI encompasses the lower eastern slopes of Hinksey Hill (lower western slopes of the Thames Valley), north-west of South Hinksey and south-east of the A34, immediately west of Zones VII and VIII. Zone XII covers the trenches to the south-west of the A34 on the northern edge of the Chilswell Valley, on the upper eastern slopes of Hinksey Hill (upper western slopes of the Thames Valley). Zone XIII incorporates the trenches east of the A4144 (Abingdon Road) behind the Spires Hotel and adjacent to the current Thames channel.

3.1.4 Zone III was not trenched as this area has now been removed from the scheme. Zone X incorporates the Old Abingdon Road (previously evaluated OA, 2017b) and the area to the south which lies within extensive former landfills where the original ground surface has been raised by 2-3m. Consequently, there is no new data to report from these zones.

3.1.5 The results of the evaluation are presented below by zone, moving broadly from north to south across the scheme and include a geoarchaeological zone description, followed by an archaeological description by period - Mesolithic, Neolithic, Bronze Age, Iron Age, Roman, Medieval, Post-medieval, Modern and Undated (see Section 3.3). Tables quantifying the total number of artefacts, environmental samples (collected and assessed) and radiocarbon determinations by zone are also presented below (see Sections 3.4, 3.5 and 3.6 respectively).

3.1.6 This synthesized summary text is supported by detailed datasets presented in Document 2: Appendices;

- i. Appendix A - Trench descriptions and context inventory,
- ii. Appendix B - Specialist finds reports,
- iii. Appendix C - Geoarchaeological sediment sequences,
- iv. Appendix D - Environmental reports,
- v. Appendix E – Radiocarbon laboratory certificates

3.1.7 Context numbers reflect the trench numbers unless otherwise stated e.g. pit [102] is a feature within Trench 1, while deposit (304) is within Trench 3, and structure {10410} is in Trench 104.

3.1.8 The descriptions of the geoarchaeological zones, their archaeology and palaeochannels are illustrated with pertinent figures and plates which can be found in Document 3: Figures and Plates. Other palaeochannel sequences are illustrated by digitised sample logs and monolith/core photos within Document 2: Appendix C.

3.2 General soils and ground conditions

3.2.1 The soil and sediment sequences varied considerably across the scheme as a whole and also within individual zones.

3.2.2 On the upper western valley slopes the natural bedrock geology was limestone, which gave way to Oxford Clay further downslope towards the A34. The bedrock was overlain by colluvial ploughwash in some trenches, which was sealed by ploughsoil.

3.2.3 In the valley floor the Oxford Clay bedrock was not generally exposed, buried beneath thick deposits of Late Pleistocene Northmoor Gravel, Holocene floodplain alluvium and subsoil/topsoil deposits. The surface of the gravel varied in elevation and was not always reached, even within the deeper trenches.

3.2.4 Ground conditions varied throughout the evaluation and some trenches, particularly the deep trenches, suffered from significant groundwater ingress. In these situations large pumps were necessary in order to gain access (sometimes trench stability became an issue).

3.2.5 Features (archaeological, geoarchaeological or otherwise), and structures, where present, were relatively easy to identify within the floodplain sequences, and clear against the underlying gravel geology. It is possible, however, that more ephemeral remains such as small flint scatters within the colluvium and alluvium, could have been missed.

3.3 Description of the geoarchaeological zones and their archaeology

3.3.1 Archaeological remains were identified in the majority of the Zones (I, II, IV – IX and XI – XIII), although they were not evenly distributed.

3.3.2 There were high concentrations of archaeological features in Zones VII, XI and XII which corresponded with the higher surface elevations of the Northmoor Gravel in the valley floor and the drier areas on the western valley slopes.

3.3.3 In other areas archaeological evidence was distributed more sporadically, but was frequently associated with gravel highs. Limited evidence was recovered from the deeply alluviated zones, although a potentially significant Late Bronze Age timber pile alignment was located in Zone IX.

Zone Ia, Ib and Ic: North of Botley Road (Trenches 1 - 7)

Figs. 1 – 3, 14, 15; Plates 1 and 2

Geoarchaeological Summary

3.3.4 Zone I lies entirely to the North of Botley Road, at the most northerly extent of the Scheme, in an area known historically as Botley Mead. The Seacourt Stream, which flows through this zone, is classified as a primary watercourse. It bifurcates from the Thames channel north of Wytham and follows a route southward, along the western edge of the floodplain, past the Deserted Medieval Village (DMV) of Seacourt. Immediately to the north of Botley Road the stream splits into two branches. The easternmost branch is the original meandering course of the stream, whereas the western canalised channel is an artificial cut serving the former Botley mill. Historically the Seacourt Stream formed the boundary between the Saxon kingdoms of Mercia and Wessex and later, the boundary between the counties of Berkshire and Oxfordshire. Based on the underlying topography of the surface of the Northmoor Gravel observed during the trenching, Zone I has been divided into three sub-Zones; Ia, Ib and Ic.

Zone 1a

3.3.5 Zone 1a is located immediately west of the current Seacourt Stream and is generally characterised by a rapid rise in the elevation of the surface of the Northmoor Gravel (compared to Zone 1b, below) and a corresponding shallowing of the overlying Holocene floodplain deposits, which generally comprise homogenous silt clay, extending to c 0.80m BGL. Ground levels average c 56.00m to 56.50m OD, with the surface of the Northmoor Gravel exposed at c 55.7m OD. This is with the exception of Trench 6 which exposed an organic channel fill at the southern end of the trench beneath the alluvium that extended beyond the base of excavation. It is likely that these channel deposits are similar in nature to those recorded in Zone 1b (see below), associated with the Seacourt Stream. The surface of the Northmoor Gravel, where exposed, was disturbed by occasional tree holes and root action.

Zone 1b

3.3.6 Zone 1b is located on land immediately east of the current Seacourt Stream where ground-levels average c 56.3m OD. The floodplain sequence at this location is relatively deep and underlain by a channel complex, filled with gravelly sands, organic clay silt and capped by an alluvial blanket of minerogenic silt clay. Borehole OA111, drilled in 2016, recorded a channel complex dating from the Early Bronze Age at 2115-1900 cal BC (Beta-450169, 3620±30 BP), if not earlier. The surface of the Northmoor Gravel was recorded at 53.74m OD (2.55m BGL).

3.3.7 Trenches 3 and 4, excavated to c 2m in depth, exposed similar sequences, although neither reached the surface of the Northmoor Gravel. Trench 4 was chosen for detailed recording and sampling due to the fact it contained multiple phases of channel incision and alluvial deposition with potential for radiocarbon dating (see Figs. 3 and 14 and Plate 1).

3.3.8 The earliest deposit exposed in the base of Trench 4 at 1.90m BGL was an organic sand (416) infilling palaeochannel [419]. This unit probably equates to the sands recorded in the base of Borehole OA111. In Trench 4 the sand was overlain by peat (406) and a sequence of alluvial clays (405-402). The peat (406) has been radiocarbon dated to the Early Bronze Age at 2200-2230 cal BC (Beta-481039), which is similar to the date processed from Borehole OA111. Waterlogged plant remains and insects were well-preserved in the peat (406), suggesting accumulation in wet alder carr woodland with abundant sedges. The seeds included a mixture of waterside vegetation such as alder and hemp-agrimony along with open ground taxa such as nettle, buttercup and grasses.

3.3.9 This sequence is cut at the western end of the trench by a later palaeochannel [415], filled with organic and inorganic clay silt. The organic deposits produced an Early to Middle Iron Age radiocarbon date from fill (413) at 490-260 cal BC (Beta-481091). A further thin sequence of minerogenic alluvium seals this palaeochannel that is likely to be of historical date. Preservation of waterlogged plant remains and insects within the lower fills of the channel was good, although seeds are relatively sparse and are often partly decayed or damaged. These are strongly dominated by crowfoot, with a smaller number of other taxa mostly of wet or damp habitat, such as sedge, spike-rush and arrowhead. Mollusc shell from (414) was moderately abundant, although surfaces were worn and pitted. The assemblages were dominated by species of flowing water such as the river nerite *Theodoxus fluviatilis*, *Bithynia tentaculata* and *Valvata piscinalis* with a range of other species suggesting a moderate to fast flow regime with clean, well oxygenated water. Terrestrial molluscs were

virtually absent. The upper fills were less productive with preservation poorer. Small charcoal fragments occurred frequently in the lower fills of both channel sequences, pointing to human activity in the prehistoric period. Charcoal is, however, quite resistant to decay and fragments can travel some distance in flowing channels and/or be reworked from older sediments.

Zone 1c

3.3.10 Zone 1c is located on land behind Bulstake Close, to the west of Seacourt Park and Ride. This zone is also characterized by relatively shallow homogenous silt clay alluvial deposits. Ground levels average c 56.30m OD and the surface of the Northmoor Gravel in Trenches 1 and 2 occurred at c 55.60m OD, although the gravel dipped a little in Trench 2 towards its eastern extent.

Archaeological Summary

3.3.11 Within this zone, Trenches 6 and 7 had to be moved slightly in order to avoid ecological constraints.

Mesolithic - Neolithic

3.3.12 No archaeological features were present from these periods in Zone 1.

Bronze Age

3.3.13 To the west of the channel sequence, Trench 7 (Zone 1a), which had been programmed as a deep trench, revealed Pleistocene gravel at less than 1m BGL. One of the features in this trench (a possible tree throw or pit), [707] (see Figs. 3, 15 and Plate 2), was sampled due to the high concentration of burnt material present in its fill. This sample, <1>, contained burnt twig and hazelnut shell which was dated to the Early Bronze Age at 2030-1890 cal BC (Beta-480758, 3600±30 BP).

3.3.14 Although no artefacts, such as worked flint, were recovered from feature [707], the possibility that the burnt remains within this feature are archaeological in origin should not be ruled out, and perhaps indicate Early Bronze Age activity exploiting the contemporary environment revealed by the peat (406) in Trench 4.

3.3.15 This feature was sealed by the entire alluvial sequence in this trench and therefore provides a *terminus post quem* for the alluviation of this higher area to the west of the complex channel sequence in Zone 1b.

Iron Age – Modern

3.3.16 No archaeological features were present from these periods in Zone 1.

Undated

3.3.17 To the east of the channel sequence in Zone 1c, Trenches 1 and 2 reached Pleistocene gravel at less than 1m BGL. No archaeology was present in these trenches but Trench 2 contained a shallow channel at its eastern end. To the west of the channel sequence, in Zone 1a, Trench 5 also recorded gravel under 1.00m BGL. The only feature in this trench was natural and interpreted as a tree throw.

Zone II: Site of Botley Mill (Trenches 8 – 11)

Figs. 1 – 3, 8, 16 and Plate 3

Geoarchaeological Summary

3.3.18 Zone II is located immediately south of Botley Road in an area currently managed by Oxford City Council as a Nature Park. Ground levels vary between c 56.50m and 58.20m OD. The zone is bounded to the west by the canalized Seacourt Stream, which at this point is an artificial cut that served Botley Mill, constructed in the Medieval period. The mill was demolished in the early 20th century during improvements to the Botley Road bridge, at which time the stream was dredged and widened to improve water flow. The meandering course of the Seacourt Stream prior to construction of the mill lay a little to the east and can still be seen as a shallow ditch within the wooded areas of the nature reserve. The ditch is clearly visible as an extant feature in the meadow to the south of this zone (see Zone IV below). This watercourse remained connected to the Seacourt Stream, acting as a bypass to the mill stream during operation, but was partially backfilled and silted up following demolition. The remains of a masonry structure, marked as ‘lasher’ on historical OS maps, are located in woodland immediately north of Botley Road which would have controlled the water entering this bypass channel.

3.3.19 Zone II was not included in the 2016 geoarchaeological survey, consequently, knowledge of the sub-surface geology was limited. It was anticipated that a depth of made ground and demolition rubble would be present overlying the natural floodplain sequence. Evaluation trenches were initially placed to target potential water management features associated with the mill, identified from historical OS mapping. However, due to ecological constraints and presence of services, these locations had to be altered significantly (Fig. 8). Trench 8 had to be omitted altogether, while Trenches 9 and 11 had to be moved to the eastern side of the modern footpath. Trench 10 was moved to the western side of the footpath.

Archaeological Summary

Mesolithic – Post-Medieval

3.3.20 No archaeological features were present from these periods in Zone II.

Modern

3.3.21 Trenches 9 and 11 encountered modern made ground deposits to their full designed depth. As requested by David Radford these were excavated deeper, using a mechanical excavator, and found to be 3.15m and 2.00m thick respectively on top of alluvial clays. No archaeology was observed at the base of these trenches, though entry was not permitted due to depth and instability of the deposits and therefore no depth to gravel could be ascertained.

3.3.22 Trench 10 also contained modern made ground but only to a depth of 0.80m, below which the cut of a channel, [1002] (Fig. 16, Plate 3), was revealed that had mostly filled with alluvial deposits. However, the upper fill of this cut consisted of a dumped deposit containing a large quantity of coal, clinker and CBM dating from the mid-19th century to the 20th century.

3.3.23 Gravel was not reached in Trench 10, but the base of the slot dug into channel [1002] was augered and a gravel deposit was encountered at 53.07m OD, although it is not clear whether this represents the fill of a channel or the surface of the Northmoor Gravel.

3.3.24 The sondage requested for this trench could not ascertain the level of the Pleistocene gravel due to heavy water ingress at approximately 2.40m BGL.

Undated

3.3.25 There were no undated features in Zone II.

Zone III: Great Meadow (Figs. 1 – 3)

Geoarchaeological Summary

3.3.26 Zone III, defined during the 2016 geoarchaeological survey, is located entirely within the eastern and central area of a large hay meadow, known historically as the Great Meadow (or Hinksey Meadow). Ground levels average 55.60m to 56.00m OD. The majority of this zone no longer forms part of the scheme and consequently no evaluation trenches were excavated. The meadow is currently designated species rich MG4 grassland, a nationally rare type of mesotrophic grassland of ecological importance containing snake's-head fritillary (*Fritillaria meleagris*).

3.3.27 Previous auger and boreholes suggest the surface of the Northmoor Gravel lies at relatively high elevations, over 55.00m OD, sealed by a thin alluvial blanket and topsoil which, in places, is only 0.45m thick, increasing to c 1.00m westwards adjacent to Zone IV.

Archaeological Summary

3.3.28 No Trenches were excavated in Zone III.

Zone IV: The Seacourt Stream in the Great Meadow (Trenches 12 – 17)

Figs. 1 – 3, 17 and Plate 4

Geoarchaeological Summary

3.3.29 Zone IV is largely located in an area of land adjacent to the Seacourt Stream in the Great Meadow. The Seacourt Stream at this location is canalised and constrained against the rising ground followed by North Hinksey Lane. Ground levels average c 55.80m OD. Similar to Zone Ib, this zone is underlain by a deep complex channel system representing former courses of the stream. Borehole OA106, drilled in 2016 recorded a very deep and complex channel sequence containing peat deposits indicative of an alder carr environment, radiocarbon dated to the Mesolithic period at 6200-6020 cal BC (Beta-450165, 7220±30 BP) and 4790-4615 cal BC (Beta-45016, 5840±30 BP). The Northmoor Gravel was recorded at 50.29m OD.

3.3.30 No trenches were excavated in the Great Meadow, solely due to the presence of nationally important MG4 grassland. However, trenches were excavated in the northern part of Zone IV, immediately south of Botley Mill (Trenches 12-17). This is an area of meadow known historically as Cindersea, defined by the path of an old meander of the Seacourt Stream. This old meander, now largely silted up, marks the ancient boundary between the

Saxon kingdoms of Wessex and Mercia and later, a bypass to Botley mill (see Zone II) and the former county boundary between Oxfordshire and Berkshire.

3.3.31 Deep alluvial and organic channel sequences were encountered in all of the six trenches which were excavated to depths of c 2m. The surface of the Northmoor Gravel was not encountered. Although gravelly channel deposits were exposed, these are likely to be Early to Middle Holocene in date. Trenches 13 and 16 were relocated in this zone, both to avoid ecological constraints. Severe problems, were encountered with water ingress in all of the trenches that caused instability. Consequently, sampling efforts were focused on Trench 15 which was extended at its eastern end to examine the profile across an old extant meander visible on LIDAR (Fig. 17, Plate 4).

3.3.32 The earliest phase of channel activity in Trench 15 is likely to date to the prehistoric period and is similar to the sequences recorded in Zone Ib. Radiocarbon dates from the later channel phases produced historical dates. Channel [1528] was dated to the Late Saxon to Early Medieval period at 990-1100 cal AD (Beta-480760, 980±30 BP). This channel was very wide and only one side of it was visible in a 13m long section. It was sealed beneath over 1m of alluvium and was filled with very organic silts. Channel [1523] truncates the fills of [1528] and was undated but is likely to be of Medieval or Post-medieval date and was filled with organic clays. Channel/ditch [1520] was the most recent phase dated to the Modern period, 1700 cal AD to present (Beta-480759, 170±30 BP), it was much smaller and only measured 3.70m across. It was cut from just below the subsoil and also filled with slightly organic and inorganic clays.

3.3.33 Samples from two sediment profiles (A and B) covering all three channel phases have been examined for palaeoenvironmental remains. Preservation of plant remains was excellent in the organic deposits, with a large range of taxa preserved, along with insects and pollen. Molluscs were present, but were generally poorly preserved and of low abundance. The evidence from [1528] suggests an open, herb-rich grassy environment supporting grasses, daisies, dandelions, cinquefoil and plantain. Damp surfaces and/or shallow still/standing water are suggested by taxa indicative of sedge fen and/or reed marsh, and to a lesser extent, pondweed, waterweed and bur-reed. There is some indication of the nearby growth or processing of cereals; charcoal occurred frequently along with numerous charred wheat grains and a rachis fragment from a free-threshing wheat. Tree and shrub pollen values are sufficiently low to indicate either only the isolated growth of individual species, or their growth at distance. The pollen from [1523] and [1520] is largely analogous to that recorded from [1528] although there was a greater dominance of Poaceae, which indicates either the greater growth of grasses, or of reed swamp. The plant remains show an abundance of seeds of white water-lily and other aquatic plants. Overall this channel sequence suggests slow moving or standing water consistent with a backwater environment.

Archaeological Summary

Mesolithic – Roman

3.3.34 No archaeological features were present from these periods in Zone IV.

Saxon - Modern

3.3.35 The old county boundary ditch/channel running roughly north to south in the eastern end of Trench 15 was examined and sampled in detail (described above, Fig. 17, Plate 4). This

feature was represented by three separate cuts, [1520], [1523] and [1528] which spanned the Late Saxon to Modern periods. No material culture was found associated with this feature apart from a single oyster shell.

Undated

3.3.36 There were no undated features in this zone and the rest of the trenches revealed no other archaeology.

Zone Va, Vb and Vc: Bulstake Stream (Trenches 18 – 37, 39, 40, 43 – 46, 48 – 50, 53, 54 and 196)

Figs. 1 – 4, 9, 9i, 9ii, 18 – 24, 26 and Plates 5 – 8, 10 – 16, 18

Geoarchaeological Summary

3.3.37 Zone V is located in the vicinity of the current course of the Bulstake Stream. (also known as Potts or Pot Stream), adjacent to Osney Mead Industrial Estate. This stream was once the main navigation route west of the city, prior to the construction of Osney Lock in 1790 and as such is likely to have been wider and deeper than it appears today. It is classified as a primary watercourse, branching from the Thames channel at Four Rivers junction. It flows beneath Botley Road at Bulstake Bridge and skirts Osney Mead Industrial Estate before rejoining the Thames channel at Osney Rail Bridge.

3.3.38 Zone V has been divided into three subzones and is characterised by complex underlying topography associated with waterside edge environments, meandering channels and drier areas where the surface of the Northmoor Gravel is relatively high beneath a shallow alluvial clay. Deep alluvial sequences of more than 1m were encountered in several of the trenches in this area, notably Trenches 23, 24, 29, 30, 31, 33, the south-east end of Trenches 36, 37, 40, 50, 53, 54 and 196. The rest of the trenches all recorded gravel at 1.00m BGL or less.

Zone Va

3.3.39 Zone Va is located in an area west and south of the Bulstake Stream, between Willow Walk bridleway (constructed in the 19th century) and the purported Medieval routeway known as the Hinksey Causeway. Ground levels average c 55.60-56.00m OD. Overall the depth of the alluvium in this area was relatively shallow and the surface of the Northmoor Gravel was recorded at c 55.00m OD, dropping a little to the northeast in the vicinity of Trench 23, with a corresponding thickening of the overlying inorganic alluvium. Effectively in the past this would have acted as an island or spit of higher, drier ground between the Seacourt and Bulstake Streams, perhaps reflected in the historical name for this field – Great Midley. LIDAR data indicates several minor channels may traverse this area. However, the only channel of notable size identified during the evaluation was the channel recorded in Trenches 24 and 33, the NE-SW alignment of which may be a precursor of the Bulstake Stream running beneath the Hinksey Causeway. The channel sequence in Trench 24 was recorded, sampled and radiocarbon dated. It should be noted Trenches 25, 28 and 33 were all moved slightly from their original position to avoid ecological constraints.

3.3.40 The earliest sequence exposed in Trench 24 was channel [2416] infilled with peat (2409), dated to the Early Bronze Age at 1880-1640 cal BC (Beta-481037, 3430±30 BP), and

overlain by minerogenic clay silt alluvium (Fig. 20). This sequence was later truncated by channel [2415] which has produced a Middle Iron Age radiocarbon date from organic fill (2423) at 360-120 cal BC (Beta-480761, 2170±30 BP). The sequence was capped by further deposits of clay silt alluvium. This suggests this channel is likely to have become inactive and silted up by the historical period. Two sediment profiles (A and B) were examined from this trench for waterlogged plant remains and insects and preservation was found to be good to excellent. Pollen samples were not examined from this trench, and molluscs were only present in one sample from the later channel and were of low abundance.

3.3.41 The peat (2409) from [2416] produced a seed assemblage dominated by sedge, spike-rush and dock, as well as grassland and open ground taxa of including stitchwort, silverweed and hawkbit. The overlying alluvium was dominated by rush and mint. Few non-wetland plant taxa were found amongst the small number of other seeds and there was a notable absence of alder, perhaps suggesting conditions may have been a little more open in the immediate vicinity during the latter part of the Early Bronze Age. Samples from channel [2415] contained seeds of damp or wet ground: sedge, mint, marshworts, dock, water-plantain and crowfoots. The assemblage is heavily biased towards the taxa that would have been growing in or around the stream, although some may be reworked from elsewhere by the movement of water in the channel. The molluscs mainly include *Bithynia tentaculata* and *Valvata cristata*, suggesting a permanent body of water with a muddy substrate and slow flow regime. The overlying alluvium was unproductive, with only a few poorly preserved seeds of rushes.

Zone Vb

3.3.42 Zone Vb is located north and west of the Bulstake Stream in an area known historically as King's Mead. Ground levels averaged 55.7m to 60.0m OD. The Minster Ditch, what was once a small stream, lies immediately to the north of this zone, skirting Osney Mead Industrial Estate. Several finds of Bronze Age, Iron Age and Saxon metalwork have been recovered from dredging of this watercourse during the late 19th century and Early Bronze Age settlement evidence has been recorded beneath the buildings of the estate which sits on an elevated area of Northmoor Gravel as mapped by the BGS.

3.3.43 In Zone Vb the surface of the Northmoor Gravel was recorded at relatively high elevations in the northern and central areas, up to c 55.0m OD, where it was generally overlain by c 0.70-1.0m of orange brown silt clay of alluvium. This represents the edge of the Osney Mead gravel island and the surface was noted to be disturbed by numerous treeholes and root action. The alluvium above the gravel appeared to contain frequent bright red or orange flecks and small clasts of ochre-like iron oxide. Gravel elevations dipped by c 0.5-0.7m approaching the Bulstake Stream. A rapid drop was noted in Trench 29 where Northmoor Gravel was recorded at c 53.9m OD, overlain by peat and alluvium. In Trench 39 the edge of a palaeochannel was recorded at its southeastern end which correlates with a channel visible on LIDAR, parallel with the edge of the current Bulstake Stream. Both Trenches 29 and 39 were chosen for detailed recording and sampling.

3.3.44 Northmoor Gravel lay beneath the base of excavation at the southern end of Trench 29, but was recorded through hand augering at a depth of 1.8m BGL (53.9m OD). This was overlain by a peat (4912) that has been radiocarbon dated to the Early Bronze Age at 2200-2030 cal BC (Beta-480762, 3720±30 BP). Minerogenic alluvium sealed the peat at 54.33m OD (1.42m BGL) and ground level occurred at 55.75m OD. Pollen, insects and waterlogged plant

remains were well-preserved in the sequence from Trench 29. Molluscs were present but of low abundance and the shell fragile. The evidence associated with the Early Bronze Age peat indicates an environment of alder and possibly willow carr woodland in the vicinity, with sedge fen / reed swamp and polypody ferns. There is a suggestion in the pollen assemblages of at least some nearby mixed deciduous woodland occupying the dryland environment. Evidence from the overlying alluvium suggests a change to wetter conditions, dominated by sedge fen, whilst alder became restricted to drier areas. The seed assemblage indicates an increase in pondweeds and rushes. There was no clear evidence for nearby cereal cultivation in this sequence.

3.3.45 In the southeastern end of Trench 39 the Northmoor Gravel lay at 1.33m BGL (54.37m OD) and was overlain by organic silt (3920) infilling the edge of palaeochannel [3924]. The organic silt was radiocarbon dated to the Late Saxon to Medieval period at 1020-1160 cal BC (Beta- 481092, 930±30 BP). The organic silt was sealed by c 1.00m of alluvium at 0.98m BGL (54.72m OD). Ground level occurred at 55.70m OD. The seed assemblage from the organic silt was small and contained a fairly restricted range of aquatic and damp ground taxa, including white and yellow water-lily, mint, sedge and crowfoots, with some plants of disturbed ground (nettle, greater plantain, goosefoots). A small number of seeds of alder were also present.

Zone Vc

3.3.46 Zone Vc is located southeast of the Bulstake Stream and immediately north of the Hogacre Stream (or Hogacre Ditch). Ground levels average c 55.80m in the northwest, dropping to c 55.30m OD to the southeast. The surface of the Northmoor Gravel follows a similar pattern to Zone Vb in that the highest elevations occur in the northern and central part of the zone at up to c 55.00m OD. Elevations dip approaching current the watercourses with a corresponding thickening of the alluvial blanket, which at these locations include organic silts and peat deposits. These sequences represent edge environments and are similar and probably a continuation of the channel complex observed in the Long Meadow (Zone VI) on the other side of the Hogacre Ditch, albeit shallower. The lowest elevations in the surface of the gravel were recorded in Trenches 40, 50, 53 and 54 at c 54.2-53.7m OD. Samples were recovered from the sediment sequences in Trenches 40 and 50 and have been retained should future analysis be required. A small number of samples were examined from the sequence in Trench 53 which contained a ditched trackway, although this feature is now known, through radiocarbon dating, to be of relatively recent data (see below).

Archaeological Summary

Mesolithic – Early Neolithic

3.3.47 Zone Va and Vc both contained evidence of early prehistoric activity in the form of worked flint. In Zone Va the flint was all retrieved by the processing of environmental samples taken from Trenches 19, 20 and 22, whereas the flint from Zone Vc was contained within features in Trenches 46 and 49.

3.3.48 The earlier flint, dated to the Late Mesolithic, came from Zone Vc on the northern side of the Hogacre Ditch. In Trench 49 (Plate 14) there were two features, one of which may have been a fire pit or burnt tree throw, [4924], the other being a naturally filled tree throw, [4906] (Figs. 9, 9ii, and 24, Plate 16). Feature [4906] contained bone along with worked flint, while

cut [4924] contained an *in situ* burnt deposit (4917) with a much larger flint assemblage, most of which came from sample <1055>.

3.3.49 Also in Zone Vc, Trench 46 (Plate 11) contained three linear features. One of these, ditch terminus [4605] = [4630] (Fig. 23), produced worked flint that was dated to the Mesolithic or Early Neolithic. This feature was one of two termini, aligned NE-SW that ended just a few centimetres away from each other, the other being [4618] = [4624] which was undated. Considering the proximity and the similarity of the profiles of these two features, it is likely that they are contemporary. All of these features were sealed by alluvium.

3.3.50 In Zone Va the worked flint was generally of later date and contained within the alluvial clay. The Mesolithic – Early Neolithic flint from Trench 19 was retrieved from a sample of the clay, (1906), underlying stone causeway {1904}. In contrast, the prehistoric flint from Trench 20 was recovered from a sample of the alluvial clay, (2005), which overlay stone causeway {2006}. The flint from Trench 22 was dated to the Early Neolithic and was recovered from a sample from alluvial deposit (2205).

Bronze Age – Iron Age

3.3.51 Trench 53 was extended to cut across a significant LIDAR feature at its south-east end. This feature appeared as a low bank, running north towards a cropmark enclosure that lies just outside of the scheme boundary. The trench section revealed two ditches, [5352] to the north-west and [5334] to the south-east, cutting through alluvial deposits and into earlier ditches [5353] = [5357] to the north-west and [5333] to the south-east. All of these features were cutting into a large palaeochannel [5318], one fill of which, (5350) contained a small segment of worked wood that was broadly dated, by tool marks, to the Iron Age.

Saxon - Medieval

3.3.52 In Zone Va two trenches contained concentrations of compacted limestone pieces and rounded flint river pebbles, Trenches 19, {1904}, and 20, {2006} (Figs. 9, 9i, 18 and 19, Plates 5 and 6). In Trench 20 the very clear and robust remains of a cambered surface (the edges being roughly 0.10m lower than the centre) orientated SW-NE with evidence of wheel rutting on the same orientation was revealed. The surface was clearly a metallated trackway (or causeway), and had been lain directly onto the natural gravel with no sign of side ditches or basal deposits to provide an elevated level. In Trench 19 the deposit comprised the same material, but in patches corresponding with underlying pockets of softer organic alluvium (probably the southern extents of the relict channel immediately to the North, evident on LIDAR, and investigated in Trench 24). The extrapolated orientation of the surface and wheel ruts in Trench 19 pass to the East of those in Trench 20, and perhaps indicate different surfaces and/or different phases, but more probably together the evidence represents a single routeway with diffuse edges especially when passing through softer ground as seen in Trench 19. These surfaces were overlain by alluvium to depths of 0.48m and 0.50m BGL respectively. The feature in Trench 20..

3.3.53 Dating of these features relies on horseshoes that were recovered from each location. In Trench 19 one of the horseshoes lay directly on top of the stones and was dated to the 13th – 14th centuries AD. This is slightly earlier than the 14th – 15th century date for the horseshoe from Trench 20, which was attributed to the alluvial clay immediately overlying the stones. It is therefore likely that both these causeways are of Medieval date.

Post-Medieval - Modern

3.3.54 In Zone Va Trench 25 was intended to target the Hinksey Causeway. However, due to ecological constraints this trench had to be moved from its original location by roughly 125m to the south-west along the footpath. The trench design also had to be altered to enable excavation to take place; instead of a single trench spanning the entire causeway, it was split into two offset segments.

3.3.55 Trench 25 revealed a gravel footpath (2519), overlain directly by a possible later surface, (2528) (Fig. 21, Plates 7, 8). The feature was flanked by ditches on both the north-west and south-east sides.

3.3.56 To the south-east lay a single ditch [2511]. To the north-west there was a sequence of ditches, [2505], [2502] and [2522] (Fig. 9, 21, Plates 7, 8). Ditches [2511], [2502] and [2522] all contained finds dating from the 18th or 19th centuries. Ditch [2511] was sealed by alluvial deposit (2520) that ran beneath surface (2519), whereas (2520) was cut by ditch [2502] on the other side. Ditch [2502] was in the middle of the sequence of linears on that side of the causeway, with only [2505] being earlier. This suggests that the only ditch that can possibly be contemporary with [2511] is [2505], and the alluvium sealing [2511] must have accrued within the last 300 years.

3.3.57 The ditches in Trench 53 that cut palaeochannel [5318], [5353] = [5357] to the north-west and [5333] (Fig. 26, Plate 18) to the south-east, produced no datable material culture. However, a sample of oak sapwood recovered from (5331) of [5333], was dated to 1670-1940 cal AD (Beta-481035, 140±30 BP). These features were then cut by later ditches [5352] to the north-west and [5334] to the south-east and both of these produced glass and pottery dated to the late 18th century to mid 19th century.

3.3.58 The two latest ditches were both cut from just below the topsoil and while [5353] = [5357] was cut from just below the subsoil, ditch [5333] was sealed by 0.80m of alluvium.

3.3.59 The only other datable feature located in this zone was ditch [4402] in Trench 44 (Plate 10, Fig. 22), which contained post-Medieval pottery and a modern (19th century or later) screw.

Undated

3.3.60 In Trench 46, as well as the two termini [4605] = [4630] and [4618] = [4624], there was a third terminus, [4609] = [4637] (Fig. 9ii and 23, Plate 12). As with [4618] = [4624] (Plate 13) this linear was undated. It was situated roughly 3m to the southeast and on a very similar NE-SW alignment to the other two termini, though it was wider than the other two. This feature was also sealed by alluvium and so could be of a similar date to [4605] = [4630].

3.3.61 Some of the other Trenches, such as 35, 36, 39, 43, 45 and 48, contained numerous possible features which were tested but considered to be of natural origin. However, many of these natural features were filled with material very similar to that which filled archaeological features, so it is possible that some of the features may not be natural. This is particularly true for Trench 45 which may contain features relating to the activity in Trench 46.

Zone VI: The Long Meadow (Trenches 38, 41, 42, 47, 51, 52, 55 – 58 and 60)

Figs. 1, 2, 4, 9, 9ii, 25 and Plates 9, 17

Geoarchaeological Summary

3.3.62 Zone VI is located in a field historically known as the Long Meadow, bounded by the Hogacre Ditch to the north and Hinksey Stream to the south. Ground levels average c 55.8m OD in the northwest, dropping southeastwards to c 55.30m OD. Similar to Zones I and IV, this zone is characterised by a deep complex channel system associated with the Seacourt-Hinksey Stream. The surface of the Northmoor gravel is low-lying throughout this zone and was not generally exposed during the evaluation trenching, but has been recorded at varying depths during the previous borehole survey. In borehole OA104a it was recorded at 3.84m BGL (51.46m OD). Here it was overlain by gravelly sand and organic silts dated to the Early Neolithic at 3620-3365 cal BC (Beta-450164, 4670±30 BP) and the Early Bronze Age 2200-2025 cal BC (Beta-450166, 3710±30 BP) respectively. In borehole OA104b, the Northmoor Gravel was a little higher and here the organic silt was dated to the Middle Bronze Age at 1435-1290 cal BC (Beta-450168, 3110±30 BP). The prehistoric sequences are generally blanketed by substantial thicknesses of minerogenic alluvium. Assessment of samples from the borehole for palaeoenvironmental remains was similar to other sequences examined from this period, suggestive of an environment of alder carr wet woodland during the Neolithic and Early Bronze Age, becoming more open during later prehistory

3.3.63 The evaluation trenches excavated in the Long Meadow were restricted to a maximum excavation depth of 2.00m. However, several of these trenches revealed some complexity indicative of channel activity during the period of alluvial deposition e.g. Trenches 42, 52, 56, 58 and 60. Trench 51 is of particular note as it contained substantial axe-cut timber piles and stakes driven into the alluvium, one of which was radiocarbon dated to the Late Bronze Age at 1080-910 cal BC (Beta-480757, 2830±30 BP) (see below).

3.3.64 Detailed recording and sampling was carried out from a channel sequence at the western end of Trench 42. LIDAR data indicates this may represent an old meander of the current Hinksey Stream which lies immediately to the south. This trench was chosen due to the fact that artefactual material was recovered from the channel edge that included both Roman and Medieval pottery, as well as a quantity of animal bone. The channel truncated minerogenic clay alluvium and was filled with organic clay. Radiocarbon samples from the base and top of the channel fill produced Early – Middle Roman dates of 90-240 cal AD (Beta-481040, 1840±30 BP) and Late Medieval – Post-medieval dates of 1460-1630 cal AD (Beta-481028, 350±30 BP) respectively. This suggests this channel was active from the Early - Middle Roman period and had silted up towards the end of the Medieval period, probably as a result of the course of the Hinksey Stream shifting a little southward.

3.3.65 Pollen, waterlogged plant remains and insect assemblages were very well preserved in the sediments from this channel and analogous to those recovered from Trench 15 which are also of historical date. Seeds of plants of open and/or cultivated ground are common, particularly knotgrass, redshank/pale persicaria, stitchwort and goosefoot and other arable weeds such as stinking chamomile and poppy. These are found alongside numerous seeds of wetland plants, especially rushes and sedge but also including ragged-robin, meadowsweet and water-cress. Aquatic plants including yellow water lily and pondweed. This channel

sequence also contained moderately preserved mollusc assemblages, dominated flowing water species such as *Bithynia tentaculata*, *Valvata piscinalis*, the river nerite *Theodoxus fluviatilis* and river limpet *Ancylus fluviatilis*. This suggests a well-oxygenated moderate to fast flow regime within the channel, and a mixture of muddy and gravelly substrates. It is likely that a proportion of the pollen grains and seeds from these samples have been the subject of some transportation from adjacent areas.

Archaeological Summary

Mesolithic - Neolithic

3.3.66 No archaeological features were present from these periods in Zone VI.

Bronze Age

3.3.67 Trench 51 uncovered several worked timber posts and stakes driven through the alluvium, these were encountered in a good state of preservation at c 1.00m BGL. Most of the posts form a broad NNE – SSW alignment (Figs. 9 and 9ii). The northernmost, (5118), and southernmost, (5113) (Fig. 25, Plate 17), of these posts were of much larger size than the others, both were excavated but only one, (5113), was able to be fully exposed and removed. This oak post was subject to tool mark analysis which returned a likely Bronze Age date (see Allen, Appendix B), this was refined with a Late Bronze Age radiocarbon determination of 1080-910 cal BC (Beta-480757, 2830±30 BP).

3.3.68 The post 'alignment' ran for just over 6m across the trench, probably continuing beyond the trench limits in both directions. Lying almost perpendicular to the main alignment and c. 2.2m to the ESE of post (5113), was a pair of smaller stakes, (5123) and (5124). There didn't seem to be any other posts associated with this outlying pair, although stake (5125) was noted surviving a few centimetres below the machine level close to (5113), suggesting there may be more stakes/posts surviving at greater depths.

3.3.69 The orientation of the post alignment, when extrapolated to the NNE points towards the antiquarian discovery of Late Bronze Age spear heads and an Iron Age dagger sheath in Minster Ditch (Fig. 9), (note: this is also near the known earlier Bronze Age activity found at Newsquest, Osney Mead).

3.3.70 The dating of this post alignment demonstrates that a significant amount of the alluvial sequence in this area had built up prior to the Late Bronze Age.

Iron Age

3.3.71 No archaeological features were present from this period in Zone VI.

Roman – Medieval

Trench 42 cut across the deep palaeochannel sequence underlying northern end of the Long Meadow. This was sampled in detail and radiocarbon dates suggest it was active during the Roman and Medieval period (see above). On the edge of a channel cut associated with this sequence, at the south-west end of the trench, a finds rich deposit was located (4204) = (4206) that contained Roman and Medieval pottery and animal bone (Plate 9).

Post-Medieval – Modern

3.3.72 No archaeological features were present from these periods in Zone VI.

Zone VII: South Hinksey (Trenches 59, 61 – 81 and 83 – 108)

Figs. 1, 2, 4, 5, 10, 10i, 10ii, 27 – 53 and Plates 19 - 48

Geoarchaeological Summary

3.3.73 Zone VII is located south of the current course of the Hinksey Stream and northeast of South Hinksey village. Ground levels average 55.00m to 55.50m OD. The fields in this area, mostly under pasture, are known historically as Great Common, Long Common and Little Common. This section of the route traverses an area of cropmarks identified from aerial photographs.

3.3.74 This Zone is characterised by relatively high elevations in the surface of the Northmoor Gravel at c 54.60m to 55.00m OD. The thickness of deposits overlying the gravel ranges from c 0.40m to 0.80m, increasing locally to c 1.20m, particularly in the northern part of the zone approaching the Hinksey Stream. Previous borehole work and geophysical survey indicated shallow channel like features may traverse this zone and Borehole OA103 was drilled in 2016 to sample one of these features which is infilled with an organic silt clay to 1.20m BGL. A single radiocarbon date was processed from the base of this unit which produced a recent date. The pollen also included rosebay willowherb which did not become widespread until after the Second World War. It was not clear therefore whether this channel is a recent feature or whether the samples were contaminated with recent material. The pollen data suggested an open, herb-rich grassy palaeoenvironment with evidence for areas of shallow, possibly stagnant water nearby. The occurrence of cereal-type pollen may represent pollen of a cultivated crop that may have been growing or possibly processed nearby. Pollen of weeds associated with disturbance and/or damp areas was also recorded.

3.3.75 Sampling from Trench 72 was intended to resample the sequence examined in Borehole OA103 at a different location. Northmoor Gravel was recorded at 54.27m OD (0.89m BGL). This was overlain by a peaty silt (7207), radiocarbon dated to the Early Saxon period at 430-620 cal AD (Beta-481033, 1510±30 BP). The sequence was sealed by silt clay alluvium that was organic towards the base, with ground level at 55.16m OD. The radiocarbon date suggests that the peat filled feature post-dates the cropmark enclosure and ditched trackway, immediately to the southwest, which have been radiocarbon dated to the Roman period (see below). A further indirect date for the peat deposits in this zone derives from an *in situ* wooden stake driven into the peat in Trench 64 which yielded a Late Saxon – Early Medieval date of 890 - 1010 cal AD (Beta-481031, 1100±30 BP). This stake was found beneath a possible stone trackway surface or causeway (see below).

3.3.76 Waterlogged plant remains and insects from Trench 72 were well-preserved in the organic sediments with a range of seeds of wetland and aquatic taxa: sedge, crowfoot, mint, water-plantain and marshwort, but seeds of open or rough ground are also present at lower frequency (nettle, grasses, docks). Molluscs were moderately preserved in the organic silt and the base of the alluvium. The assemblages were dominated by the aquatic species *Bithynia tentaculata*, along with *Valvata cristata* and *Planorbis planorbis*, but a range of other freshwater ditch and catholic species were also present suggesting a slow flow regime.

Archaeological Summary

Mesolithic

3.3.77 In Trench 61 (Plate 20) one of the more significant assemblages of Mesolithic flint was retrieved from the samples from a burnt treehole [6111] (Fig. 27, Plate 19), however, two sherds of Iron Age pottery were also recovered from this context.

Neolithic

3.3.78 No archaeological features were present from this period in Zone VII.

Bronze Age

3.3.79 Only one feature was dated to the Bronze Age in Zone VII, a large pit in Trench 68, [6804] (Fig. 32, Plate 29). This pit contained small undiagnostic sherds of pottery that were loosely dated as prehistoric, but a radiocarbon date on uncharred hazelnut shell suggests they are Middle to Late Bronze Age at 1210-1010 cal BC (Beta-481032; 2910±30 BP).

Iron Age

3.3.80 The burnt treehole [6111], previously mentioned, was revealed at c 0.65m BGL on the southern edge of the palaeochannel belt running through Zone VI. The finds from this feature were almost entirely retrieved from the bulk samples, and include two small, abraded pieces of Iron Age pottery.

Trench 67 (Plate 26) contained a large pit, [6702] (Fig. 31, Plate 27), similar in shape but wider and deeper than the one in Trench 68. The pottery in this pit was dated to the Early Iron Age. Another Iron Age pit, again dated by pottery, was located in Trench 87, [8719] (Fig. 42, Plate 41), this pit was wide, but much shallower than the one in Trench 67.

Roman

3.3.81 Trenches 76, 77, 78, 79, 80, 81 and 83 were all located to target cropmark features, a possible north-east – south-west trackway and adjacent enclosure (Figs. 10, 10i and 10ii).

3.3.82 The trackway was targeted by Trenches 77 and 78, both of which exposed the full width of the feature. Two parallel ditches were revealed, the northernmost being excavated in Trench 77, [7700] (Fig. 35, Plate 33) and the southernmost in Trench 78, [7805] (Fig. 36, Plate 34). Unfortunately, neither slot produced any finds, but a radiocarbon date on waterlogged seeds and twigs from sample <519> from trackway ditch [7805] produced an Early to Middle Roman date of 90-240 cal AD (Beta-481042, 1840±30 BP). It is noticeable that the ditches were both cut from just below the alluvial subsoil and the alluvial deposits they cut were not particularly thick.

3.3.83 The cropmarks suggested an alignment of circular features running along the south-east side of the southernmost ditch. In Trench 78 a single pit [7807] was found in that location, but there were no corresponding features identified in Trench 77. It is possible that the crop mark 'pit alignment' is an interpolation effect or error created during digital processing of the aerial photos.

3.3.84 The trackway measured roughly 8.35m wide between the inside edges of the two ditches and in Trench 77 some heavily compacted areas of gravel indicated a possible metallated surface (although no wheel ruts were apparent). It was possible to trace the trackway for c

68m between Trenches 77 and 78, but it was not found in Trench 76 as the cropmarks indicated. The trackway also does not show up in Trench 75 which means that it may well thread the gap between Trenches 74 and 75. There is the possibility that features interpreted as natural at the south-east end of Trench 74 may actually be related to the trackway.

3.3.85 Roughly 30m to 35m south-east of the trackway was a square enclosure with an opening on the north-west side, facing the trackway. Trenches 77, 79, 80, 81 and 83 all targeted various parts of the enclosure ditch, [7711] (Plate 32), [7904] (Fig. 37, Plate 35), [8005] (Fig. 38, Plate 36), [8105] and [8307] and found it to be cut from the same level as the trackway, suggesting the two are contemporary and as such the enclosure has been included in the same period as the dated trackway ditch.

3.3.86 As with the trackway ditches, no finds were recovered from the enclosure ditch. No internal features were identified and curiously there were no organic deposits in the enclosure ditch either, as you may expect from an animal pen.

3.3.87 The orientation of the enclosure is not an exact fit to the cropmarks and as such it is difficult to ascertain precise internal dimensions, but it is roughly 52.50m from the internal edge of [8005] before it turns towards the north-east to the edge of Trench 77 where [7711] is clearly turning towards the south-west.

3.3.88 As well as the cropmark ditches already described, there were other ditches that could be lined up between certain trenches in this zone. In Trench 98, [9805] and [9809] (Figs. 10, 48, Plate 45), the ditches running parallel to the causeway head towards Trench 99, where a single ditch was recorded as [9907]. It is not possible to say which of the two ditches in Trench 98 continues through to Trench 99. The intervention in Trench 99 contained a small piece of worked wood that was sent for radiocarbon analysis and has been dated to the Late Roman period at 240-390 cal AD (Beta-481029, 1730±30 BP).

3.3.89 Ditch [9907] was recorded cutting from the top of the gravel and sealed by alluvium, whereas the two ditches in Trench 98 and the other datable Roman ditch were all cut from just below the subsoil. It is possible that this is a misjudgement regarding the cut level of ditch [9907] and that it also is cut from below the subsoil.

Saxon

3.3.90 The Saxon period is generally quite poorly represented across the scheme and no archaeological feature produced any material culture of this period so it is important to note that one of the stone causeways in Zone VII, {6406} (Fig. 29 and Plates 23, see below), was pressed into an alluvial clay deposit (6403) that lay on top of a layer of peat, (6404). Driven through the peat, but not through the clay above, was a worked stake, 6408, which was radiocarbon dated to the Late Saxon period at 890-1010 cal AD (Beta-481031, 1100±30 BP). Interestingly, samples taken from an organic palaeochannel fill in Trench 72, thought to be the same channel crossed by causeway {6406}, produced an Early Saxon date of 430-620 cal AD (Beta-481033, 1510±30 BP).

Medieval – Modern

3.3.91 No archaeological features were present from these periods in Zone VII.

Undated

3.3.92 Unfortunately, the vast majority of the features in this zone were undatable (due to a lack of artefacts) The causeway in Trench 64, {6406} (Plate 24) ran NNE – SSW across a palaeochannel, measured 3.80m in width and was the better made and preserved of the two, though still not as well made as the routeway/causeway located in Trench 20. It lay at c 0.60m BGL and was sealed by alluvial clay. The causeway consisted of a single stone course, pressed into another thin alluvial clay, (6403), this overlay a peat layer (6404) that had the Saxon wooden stake 6408 driven through it. Also in Trench 64 were two almost parallel cuts that appeared to be construction or robber cuts but upon excavating one, [6409] (Plate 22), they were found to be stone filled land drains.

3.3.93 The causeway in Trench 98, {9811} (Fig. 48, Plate 46), ran roughly north-east – south-west and was also a single stone course pressed into alluvial clay but was situated in a wetter area and is thought to be more of an ad hoc route to bridge the gap between islands of drier gravel due to its poor construction. It lay at roughly 0.40m BGL, overlain by a thin alluvial deposit. The feature was only 1.60m wide and did not produce any dating.

3.3.94 In Trench 101 (Plate 47) a set of three north-east – south-west aligned, intercutting ditches [10100], [10101] and [10102] (Fig. 49, Plate 48) were identified which align very well with ditch [10214] in Trench 102. These ditches were all cut from the same horizon though none of them produced any dating. These ditches are running on roughly the same alignment as the stone causeway {9811} and the Roman ditch [9907].

3.3.95 In Trench 61 were two ditch termini, [6112] and [6114], similar to Trench 46 in that they were almost touching. Both of them were overlain by alluvium and neither produced any dating material.

3.3.96 Numerous other ditches in this zone were identified but did not clearly align with any other identified linears. Trench 62 contained NE-SW [6204] (Fig. 28, Plate 21) which was overlain by alluvium and cut by a possible channel [6207]. In Trench 66, NW-SE [6603] (Fig. 30, Plate 25) was cut from 0.30m BGL, sealed by and cutting alluvial layers. At the south-eastern end of Trench 68 there were also the edges of two converging unexcavated linears, ENE-WSW [6813] and NE-SW [6815] (Plate 28). Three linears were identified in Trench 69 all running NE-SW, [6913], [6915] (Fig. 33, Plate 30) and [6917], although [6917] was only seen in section. Ditch [7005] (Fig. 34, Plate 31) in Trench 70 was cut from the gravel level at roughly 0.50m BGL and ran NW-SE.

3.3.97 Trench 84 (Plate 37) contained two parallel sets of intercutting NW-SE linears, [8407] cut by [8409] (Fig. 39, Plate 38) and [8411] cutting [8413] (Fig. 39). These two sets of linears were both cutting the lowest alluvial layer in the trench (8402).

3.3.98 Parallel ditches were also identified in Trench 91, N-S aligned [9105] and [9107] (Fig. 45, Plate 43), both of which were cut from the gravel horizon at about 0.25 – 0.30m BGL.

3.3.99 The E-W ditch in Trench 86, [8614] (Fig. 41), and the NNW-SSE ditch [8905] (Fig. 44) in Trench 89, along with the WNW-ESE ditch [9410] (Fig. 46, Plate 44) in Trench 94 and the NNE-SSW ditch [9705] (Fig. 47) in Trench 97 were all overlain by alluvium in their respective trenches, at a depth that varied between 0.40m – 0.85m BGL. Ditch [8614] contained numerous fragments of undatable fired clay. In some trenches there were deposits that

appeared to contain burnt material, many were proved to be natural features with iron mineralisation being the cause of the burnt elements.

3.3.100 Some trenches encountered just the termini of ditches. In Trench 85, WNW-ESE terminus [8504] (Figs. 10 and 10i, Plate 39), survived under 0.50m of alluvial overburden. The terminus in Trench 87, [8726] (Fig. 42) was similarly located stratigraphically but was oriented NE-SW. Terminus [10512] (Fig. 51), was aligned NW-SE and also cut from the gravel horizon but the alluvial sequence in this trench was deeper at roughly 0.80m thick.

3.3.101 The NW-SE aligned [10404] (Fig. 50) in Trench 104 and NW-SE gully [10806] (Fig. 53) from Trench 108 were cut from between 0.50m-0.60m BGL.

3.3.102 Pits of various sizes were identified across the zone, but were far less frequent than the linears. These features were located in Trenches 70, [7014]; 86, [8608] (Fig. 41, Plate 40); 87 [8719] (Fig. 42, Plate 41); 94, [9406] and [9408] (Fig. 46) and 103, [10305].

3.3.103 Across the Zone very few postholes were found and they were almost entirely concentrated in Trench, 87, which contained five clustered together, [8709], [8711], [8713], [8715], [8717] (Plate 42) and running across the trench in a NE-SW direction, roughly half way along the trench. Trench 88 contained a single posthole [8805] (Fig. 43), as did Trench 107, [10704] (Fig.52), while in Trench 86 there was the possible stakehole [8606] (Fig. 41, Plate 40).

3.3.104 Many of the trenches in this zone contained numerous possible archaeological features, these were tested by partial hand-excavation, that revealed undulating bases, amorphous shapes in plan, or obvious root holes, with no artefacts or evidence of human use and therefore were interpreted to be natural in origin. However, many of these natural features were filled with deposits very similar to those that filled the archaeological features.

Zone VIII: The Devil's Backbone (Trenches 109 – 130)

Figs. 1, 2, 6, 54 – 58 and Plates 49 - 54

Geoarchaeological Summary

3.3.105 Zone VIII is located either side of the Devil's Backbone, a raised path or causeway linking South Hinksey village with New Hinksey. The routeway may have its origins in the Medieval period. Historically the field to the north of the Backbone is known as North Meadow and the field to the south, Feast Meadow. Ground levels average c 55.00m OD in the north, dropping to c 54.70m OD towards the southeast. A meandering palaeochannel is visible on the LIDAR.

3.3.106 This zone is characterised by increased thicknesses of alluvium compared to Zone VII, and a corresponding drop in the elevation of the underlying Northmoor Gravel which averaged 54.20m to 53.20m OD. Half of the trenches in this zone exposed deep alluvial sequences (Trenches 110, 113, 14, 116, 119, 124, 126, 128, 129 and 130), the remained exposed gravel at 1m depth or less.

3.3.107 Peaty organic deposits were recorded in trenches coinciding with a meandering palaeochannel which is visible on the LIDAR running through Feast meadow. The sequence was recorded and sampled in detail in Trench 127. Trenches 119, 120 and 125 had to be moved short distances in this zone to avoid ecological constraints, services and permanent fixtures.

3.3.108 The sedimentary sequence from Trench 127 incorporated the fills of palaeochannel [12714], comprising a basal clay channel fill (12706) and a peat (12709), the base of which has been radiocarbon dated to the Middle to Late Saxon period at 780-990 cal AD (Beta-480763, 1130±30 BP). In addition, a piece of chopped branchwood (12711) recovered within the peat was dated to 770-970 cal AD (Beta-481043, 1160±30 BP), Middle – Late Saxon. The channel fills are capped by alluvial clays (12704), (12708) and (12705).

3.3.109 Pollen was abundant in the samples from the organic sediments, but only moderately to poorly preserved. Preservation and abundance was poor in the overlying alluvium. The assemblage is broadly consistent in all samples, and is similar to that recorded in Trenches 15 and 42 of similar historic age (though of worse preservation). The environment in the vicinity was open with herb rich grassland with areas of damp ground and some evidence of cultivation. The seed assemblage was well preserved in the organic sediments but less so in the upper part of the alluvium. The assemblage included flax (*Linum usitatissimum*), alongside seeds of aquatics and wet ground taxa; sedge, spike-rush, mint and crowfoot. Although insect remains are sparse, they are well-preserved where present.

3.3.110 Peat recorded in Trench 113, (11305), immediately north of the backbone was sealed by an accumulation of limestone rubble that may be the remains of a structure such as bridge support or trackway. The top of the peat here was dated to 1020-1160 cal AD (Beta-481038), Late Saxon – Early Medieval and may be associated with the same channel as in Trench 127. A single sample from the peat produced a well-preserved assemblage. Taxa of wet or damp ground are abundant, especially crowfoots, mint, water-plantain, rushes and sedges. Few taxa indicative of other habitats are present, although greater plantain, a plant that favours cultivated or rough ground, does occur frequently. Numerous seeds of cultivated flax (*Linum usitatissimum*) were also noted.

Archaeological Summary

Mesolithic – Saxon

3.3.111 No archaeological features were present from these periods in Zone VIII. However, the peat from the palaeochannel investigated in Trench 127, which produced some worked wood, has been dated to the Saxon period (see above).

Medieval – Post-Medieval

3.3.112 In Trench 113 (Plate 51) there were two concentrations of stone that resembled pads that might support some form of bridge or crossing, {11307} (Fig. 56, Plate 50). These were roughly aligned NW- SE and measured 2.50m wide and 0.08m thick with two courses identified in places. A small horseshoe lay on top of them and was dated to the Late Medieval or early Post-medieval period, but was attributed to the overlying alluvial clay, (11304), as was the pottery which was dated to 1175-1400 AD. They were overlain by an alluvial sequence roughly 0.80m thick and were laid on top of a peat layer, (11305) (Fig. 56). The peat was radiocarbon dated to 1020-1160 cal AD (Beta-481038, 930±30BP), Late Saxon to Early Medieval.

3.3.113 There were two intersecting linears in Trench 120, [12004] (Fig. 58, Plate 53), a 1.20m wide ditch running NE – SW and [12007] and a 0.80m wide gully running NW – SE. Ditch [12004] contained Medieval pottery dated to AD 1225 – 1400 and cut ditch [12007]. Both ditches were cut from within the alluvial sequence at c 0.75m BGL.

Modern

3.3.114 No archaeological features were present from this period in Zone VIII.

Undated

3.3.115 There were three undated linears in Zone VIII, N-S [11105] (Fig. 54, Plate 49), NE-SW [11903] (Fig. 57) and NW-SE [12905]. The ditches in Trenches 111 and 119 both cut the natural gravel and were sealed by alluvium at 1.00m and 0.90m respectively. Ditch [12905] was cut from within the alluvial sequence at roughly 1.30m BGL. This ditch remained unexcavated due to hydrocarbon contamination in the groundwater that was present in this trench.

3.3.116 Trench 112 contained a single undatable pit [11209] (Fig. 55) that cut the natural gravel from 0.55m BGL and was sealed by the entire alluvial sequence.

Zone IX: North of the Old Abingdon Road (Trenches 131-141)

Figs. 1, 2, 6, 59, 60 and Plates 55, 56

Geoarchaeological Summary

3.3.117 Zone IX is located adjacent to the Old Abingdon Road and is dissected by an extant drainage ditch or stream aligned northwest to southeast from South Hinksey village. This stream continues beneath the Old Abingdon Road. Ground levels average 54.50 to 54.70m OD, rising to 55.00m OD in the southwest.

3.3.118 This Zone is generally characterised by thinner deposits of alluvium compared to Zone VIII, with colluvial ploughsoils and the remains of ridge and furrow cultivation located southwest of the stream. Trenches 136, 138 and 141 had to be moved to avoid geotechnical installations, services and permanent fixtures. The surface of the Northmoor Gravel was recorded on average at c 54.00m to 53.40m OD. Possible Pleistocene Head deposits were recorded in the base of Trench 141. Alluvial deposits overlying the gravel were notably thin in Trenches 133 and 134 with the gravel appearing at c 0.40m BGL. In the remaining trenches, apart from Trench 136, the gravel appeared at less than 1.00m BGL.

Archaeological Summary by Period

Mesolithic - Modern

3.3.119 No archaeological features were present from these periods in Zone IX.

Undated

3.3.120 Only three trenches in this zone contained any archaeological features, 133, 139 and 141, neither of which produced any dating material.

3.3.121 Trench 133 (Plate 55) contained two NE – SW aligned ditches, [13305] and [13311] (Fig. 59). Only [13311] encountered at c 0.80m BGL was excavated, and was overlain by alluvium.

3.3.122 In Trench 139 a c 3.5m wide by 0.47m deep ditch [13910] running NNW-SSE was sample excavated. This corresponds to a c 300m long geophysical anomaly that was identified in this area. The anomaly appears to demarcate the eastwards extent of the ridge

and furrow seen on the LIDAR. It probably formed part of the drainage system for these fields and may date to the Medieval period or later.

3.3.123 There was also a single NW – SE ditch in Trench 141 (Plate 56), [14106] (Fig. 60) that too was sealed by c 0.90m of alluvium.

Zone X: Old Abingdon Road (and area to the south)

(Figs. 1, 2, 6)

Geoarchaeological Summary

3.3.124 This is the alignment of the southernmost section of a principal Medieval (perhaps with earlier origins) causeway route into Oxford (from the west and south) leading to the Norman Grandpont, Oxfords South Gate and thence to St Aldates. The Old Abingdon Road section contains multiple relatively small stone built culverts that continue to channel the Thames's waters downstream under the current roadway from NW - SE, together they constitute a Scheduled Ancient Monument (OA 2016a, no. 2). This Zone was evaluated in 2016 and revealed significant complex stratigraphy which included multiple road surfaces (the earliest of which comprised a series of metalised surfaces of small rounded gravels), a roadside ditch, a limestone masonry structure – probably a culvert abutment, and stone curbing dating from the 12th century to Modern times (OA, 2017b). The underlying geoarchaeological landscape is likely to be the same as the neighbouring southern extents of Zone IX. Limited observations of the underlying natural were possible, revealing potential hill wash deposits derived from the valleys western slopes, overlying Pleistocene gravels (limited alluvial deposits were encountered, having been removed to create the causeway). Assessment of soil samples has demonstrated excellent preservation of waterlogged palaeoenvironmental remains associated with a Medieval roadside ditch on the north side of the causeway, with less well-preserved organics associated with the channel bridged by the probable culvert.

Archaeological Summary

3.3.125 Old Abingdon Road has already been subject to an archaeological evaluation (OA, 2017b) and the archaeology is summarised in Section 1.7. The area to the south of Old Abingdon Road, both to the east and west of the railway has been, in the last century, covered in landfill (OA, 2016, Fig 5), both this and the area to the east of the railway, within Redbridge Park and Ride, was outside of the scope of this evaluation.

Zone XI: Lower Slopes of Hinksey Hill / Lower Western Valley Slopes (Trenches 142 – 163)

Figs. 1, 2, 5, 6, 10, 10iii, 10iv, 61 – 74 and Plates 57 – 63

Geoarchaeological Summary

3.3.126 Zone XI is located immediately north-west of South Hinksey village. Here ground levels rise from c 55.2m OD to c 60.5m OD above the floodplain. The sediments in this zone are dominated by colluvial ploughwash which invariably appears as a reddish brown silt loam with variable amounts of poorly sorted limestone gravel. There was a noticeable lack of bedding within the colluvium which may suggest it built up over a considerable time.

3.3.127 This zone is particularly significant due to the large number of archaeological features identified in multiple trenches, along with flint scatters. These features were invariably found stratified within the colluvial deposits. Consequently, excavation did not generally expose Pleistocene gravel and/or Head deposits. The colluvium is oxidized and has low potential for preservation of palaeoenvironmental remains apart from charred material associated with occupation. Molluscs were generally absent or only occasionally preserved in low numbers.

Archaeological Summary

3.3.128 No trenches needed to be moved or relocated in this zone.

3.3.129 Overall a high concentration of archaeological features were identified in this zone although, similar to Zone VII, associated material culture was sparse.

Mesolithic – Early Neolithic

3.3.130 Across the scheme, three 1.00m² sample areas (or test squares) were hand excavated in 0.05m spits for recovery of worked flint artefacts. Two of these sample areas were excavated in Trenches 142 and 144. The worked flint assemblages from each trench turned out to be of very different character, with the earlier of the two located in Trench 144.

3.3.131 In Trench 144 the flint was located within 0.10m of a layer of brownish orange colluvium, (14403), at c 0.70m BGL. Two spits were excavated and fully sampled. The flint scatter dated to the Late Mesolithic – Early Neolithic and was shown to be in fresh condition, which suggests that it resulted from a short episode of flint working either *in situ* or very nearby.

Bronze Age

3.3.132 The worked flint assemblage from Trench 142 was also located within a greyish reddish brown mottled layer of colluvium (14209) at c 0.60m BGL. The flint was subject to the same excavation method as Trench 144, which also resulted in two spits being fully excavated and sampled from a single test square.

3.3.133 The worked flint recovered from Trench 142 had a higher degree of edge damage typical of an *ex situ* assemblage and was of mixed character suggestive of a general prehistoric to Bronze Age date. Within the second spit of this test square a fragment of (Early?) Bronze Age pottery was also recovered.

3.3.134 Trench 155 contained the only human remains recovered from the entire scheme in the form of Cremation [15505] (Fig. 69, Plate 61) that was observed cutting colluvium at 0.60m BGL. There was no urn associated with the cremation, but a sample of cremated bone produced a Middle Bronze Age radiocarbon date of 1390-1130 cal BC (Beta-48075, 3020±30BP).

3.3.135 In Trench 146 (Plate 57), NW – SE ditch [14607] (Fig. 63), a recut of ditch [14610], contained a single sherd of Early Bronze Age pottery and is the only linear to be solely dated to the Bronze Age across the scheme, however, with the amount of residuality in other features it is quite possible that this is residual. This feature was cut from within the sequence of colluvium at c 0.70m BGL.

Iron Age

3.3.136 In Trench 142, pit [14212] (Fig. 61) contained numerous fragments of pottery which were mostly only attributable generally to the early prehistoric, although one base sherd has been tentatively dated to the Iron Age. This pit was recorded at 0.80m BGL and was sealed by a possible palaeosol, (14205), that contained Roman pottery.

3.3.137 In Trench 149, pit [14911] (Fig. 65, Plate 58) was dated from pottery to the Middle - Late Iron Age, although there were numerous residual and undatable sherds in the assemblage as well. Pit [16108] (Fig. 73, Plate 62) in Trench 161 was also dated to the Late Iron Age, but it too had residual pottery in the assemblage. These two pits were both found within the sequence of colluvium, but were cut from very different depths. Pit [14911] was recorded at 0.50m and pit [16108] at 1.00m BGL.

3.3.138 Pit [16108] was immediately adjacent to ditch [16106] which contained Middle – Late Iron Age pottery and both features were sealed by colluvial layer (16109).

3.3.139 Clusters of post holes were recorded in Trenches, 149 and 151. The arrangement of post holes in Trench 151, [15103], [15105], [15107] and [15109] (Fig. 66, Plate 59), strongly suggests that they form part of a circle for a probable roundhouse. Posthole [15109] contained pottery that was dated to the early prehistoric period, however, a radiocarbon date from charred cereal in sample <534> returned a Late Bronze Age to Middle Iron Age date at 730-390 cal BC (Beta-481030, 2380±30BP). These postholes cut into reddish brown colluvium (15102) at a depth of 0.70m BGL.

3.3.140 In Trench 162 a sequence of three drip gullies was identified, [16206], [16208] and [16210] (Figs. 74, Plate 63). These drip gullies were not all cut from the same horizon, the earliest gully, [16206], was sealed by colluvial layer (16204), whereas gullies [16208] and [16210] cut into the colluvium and are therefore later. The two later gullies survived at 0.60m and the earlier at 0.75m BGL.

3.3.141 Pottery was found in two of the three gullies, [16206] and [16208], which has been dated to the Middle to Late Iron Age and early prehistoric period respectively. There were two samples sent for radiocarbon dating from these gullies, a cattle mandible from the fill of [16208] and charred remains from the fill of [16206], sample <560>. Unfortunately, there was insufficient collagen to achieve a date from the mandible, but the charred remains were dated to the Middle to Late Iron Age at 360-60 cal BC (Beta-481689, 2150±30BP).

3.3.142 Some of the ditches in this zone have been noted to align across trenches. For instance, between Trenches 158 and 159 are NW – SE ditches that may well be continuations (Fig. 10). In Trench 159 ditch [15909] (Fig. 71) and a set of intercutting ditches in Trench 158, [15803], [15805] and [15807] (Fig. 70), align very well. Whilst [15803] produced Middle - Late Iron Age pottery, it sits in the middle of the sequence of three ditches, all of which are sealed by the same material horizon that seals [15909]. Consequently, discerning which of the three ditches might be running through is not possible. All of these ditches were cut from the same horizon at c 0.50m BGL. Ditch [15403] also lines up well with [15909] and produced early prehistoric pottery, although it was recorded as cutting from just below the topsoil.

Roman

3.3.143 Trench 160 was placed to target one of the few geophysical anomalies within the scheme limit (Fig. 10). This was found to be a sequence of three intercutting ditches,

[16008], [16011] and [16013] (Fig. 72), aligned roughly E – W and located right on top of the geophysics, which follows the line of the stream to the north remarkably well.

3.3.144 The earliest in the sequence, [16013] was sealed by a layer of colluvium (16001), which the two later ditches were cutting. This ditch contained pottery that was dated to the Roman period (43 – 410 AD) and cut at c 0.80m BGL.

3.3.145 In Trench 142 the Iron Age pit [14212] was sealed by a possible palaeosol, (14205), which contained Roman pottery. This layer was then cut by NE – SW ditch [14206] (Fig. 61), which also contained pottery that dated to the Roman period (50 – 410 AD). This Roman layer survived at c 0.70m BGL.

Saxon

3.3.146 No archaeological features were present from this period in Zone XI.

Medieval – Post-medieval

3.3.147 As previously noted, the earliest of the ditches in Trench 160 was sealed by layer (16001), which was then cut by two later ditches [16008] and [16013]. The latest ditch in the sequence, [16008] (Fig. 72), contained pottery that was dated from c 1650 – 1800 AD. These ditches were cut from just below the topsoil.

Modern

3.3.148 No archaeological features were present from this period in Zone XI.

Undated

3.3.149 As highlighted above, several linear ditches in this zone could be lined up across trenches. In Trench 158, NW- SE ditch [15811] and ditch [15814] (Fig. 70) line up very well with ditch [15905] and ditch terminus [15907], although it is not possible to say which of the ditches in Trench 158 correspond with those in Trench 159. None of these ditches produced any dating material but all are cut from the same horizon and survive at 0.30m – 0.50m BGL.

3.3.150 The final NW – SE ditch in Trench 158, ditch [15809] (Fig. 70), lines up very well with ditch [15405] and unexcavated ditch [15911] lies just off the same line in the intermediary trench. None of these features contained any dating material, but the two excavated features were cut from the same horizon, between 0.50m – 0.60m BGL and have very similar profiles.

3.3.151 It is interesting to note that none of the ditches in Trench 158 were identified in Trench 157 to the south-east.

3.3.152 The third linear in Trench 154, ditch [15407] (Fig. 68), was aligned NE – SW and slightly curving. This ditch may run through to Trench 152 and join with the slightly curving WNW – ESE ditch [15210] (Fig. 67, Plate 60). However, despite being cut from the same horizon at c 0.50m – 0.60m BGL, the two ditches are curving in slightly different directions which makes this a little tentative.

3.3.153 All of the remaining linear ditches in this zone did not appear to be aligned with any other features. The NW – SE ditches [14508], [14510] (Fig. 62), [14603] and [14605] (Fig. 63), produced no dating evidence, nor the E – W aligned ditch [14702] (Fig. 64). Despite the close proximity of the trenches containing these ditches, the depths below ground level

varied from 0.90m in Trench 145 to 0.75m in Trench 146 and 0.50m in Trench 147, which may suggest multiple horizons of activity or variable thicknesses of colluvial deposits.

3.3.154 Closely associated with the drip gullies in Trench 162 was pit [16212] (Fig. 74) that was cut from the same horizon as the two later gullies but did not contain any dating material.

3.3.155 Most of the pits in this zone were devoid of any dating evidence, including [14506] (Fig. 62), [15204] (Fig. 67), [15207], [15212], [15903] (Fig. 71) and [16103] (Fig. 73). As with the linear ditches, these pits were cut from various depths below ground level, 0.90m in Trench 145, 0.50m in Trench 152, 0.45m in Trench 159 and 0.90m in Trench 161.

3.3.156 Unlike the postholes in Trench 151, the three postholes in Trench 149, [14903], Postholes [14905] and [14917] (Fig. 65) were undated and made no discernible pattern.

3.3.157 Some of the trenches in this zone contained possible features which were tested but found to be of natural origin.

Zone XII: Upper Slopes of Hinksey Hill (Trenches 177 – 195)

Figs. 1, 2, 5, 11, 75 – 85 and Plates 64 – 67

Geoarchaeological Summary

3.3.158 This zone, lying to the north of Chilswell Valley, was characterised by variable bedrock, overlain by thin colluvial deposits and ploughsoils at the lowest elevations. The bedrock at the base of the slope consisted of dense bluish grey Oxford Clay (Plate 65), which gave way to a sandier clay upslope. Towards the top of the slope the bedrock consisted of Sandford Formation Limestone (Plate 67), directly overlain by ploughsoils.

Archaeological Summary

3.3.159 In order to more reliably locate worked flint scatters such as those previously recorded in the HER in this area, the trench array in this zone was distributed more densely than other zones, albeit the trenches were shorter in length. No trenches needed to be moved during the fieldwork.

Mesolithic – Bronze Age

3.3.160 No archaeological features were present from these periods in Zone XII. However, a third sample test square intended for the recovery of worked flint, was excavated in Trench 185 using the same methodology as Zone XI.

3.3.161 In Trench 185 the worked flint was found within an orange brown colluvial layer (18503) = (18514) at c 0.45m BGL. Only one spit was excavated and the recovered flint was dated to the early prehistoric period (possibly Mesolithic), although Iron Age pottery was also recovered from this layer.

Iron Age

3.3.162 As previously mentioned Iron Age pottery was recovered from colluvial layer (18503) = (18514), along with residual prehistoric (possibly Mesolithic) flint. An intrusive 13th – 14th century horseshoe nail was also present.

3.3.163 There were not many features in this zone that produced dating evidence. The earliest pottery was dated to the Late Iron Age and was recovered from a colluvial soil that had accumulated in a possible pit or natural depression at c 0.60m BGL in Trench 188, [18808] (Fig. 81).

Roman - Saxon

3.3.164 No archaeological features were present from these periods in Zone XII.

Medieval – Post-medieval

3.3.165 In Trench 179, pit [17906] (Fig. 76) cut the lowest colluvial deposit in this trench, (17902), which overlay undated linear ditch [17904]. The pit survived at 0.50m BGL and produced pottery dating to between the Early 13th and Early 15th centuries AD.

3.3.166 There were two datable linear ditches in this zone, E – W ditch [18605] (Fig. 80) and NW –SE aligned ditch [19406] (Fig. 85, Plate 67) at the top of the slope. Ditch [18605] produced pottery dating from the Early 13th to Mid 15th centuries AD, whereas ditch [19406] contained pottery more loosely dated from the Medieval to Post-medieval periods. Neither ditches clearly lined up with any other features and were found at 0.45m and 0.30m BGL respectively.

3.3.167 Another natural feature or hollow that produced pottery was [19304], dated to the Medieval to Early Post-medieval periods. This was probably just a natural undulation filled with subsoil.

Undated

3.3.168 Unfortunately, most of the features in this zone were undated. Many of the finds are likely to be background noise, derived from the overburden in trenches that was machined away.

3.3.169 Despite the fairly large number of linear ditches in this zone, there were very few that aligned with each other and they were only between Trenches 185 and 184. Intercutting NE - SW ditches [18507], [18509] and [18511] (Figs. 11, 79 and Plate 64) all head towards ditch [18406] (Fig. 78), but it is difficult to tell which is the survivor. All of the ditches are cut from the same horizon and survive between 0.50m and 0.60m BGL, but the profiles suggest that [18509] may be the best candidate.

3.3.170 Also between these two trenches run NW – SE ditches [18412] (Fig. 78) and [18505] (Fig. 79) which are possibly the same feature. As with the other aligned features between these two trenches, both of the ditches are cut from the same horizon, survive between 0.40m and 0.60m BGL and have similar profiles.

3.3.171 All of the ditches in Trench 185 were overlain by colluvium, (18502), and cut colluvium (18503) = (18514) that contained the flint.

3.3.172 The rest of the ditches identified in this zone did not clearly align with any others. In Trench 177, N – S aligned ditch [17704] (Fig. 75) was only seen in section and was observed cutting colluvium (17703) at a depth of 0.30m BGL. The NE – SW ditch [17904] (Fig. 76) was sealed by colluvial layer (17902) that was cut by Medieval pit [17906]. It survived at 0.70m BGL.

3.3.173 In Trench 180 were intercutting ENE – WSW ditches [18004] and [18007] (Fig. 77), both of which were cut from the same horizon at 0.45m BGL and truncated the lowest colluvial deposit in the trench. The NW – SE aligned ditch [18404] (Fig. 78) cut from the same horizon as [18406] at c 0.60m BGL. Trench 186 also contained E – W ditch [18603] (Fig. 80), which was cut from the same horizon as the Medieval [18605] further down the trench, both surviving at c 0.45m BGL.

3.3.174 Further up the slope, where the overburden thinned out considerably, Trench 191 revealed N – S ditch [19104] (Fig. 83, Plate 66) and NE – SW curvilinear ditch [19106] (Fig. 83) that was recorded at 0.20m to 0.25m BGL. Trench 192 contained intercutting NE – SW ditches [19205] and [19207] (Fig. 84), that were only recorded in section but were visible in both baulks. Both of the features were cut from just below the topsoil which was lying directly on top of the sandy natural. The NW – SE ditch [19409] (Fig. 85) in Trench 194 was observed cutting the Medieval to Post-medieval ditch [19406] and was cut from the same horizon, just under the topsoil that lay directly on the natural.

3.3.175 In this zone there were only three pits identified, all of which were undated. In Trench 190, pit [19002] and pit [19004] (Fig. 82) were only seen in section, surviving just below the topsoil that lay directly on top of the clay natural. In Trench 194, pit [19404] (Fig. 85) truncated linear ditch [19409] and was cut from the same horizon, just below the topsoil.

3.3.176 There was a single, square posthole identified in this zone, [19411] (Fig. 85) and this too was cut from the same horizon as the other features in this trench.

Zone XIIIa and b: Thames Channel (Eastwyke Farm) (Trenches 197 – 204)

Figs. 1, 2, 7, 86 – 89 and Plates 68 – 70

Geoarchaeological Summary

3.3.177 Zone XIII is located some way from the main scheme, on land behind the Spires Hotel, immediately adjacent to the current Thames channel, on the east side of Abingdon Road. Ground levels range from c 55.50m OD in the north, dropping southwards to c 54.3m OD. This zone has been divided into two subzones.

3.3.178 Zone XIIIa (Trenches 197, 198, 199 and 200) is located in the north and is characterised by a relatively thin alluvial blanket and the presence of the remnants of ridge and furrow associated with Eastwyke Farm. The alluvium in this zone generally has a higher silt and fine sand component to that seen on the main scheme and is oxidised to a yellowish orange brown colour.

3.3.179 Zone XIIIb (Trenches 201, 202, 203 and 204) is located to the south and is characterised by thicker deposits of clay alluvium, gleyed and bluish grey in colour towards its base. Severe problems with ground water was encountered in this zone due to the proximity of the Thames channel, particularly Trenches 203 and 204 and access to the base of excavations was prohibited on safety grounds. Consequently, two sequences of cores were extracted from ground level, adjacent to the trenches, to record and sample the sediments in more detail. A sequence of peaty, very organic clay silts, representing a channel fill, were noted in the sequence from Trench 203 (OA1004) underlying clay alluvium and this location was therefore chosen for sample assessment.

3.3.180 Pleistocene gravel (100406) lay at the base of the sequence in OA1004, overlain by silty sand (100405) and sand (100404), also believed to be Pleistocene. At 52.18m OD (2.17m BGL) the Pleistocene deposits were overlain by c 1.4m of organic channel deposits. The basal deposits infilling this channel comprised silt clays (100403) and (100402), with wood fragments, some charcoal and coarse sand lenses. Overlying this was c 0.8m of peaty organic silt (100401), the base of which was radiocarbon dated to the Middle to Late Iron Age at 170-0 cal BC (Beta-480764, 2070±30 BP). This organic sequence was sealed by c 0.50m of silty clay alluvium (100400), onto which a soil (100408) and (100407) had formed. Ground level at this location measured 54.35m OD. Due to limited available sediment from the cores, only pollen was assessed from this sequence.

3.3.181 The pollen assemblage for the lower part of the sequence is broadly similar to that from Trench 15 (Profile B), dominated by an open, herb-rich grassy palaeoenvironment supporting grasses, and mixed herbs. Damp surfaces and/or shallow water are suggested by taxa indicative of sedge fen and/or reed marsh, and to a lesser extent, bur-reed. There was no real indication of cereal cultivation, although there may have been disturbed ground in the vicinity. Towards the top of the sequence into the alluvium there is a much stronger sedge fen signal, potentially representative of a damper environment, though no aquatic taxa were noted. Large grass grains could suggest either wetland grasses or nearby cultivation / crop processing. Like the vast majority of other sequences assessed, tree and shrub pollen values are sufficiently low to indicate either only the isolated growth of individual species, or their growth at distance.

Archaeological Summary

3.3.182 Trench 196 was relocated to Zone Vb due to the presence of a dense service corridor which prevented it from being excavated in its intended position in Zone XIII. Trench 199 (Fig. 7) was also re-designed in the field into four overlapping 10m long offset parallel strips, perpendicular to the long axis of the extant ridge and furrow it was targeting. The ridge and furrow in Trench 199 (Fig. 87) was sampled for Optically Stimulated Luminescence (OSL) dating at the request of the City Archaeologist, David Radford, and the samples retained for future analysis.

Mesolithic – Bronze Age

3.3.183 No archaeological features were present from these periods in Zone XIII.

Iron Age

3.3.184 There were, on the whole, very few archaeological features in this zone, but most of them produced dating of one form or another. The earliest was a root bole feature [19809] (Fig. 86) that contained possible Late Iron Age pottery and was observed at about 0.30m BGL.

Roman – Saxon

3.3.185 No archaeological features were present from these periods in Zone XIII.

Medieval

3.3.186 The only feature dated to the Medieval period in Zone XIII, [20011] (Fig. 88) was interpreted as a tree throw and survived beneath the entire alluvial sequence at a depth of 0.60m BGL.

The extant Ridge and Furrow within this area, although undated by artefacts is likely to be Medieval in date.

Post-medieval

3.3.187 Another root derived feature [20106] (Fig. 89) contained Post-medieval pottery dated to AD 1550-1700, and closely dated to this was the NW – SE ditch [19804] (Fig. 86) which contained clay tobacco pipe and pottery, both material classes dating to AD 1690-1720. These two features were both cut from just below the topsoil.

Modern

3.3.188 The only other features in this zone dated to the Modern period. One was pit [19913], that contained a 20th century Marmite jar and the other was pit [20007] (Fig. 88) that did not contain any dating but was cutting through the topsoil.

3.4 Artefact summary

3.4.1 The total number of artefacts recovered by hand during excavation and from soil samples has been collated by material type and zone and are presented in Table 1 below. Full specialist reports are presented by material type in Appendix B (Document 2: Appendices).

Table 1: Quantification of artefactual material by zone (no. of items unless stated)

Zone	I	II	IV	V	VI	VII	VIII	IX	XI	XII	XIII	Total
Prehistoric pottery						35			68	3		106
Late Iron Age and Roman pottery					2	2			74	15	1	94
Medieval and later pottery	6			20	27		3		3	13	9	81
Clay tobacco pipe	1			2			4			3	1	11
Ceramic building material		50		8						2	2	62
Fired clay						247	3		66	1		317
Flint				45		157	1		104	26	1	334
Cremated human bone (g)									900.7			900.7
Animal bone	1	1	1	171	13	14	5		279	28	3	516
Glass	1			4							5	10
Metal		1		4	1		2		1	9		18
Worked wood				3	2	3	7					15
Stone				3		1	1					5
Clinker		50+		1								1

3.5 Sample summary

3.5.1 The Table 2 presents a quantification of soil samples collected by zone and those assessed by material category as part of this phase of work. Full specialist reports are presented in Appendix D (Document 2: Appendices).

3.5.2 The large number of bulk samples (which includes 10L and 40L samples) were taken in an attempt to compensate for the sparseness of dateable artefacts. It was anticipated that plant remains (charred and uncharred) could be used to obtain radiocarbon dates, as well as provide information on past land-use and vegetation. Those samples not examined at this stage, along with the 2016 borehole cores, have been retained in the interim, along with processed flots and extracted ecofactual material should further analyses be required for the mitigation stage.

Table 2: Sample summary

Zone	Samples collected				Samples assessed					
	Cores	Cores (bags)	Monoliths	Bulk	Pollen	WPR	Molluscs	CPR	14C	OSL
I	0	8	4	9	0	4	2	1	4	0
II				5				1		
IV	0	7	12	31	6	7	2	0	2	0
V	0	13	24	69	5	14	4	11	5	0
VI	3	49	10	40	4	7	4	1	5	0
VII	0	0	2	32	0	4	2	20	5	0
VIII	0	8	5	17	5	6	0	3	3	0
IX	0	0	5	1	0	0	0	1	0	0
XI	0	0	0	20	0	0	0	19	3	0
XII	0	0	0	3	0	0	0	3	0	0
XIII	4	7	0	0	5	0	0	0	1	3
Total	7	92	62	227	25	42	14	60	28	3

WPR – waterlogged plant remains, CPR = charred plant remains, 14C = radiocarbon date

3.6 Radiocarbon dating

3.6.1 Overall, there was a general paucity of datable artefacts across the scheme (worked flint is not often diagnostic); many features did not yield any artefacts during sample excavation. Therefore, where possible, a range of material (eg. wood, charcoal, seeds) recovered from soil samples was submitted for radiocarbon dating to further clarify the chronology of the archaeological remains, as well as the organic sediment sequences.

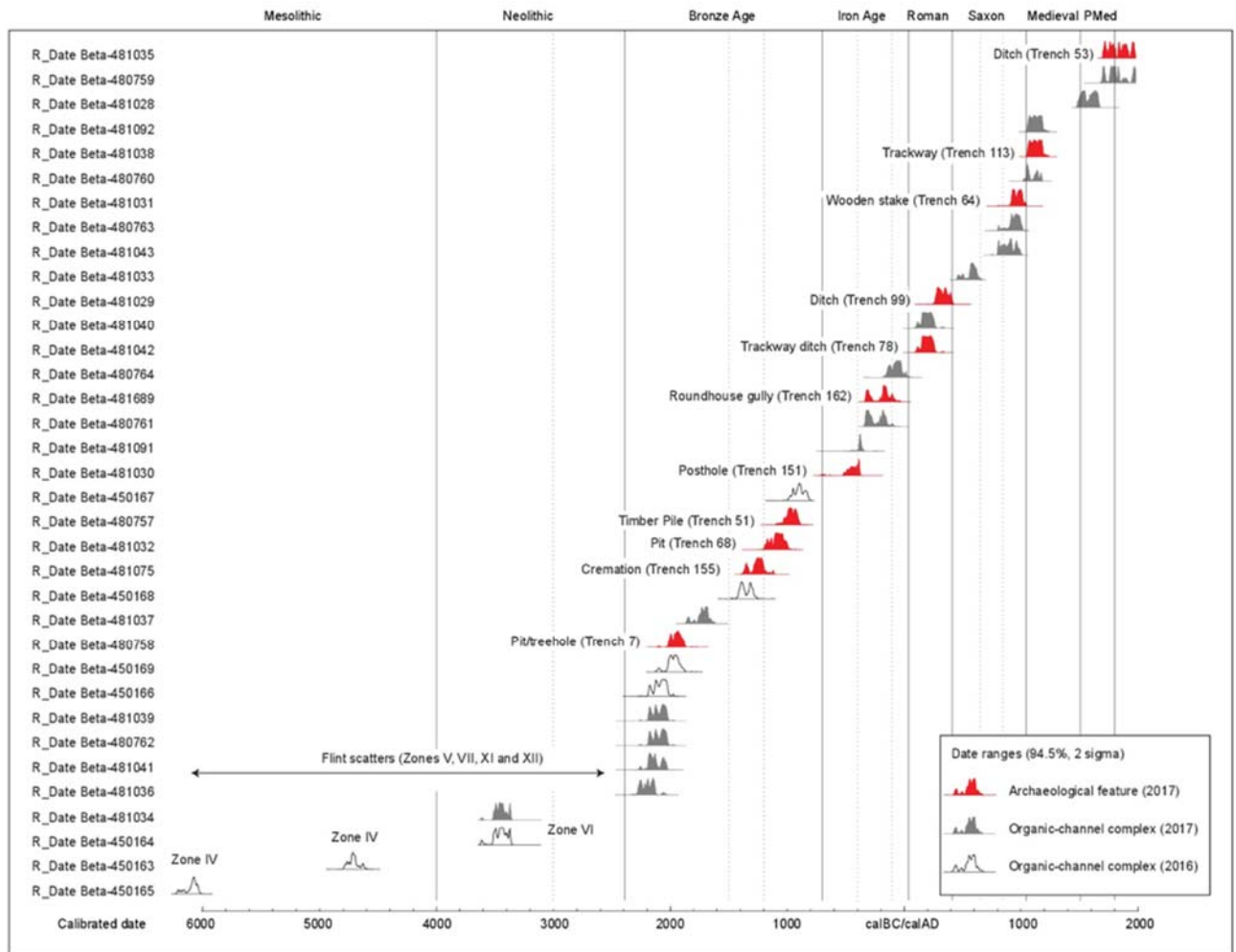
3.6.2 For this phase of work, 28 samples were submitted to Beta Analytic in Florida for AMS determinations. Table 3 presents the results of the radiocarbon dating in tabular format. Table 4 illustrates the full calibrated date ranges in calendar years, plotted against archaeological periods and includes the dates processed from the 2016 borehole cores. Dates are quoted at 95.4% confidence (2 sigma), rounded to the nearest 10 years. The laboratory radiocarbon certificates are included in Appendix E (Document 2: Appendices).

Table 3: Radiocarbon dates

Zone	Tr.	Ctxt	Material	Feature	Lab Code	14C (BP)	δ13C	Calibrated date (94.5%, 2 sigma)
Ia	7	709	Hazelnut*	TT/pit [707]	Beta-480758	3600±30	-28.4	2030-1890 cal BC
Ib	4	413	Seeds	Channel [415]	Beta-481091	2330±30	-28.9	490-260 cal BC
	4	414	Seeds	Channel [415]	Beta-481041	3740±30	-28.1	2270-2030 cal BC
	4	406	Roundwood	Channel [419]	Beta-481039	3720±30	-31.2	2200-2030 cal BC
IV	15	1511	Roundwood	Channel [1520]	Beta-480759	170±30	-28.7	1720 cal AD+
	15	1515	Roundwood*	Channel [1528]	Beta-480760	980±30	-26.4	990-1150 cal AD
Va	24	2423	Seeds	Channel [2415]	Beta-480761	2170±30	-26	360-120 cal BC
	24	2409	Seeds	Channel [2416]	Beta-481037	3430±30	-22.1	1880-1640 cal BC
Vb	29	2912	Seeds	Peat	Beta-480762	3720±30	-28.6	2200-2030 cal BC
	39	3920	Seeds	Channel [419]	Beta-481092	930±30	-29	1020-1160 cal AD
Vc	53	5331	Oak sapwood	Ditch [5333]	Beta-481035	140±30	-27.3	1670-1940 cal AD
VI	51	5113	Oak sapwood	Wooden pile	Beta-480757	2830±30	-26	1080-910 cal BC
	42	105003	Roundwood	Channel	Beta-481028	350±30	-26.5	1630-1460 cal AD
	42	105004	Seeds	Channel	Beta-481040	1840±30		90-240 cal AD
	56	5616	Seeds	Channel [5618]	Beta-481036	3780±30	-26.8	2300-2060 cal BC
	56	5608	Seeds	Channel [5618]	Beta-481034	4660±30	-27.7	3520-3360 cal BC
VII	64	6408	Bark	Wood stake	Beta-481031	1100±30	-28.8	890-1010 cal AD
	68	6805	Hazelnut	Pit [6804]	Beta-481032	2910±30	-22	1210-1010 cal BC
	78	7804	Seeds	Ditch [7805]	Beta-481042	1840±30	-24.5	90-240 cal AD
	99	9906	Wood	Ditch [9907]	Beta-481029	1730±30	-26.8	240-390 cal AD
	72	7207	Roundwood	Channel [7212]	Beta-481033	1510±30	-28.2	430-620 cal AD
VIII	113	11305	Roundwood	Trackway Peat	Beta-481038	930±30	-26.8	1020-1160 cal AD
	127	12711	Sapwood/bark	Worked wood	Beta-481043	1160±30	-24.7	770-970 cal AD
	127	12709	Bulk Sediment	Peat	Beta-480763	1130±30	-27	990-780 cal AD
XI	151	15110	Cereal grains*	Posthole [15109]	Beta-481030	2380±30	-23.1	730-390 cal BC
	155	15504	Bone*	Cremation [15505]	Beta - 48075	3020±30	-19.2	1390-1130 cal BC
	162	16207	Charcoal*	Roundhouse gully [16206]	Beta-481689	2150±30	-24.5	360-60 cal BC
XIII	203	100401	Bulk sediment	Channel fill	Beta-480764	2070±30	-27.3	170-0 cal BC

Shaded = organic/channel sequence, unshaded=archaeological feature, * = charred

Table 4: Calibrated radiocarbon date ranges (Calendar years)



4 DISCUSSION

4.1 Reliability of field investigation

4.1.1 The trenches represent a c 2% sample of the available area of the proposed scheme, this has proven substantially adequate to inform, understand, assess and draw wider conclusions on the potential archaeological and geoarchaeological heritage assets that lie within the scheme area.

4.1.2 The scope of the evaluation, trench positions and their design were a result of a deliberate, iterative, staged and sequential, approach to studying the landscape and areas of archaeological and geoarchaeological potential crossed by the scheme.

4.1.3 Each trench was reviewed and the excavation strategy for the archaeological and geoarchaeological remains were discussed and agreed on site by a number of experienced archaeologists from all parties involved in the scheme, including CH2M, the EA and OA, as well as the Archaeological Curators from both the City and the County. A single advisory visit was also made by the Regional Science Advisor from Historic England.

4.1.4 It became clear during the fieldwork that the volume of cultural artefacts from archaeological features and deposits was low. An extensive programme of soil sampling was employed to compensate and provide, through wet sieving and the extraction of carbonised and waterlogged plant remains for radiocarbon dating, for a more complete chronological understanding of the remains.

4.1.5 Two geoarchaeologists from OA were present on site for the duration of the evaluation trenching in order to advise the field team on the recording and sampling of floodplain sediment sequences exposed in the trenches. The samples were recovered for more detailed sediment description, assessment for preservation of a range of palaeoenvironmental remains (pollen, plant remains, insects and molluscs), as well as radiocarbon dating.

4.1.6 OAs network of highly experienced in-house and external specialists have contributed to the post-fieldwork assessment. The project has been overseen by OA Project Managers from the Field and Geoarchaeology Departments, with significant experience of the archaeology of the Oxford region and the Thames floodplain. This level of experience within the team and rigour of approach, with checks and counterbalances, allows for a high level of reliability to be attached to the quality of the fieldwork and its results.

4.2 Evaluation aims and objectives

4.2.1 All the aims and objectives of the evaluation work as set out in the WSI (CH2M, 2017) have been as comprehensively addressed as possible by the extensive fieldwork programme and detailed post-fieldwork assessment.

4.2.2 Nearly all the trenches, that were required, were excavated successfully. The general level of groundwater remained relatively consistent at c 1.00m BGL and the negative effects from significant ingress of groundwater was kept to a minimum. Where entry to the trenches, to record key sediment sequences, was considered unsafe, due to unmanageable ingress of groundwater, supplementary coring (extracted using a Cobra Power Auger) was undertaken (Zone VI - Trench 42 / BH1050, Trench 47 / BH1051, Trench 56 / BH1052, Zone XIIIb - Trench 201 / BH1003 and Trench 203 / BH1004).

4.2.3 The lack of evaluation in Zone IV does create a gap in our understanding of the potential archaeology of the route. However, given the excellent results from the EM survey in this area, combined with other evidence from the evaluation, this zone is likely to contain similar evidence from the complex channel sequence evaluated in Zones 1b and VI, with similarly dispersed waterside Mesolithic – Neolithic and Bronze Age evidence as seen in Zones 1a, Va, Vc and VI. The north-east – south-west orientation of the Medieval Causeway in Trench 20 (projected from the direction of the wheel-ruts, see Fig. 9) in Zone Va would suggest that this feature does not extend into the southern limits of Zone IV.

4.2.4 Very significant water ingress in the north of Zone IV was problematic, although useful historic sequences were obtained from Trench 15 – but prehistoric sequences akin to data retrieved from the complex channel sequence, are likely to be present also.

4.2.5 It should be noted that the understanding of geoarchaeological topography surrounding the significant discovery of the well-preserved Late Bronze Age timber post alignment in Trench 51 (Zone VI) may be enhanced by further EM Survey (as per Zone IV) and may assist predictions of its extent beyond the trench limits.

4.2.6 Restrictions on trench position and depth were however problematic in Zone II and any meaningful data on the nature and preservation of Botley Mill and its associated water channel regime was not able to be recovered (bar the eastern edge of a single channel in Trench 10). Where not truncated by later channel wall construction it is likely that preservation of these historic structures is relatively good below the significant depth of made ground (2.00m+ BGL) on the east bank of Seacourt Stream, immediately south of Botley Road.

4.2.7 The decision to excavate the trenches to the first significant archaeological horizon, the Pleistocene gravels, or to the proposed differing impact of the entire scheme + 0.5m (to a maximum depth of 2.00m BGL) has provided a broad and comprehensive data set that can be used to inform direct and indirect design and construction process impacts upon the heritage resources encountered.

4.2.8 A full and comprehensive physical and digital archive has been compiled. Of particular note is the projects invaluable GIS model. Significant data on the deposit sequences, underlying gravel and surface topography, logged by OA, has been shared with engineers from CH2M to assist in the scheme's design.

4.2.9 All artefacts and ecofacts have been stabilized and stored appropriately. Samples that have not been assessed at this stage are available for future study, if and when required.

4.3 Statement on the preservation of organic remains and metal artefacts

4.3.1 Overall the character of the sediment sequences observed across the floodplain and the relationship to the buried topography of the Northmoor Gravel surface were remarkably consistent with the results of the coring from the previous geoarchaeological survey and deposit modelling (OA, 2016; 2017a). However, the trenching exercise provided the exposure of much larger sediment sections which allowed channel profiles to be identified and examined more fully. This has been particularly useful for examining the upper alluvial blanket and channels that originate within this sequence.

4.3.2 The majority of the scheme runs through the valley floor of the River Thames, which is crossed by multiple extant streams and drainage ditches. The water table during the

evaluation was encountered at a relatively consistent depth of c 1m BGL (although there were local variations), during the winter months this rises and in most recent years the area is locally boggy, if not inundated. The uppermost level of preservation of the timbers that constituted the Late Bronze Age post alignment in Trench 51 (Zone VI) was recorded at 54.52m OD, c 1m BGL. This and the preservation of peat and organic channel deposits (dating from the Mesolithic right through to the Saxon and Medieval periods) at similar and lower depths BGL suggests the water table has rarely dropped below this level for at least c 3,000 years, but may have been lower prior to that.

4.3.3 The previous geoarchaeological survey indicated that most of the organic silts and peat sequences were of prehistoric date and associated with former courses of the Seacourt-Hinksey and Bulstake Streams. The current evaluation however has identified organic channel sequences of historical date (Roman, Saxon, Medieval and Post-medieval). This includes the sequences from Trenches 15 (Zone IV), 39 (Zone Vb), 42 (Zone VI), 72 (Zone VII), 113 (Zone VIII) and 127 (VIII).

4.3.4 Taken together, the samples from the previous survey and these evaluation trenches provide an almost unbroken succession dating back to c 6000 cal BC with high potential for landscape reconstruction (from pollen, WPR and insects), associated with human activity. This is clearly demonstrated in the plot of radiocarbon dated sequences (see Section 3.6 and Document 2: Appendix E). The samples from both phases of fieldwork have been retained for future analyses.

4.3.5 The low lying riverine topography, the apparent consistent lowest level of the water table and the nature of the clay alluvial blanket within the valley floor (up to c 1.5m thick in places), has created a waterlogged burial environment where preservation of organic remains below c 1.0m BGL is extremely good. At this level and below there is excellent potential for the preservation of animal and plant ecofacts, agricultural practices, as well as man-made objects and timber structures (both utilitarian and ritual) from the last 8,000 years.

4.3.6 To the west of the valley floor where the ground rises the alluvial fills of the archaeological features, such as ditches (from the Bronze Age through to the Medieval and potentially later periods) in Zone XI attest to significant flooding events extending onto the edges of the valley. But here above the reach of the permanent water table the preservation of waterlogged remains is relatively poor.

4.3.7 Charred plant remains were generally sparse in deposits of all ages, but where present is in reasonably good condition. While any charred remains recovered from channel fills and alluvial deposits may be of limited significance, since charcoal in particular is resistant to decay and may be transported and redeposited in a fluvial environment, where concentrations of charcoal are discovered it is likely to be informative. One example where further charcoal identification may be appropriate is the Early Bronze Age tree-throw [707], radiocarbon dated to 2030-1890 cal BC (Beta-480758, 3600±30 BP), where an accumulation of burnt material may relate to human activity. Occasional fragments of charred grain within a colluvial layer associated with early prehistoric flintwork in Zone XI may be intrusive, but if of a similar date to the flints would be significant as an indicator of early agriculture and landscape (Beckley and Radford 2012) and this should be borne in mind for any future sampling strategy. Early Neolithic cereal cultivation is known from Yarnton (Hey *et al.* 2016, 29-30). Charred grain, although sparse, was also found in a drip gully and a post-hole within Zone XI and have been

radiocarbon dated to 1390-1130 cal BC (Beta-48075, 3020±30 BP) and 730-390 cal BC (Beta-481030, 2380±30 BP) and given the evidence for human settlement in this area, may be more abundant in currently unexcavated features. Any future sampling strategy for charred remains should include comprehensive coverage of prehistoric features, particularly those associated or in the vicinity of settlement.

4.3.8 Deposits of Roman, Saxon and Medieval date have been unproductive as far as charred remains are concerned, but this is likely to be a function of the types of deposits sampled. Any future sampling strategy should target features associated with settlement activity, or deposits within features such as ditches and channels where dumps of charred material are present.

4.3.9 Waterlogged wood, plant remains, insects and pollen are evidently preserved across the scheme in lower-lying (floodplain) areas and excellent preservation of wood and seeds has been demonstrated associated with organic and gleyed clays and silts, dated to both the prehistoric period and historic period. Unlike charred plant remains which tend to be more robust, these waterlogged remains by their nature are fragile and vulnerable to any changes in burial environment caused by changes in the groundwater regime. Preservation is generally poorer in the upper, partially oxidized, clay alluvial deposits that generally lie within c 0.6m of current ground level. The assessment of these waterlogged remains has demonstrated the potential wealth of further information that could be provided about past landscapes and land-use with more detailed work. Specifically, further investigation can identify the nature and timing of changes in the landscape and the interaction of different processes (e.g. vegetation change, human activity, climate change, hydrological change) thereby increasing our knowledge and understanding of the site and nearby area.

4.3.10 The small assemblage of worked waterlogged wood was submitted for specialist assessment. Several species were identified including oak, willow, elder, ash, hazel and field maple. This material has been preserved in waterlogged anaerobic conditions and it appears that these conditions were mostly maintained up until exposure during excavation. Some of the pieces exhibited longitudinal shrinkage fissures that indicate some drying out had taken place. However, these fissures were filled with dense sediment from the immediate burial environment. This indicates that the drying had taken place in situ and whilst the pieces were still buried, at some remote point in antiquity. Most of the material was in good condition and firm to touch, but with some surface abrasion and occasional areas damaged before burial and inadvertently during recovery. Tool marks were clearly preserved on several of the pieces, the form of the facets indicating the use of at least two distinct types of axe blade.

4.3.11 Of the bulk samples processed, it is evident shell of land and freshwater molluscs are only sporadically preserved and in relatively low abundance. All of the assemblages examined derive from floodplain channel sequences and shells are fragile, often with pitted surfaces. The shells are of value as they can provide important information to support the conclusions of other, better preserved palaeo-environmental remains. However, should the Scheme proceed to excavation it is recommended molluscs are examined from bulk and incremental samples collected for plant remains. Onsite sampling specifically for molluscs should be targeted only on individual sequences or features that are clearly observed as shell rich.

4.3.1 As with the molluscan remains, animal bone was sporadically recovered across the scheme with the majority of material deriving from a small number of archaeological features

in Zones V and XI (Table 1). Bone condition varies across the scheme but typically bone is in poor condition and often highly fragmented – only 12.4% of the assemblage was identifiable to species, although this figure has been skewed by high levels of fragmentation in a few contexts. Much of the bone was weathered, brittle and pale with extensive surface flaking and cracking. There did not seem to be a correlation between bone condition and age: the most poorly preserved identified bones came from deposits of medieval or post medieval date as well as from early prehistoric contexts. An attempt to radiocarbon date a cattle mandible from roundhouse gully [16208] in Zone XI failed due to the low level of collagen present. Diagenesis of bone in archaeological contexts is a complex interplay of several factors including depositional environment and length of burial but here it seems likely that in many areas the typically slightly alkaline soils together with a fluctuating water table has caused loss of collagen and the expansion and contraction of clay may also have contributed to the high level of fragmentation. Surface weathering may also have occurred if the bone was exposed to the elements prior to burial. However, since the total assemblage size is very small it becomes problematic to use the data in a predictive way, and all bone should be collected in any future excavation. Any early prehistoric bone will be particularly important.

4.3.2 The metal finds included a very small assemblage of mainly iron objects, including parts of four horseshoes and occasional copper alloy. The iron was reasonably well-preserved, although surface detail was somewhat eroded. Much of the material was heavily concreted with pebbles and gravel, although below the concretions the objects seem to have been reasonably well-preserved.

4.4 Conclusions

4.4.1 The dating evidence from recovered artefacts (although rather limited in number and in the case of the early prehistoric pottery, relatively poorly preserved) were significantly enhanced by an extensive and varied programme of soil sampling which allowed for a targeted and comprehensive selection of radiocarbon determinations (28 in total) and led to a site chronology spanning 8,000 years from the Early Mesolithic to the modern periods. The site chronology includes the dating of palaeochannels and archaeological activity alike.

4.4.2 Many geoarchaeological deposits contained significant amounts of well-preserved waterlogged organic remains providing environmental and landscape evidence that establishes the wider setting for the varied and evolving contemporary evidence for the c 6,000 year period for which human activities were recovered.

4.4.3 It should be accepted that the evaluation has only revealed an indication of the reality of notoriously complex water channel / floodplain sequences – but a solid baseline and detailed broad understanding has been established.

4.4.4 Broadly speaking the scheme crosses a landscape that has been shaped and exploited by human cultures, along with changes in climate for millennia. Much of the evidence is rural and agrarian in nature which left diffuse and ephemeral archaeological remains throughout the landscape with limited material cultural assemblages. That said, the results are significant and the evaluation has revealed elements of a wider and more comprehensive picture from almost every archaeological period from the resource exploitation of hunter-gatherers, to the inception, adoption and adaptations of agriculture and permanent settlement patterns.

4.4.5 The results, build upon previous work and have been organized into thirteen Geoarchaeological Zones (numbered I – XIII), which relate to the underlying topography of the area and offer a framework for a coherent understanding of the full range of archaeological and geoarchaeological discoveries.

4.4.6 Although there was a general paucity of artefactual evidence and many features remain undated, an extensive and targeted programme of soil and sediment sampling from both archaeological features and geoarchaeological palaeochannels and alluvial sequences was undertaken and allowed for a comprehensive set of radiometric dates (28No.) to be obtained, giving an almost unbroken c 8,000 year chronology spanning the Mesolithic to the Modern periods:

- Late Mesolithic – Early Neolithic hunter-gatherer activity areas both in the valley floor and on the western slopes (where possible in-situ stone tool preparation was identified);
- an isolated Middle Bronze Age human cremation and flint tool findspots on the lower western valley slopes;
- a Late Bronze Age timber post alignment/structure perhaps contemporary with the start of Late Bronze Age – Early Iron Age round-house occupation on the lower western slopes associated with a hint of land division – perhaps agrarian/pastoral field-systems;
- Middle - Late Iron Age roundhouse occupation on the lower western slopes (interdigitated with episodes of colluviation) and the suggestion of the development of rectilinear field systems extending into the valley floor;
- a Roman trackway and square enclosure within the valley floor – perhaps developing earlier Iron Age land use and division;
- Late Saxon – Early Medieval stone causeways;
- Later Medieval stone causeways across the floodplain, one associated with a documented principal route into Oxford from the west via North Hinksey village and the other associated with South Hinksey village. These should be considered in context with the previous discovery of the Medieval causeway and associated stone structures under Old Abingdon Road (and leading to the Grandpont). The suggested survival of channels associated with Botley Mill. Ridge and Furrow to the east of Abingdon Road.
- Post-medieval renewal and maintenance of the Old Abingdon Road routeway. The continued relevance of Botley Mill and its' associated channels should also be considered.

4.4.7 The Geoarchaeological results identified palaeochannels with organic silts and peat deposits from the Mesolithic through to the Modern periods allowing for the broad temporal range of human activity listed above to be placed within the context of contemporaneous evolving and shifting riverine environments and the wider valley landscape.

4.4.8 The low lying riverine topography, the apparent consistent lowest level of the water table and the nature of the clay alluvial blanket within the valley floor (up to c 1.5m thick in places) has created a waterlogged buried environment where preservation of organic remains

below c 1.0m BGL is extremely good, with excellent potential for the preservation of animal and plant ecofacts, agricultural practices, as well as man-made objects and structures (both utilitarian and ritual) from the last 8,000 years.

4.4.9 Colluvial episodes during the later prehistoric period on the lower western slopes also present the potential for unusually well-preserved occupation evidence for the Late Bronze Age – Late Iron Age settlement identified in this area.

4.5 Significance and potential

4.5.1 This section presents a consideration of the archaeological and geoarchaeological evidence from the evaluation, in relation to the nine period based resource assessments and research agendas published in a set of documents that constitute the Oxford Archaeological Plan (OAP), (Oxford City Council, 2013).

4.5.2 As stated in Section 1 the Oxford FAS crosses two administrative districts; the Vale of the White Horse (Oxfordshire County Council) - the northern section, and the City of Oxford (Oxford City Council) - the southern section, the divide follows the course of the Hinksey Stream and the Hogacre Ditch). This division runs through the middle of the wider landscape of the Thames Valley floor, or Land Characterisation 'Zone B - The Thames floodplain and 1st terrace gravel islands' (OCC, 2013). To the west, within the Vale of the White Horse, the scheme also covers the Lower and Upper slopes of the hills on the western side of the Thames Valley floor.

4.5.3 Although the OAP specifically relates to the Oxford City Council administrative area, these documents were drawn up with reference to the earlier published Solent-Thames Research Agendas (OA, 2010), which considers the archaeological resource on a regional basis (including Oxfordshire) and therefore they are considered as pertinent and sufficient in assessing the findings from the whole Oxford FAS project area including both the Vale of the White Horse as well as the City of Oxford.

4.5.4 A series of period specific tables will summarise pertinent elements of the OAP, the results of the evaluation and comment on the significance of the archaeological and geoarchaeological heritage assets that have been discovered. A short comment is also offered on the impact of the scheme.

Table 5 Mesolithic Period overall summary

Period (with Generic Date Ranges)	Chronology	Landscape	Burials/ritual	Settlement	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
Mesolithic (8500 - 4000 BC)	The chronology of the Mesolithic is based upon stone tool technology typologies and C14 dates	Landscape remains of considerable interest with regards to understanding the utilisation of the Upper Thames and its surroundings during this period. Furthermore peat deposits within the Local Authority Area offer an important source of information regarding climatic and environmental change during these periods.	Exceptionally rare and hard to recognise within the national archaeological record	Can occupation/utilisation sites be identified; how do these vary across topographies and geologies? Was the Corallian Ridge a preferred location for activity areas in the Mesolithic; if so what factors influenced this?	Can further examination of the geology of recorded assemblage sites aid more detailed mapping of potential activity areas? What do finds from the LAA tell us about the movement of raw materials such as flint? What can this tell us about changes in landscape use, technological and social organisation?	ENVIRONMENTAL EVIDENCE VALLEY FLOOR: Zone IV OA106 (Borehole) Early - Middle Mesolithic 6200-6020 cal BC (4.58 - 4.59m bgl) and Late Mesolithic 4790-4615 cal BC (2.91 - 2.93m bgl) Paleochannel. HUMAN ACTIVITY EVIDENCE VALLEY FLOOR: Zone Va Trenches 19 - 22 Late Meso - Early Neolithic worked flint - activity site(s) probable nearby - possible horizon within, or at base of the alluvium. Zone Va Trench 46 residual Meso-Early Neolithic worked flint in Ditch. Zone VI Trench 49 late Meso flint from natural features, refuse from domestic hearth? Zone VII Trench 61 sealed by alluvium late Meso flint work from a disturbed tree-throw and 'possible hearth'. HUMAN ACTIVITY LOWER WESTERN SLOPES: Zone XI within colluvium in Trenches 142 and 144 Late Meso-Early Neolithic worked flint - a domestic site where tool use was important and where tool production had a lesser role. HUMAN ACTIVITY UPPER WESTERN SLOPES: Zone XII Trench 185 within colluvium - possible in situ horizons/foci nearby.	The Mesolithic is extremely poorly represented in the project area at present although this is likely to be due to lack of recording rather than an absence of human activity of this age. There are some stray finds from along the alluvial floodplain around the city and two larger assemblages from Iffley Fields on the gravel/mudstone interface and Littlemore Hospital on the Corallian Ridge. There are also small assemblages from higher ground around the city at Boars Hill and Shotover.	HIGH Regional and Local Significance, possibly HIGH National Significance. Mesolithic paleochannel deposits have been identified in Zone IV only (but maybe present on other areas of the route - along the complex channel corridor). Mesolithic flintwork (some in situ and some disturbed) indicate rarely identified working / activity areas, uniquely from within the valley floor from adjacent Zones VI and VII, as well as from previously known topographies on the lower and upper valley slopes to the west in Zones XI and XII. In combination the artefacts and the environmental evidence would complement each other significantly and greatly further understanding of human activity, environment and resource exploitation for this under-represented and poorly understood period.
				The heavy braiding of the river channels in the Palaeolithic to Mesolithic created a number of islands or islets. Is the evidence that these were these utilised as temporary camps, working areas within this section of the Upper Thames? Can targeted sieving of floodplain sites produce flint assemblages? E.g. as at Denham Area	Further investigation into the effect of fluvial activity such as erosion and sedimentation on the local environment is desirable. E.g. the effect of fluvial activity on the condition of flint implements to assess degree of ex situ reworking.		Whilst no definite in situ Mesolithic sites have been archaeologically excavated within the Oxford City district to date, residual artefacts have been recorded in several excavations.	
				There is some limited evidence that favoured sites attracted activity throughout the prehistoric period (e.g. low levels of material from multiple periods at Manor Ground, Headington); are there other similar sites? What were the factors that made such sites attractive?				

Table 6 Neolithic Period overall summary

Period (with Generic Date Ranges)	Chronology	Landscape	Burials/ritual	Settlement	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
Neolithic (Earlier Neo 4000 - 3000BC; Later Neo 3000 - 2400 BC)	Local environmental sequences, associated with C14 dating, have provided evidence for the climate during the Neolithic (Robinson and Lambrick 1984; Parker 2006; Robinson 2003) and C14 dating of material recovered from Neolithic-Bronze Age sites in and around Oxford has provided good evidence for an extended period of monument construction and utilisation of the Oxford promontory spanning over two thousand years from the Middle Neolithic.	Initial limited tree clearance on the 2nd gravel terrace is thought to have been undertaken from the late Neolithic onwards (Robinson and Lambrick, 1984). Partial clearance in the Middle Neolithic is suggested by the Radcliffe Infirmary enclosure, and in the Later Neolithic around the henge at Keble College.	The creation of an Earlier Neolithic sub-rectangular enclosure in the middle of the 4th millennium BC at the Radcliffe Infirmary site on the Summertown Radley gravel terrace. Limited evidence for activity on the gravel terrace and Corallian ridge associated with Peterborough ware pottery (broadly 3400-2750 BC) Phased monumental building on the Summertown Radley gravel terrace including a large Late Neolithic henge monument (Keble College).	The area presents excellent opportunities to study settlement, mobility and land management patterns in relation to the monument complexes and has excellent potential for well preserved environmental deposits within the River floodplains and for important pollen sequences within local peat deposits. Evidence from a similar landscape location just to the north of Oxford at Yarnton (Hey, 2017) would suggest that Early Neolithic occupation (rectangular and circular houses) are constructed in such environments from c 3800 - 3600 cal BC	Much of the current evidence in the area is from chance findings and isolated features, as well as ritual monuments on the promontory. With increased numbers of finds and artefacts, and the more reliable statistical conclusions that would offer, perhaps different activities in different locations could be identified.	ENVIRONMENTAL EVIDENCE VALLEY FLOOR: Dated environmental evidence has been recovered from within the 'complex channel band', notably from within Zone VI. Zone VI Trench 56 3520 - 3360 cal BC Early Neolithic Organic Silts in Paleochannel. Zone VI OABH104A 3620-3365 cal BC Early Neolithic Organic Silts in Paleochannel. HUMAN ACTIVITY EVIDENCE VALLEY FLOOR: Zone Va Trenches 19 - 22 Early Neolithic flint work within or at base of alluvial sequence. Zone Vb Trench 46 Meso - Early Neolithic worked flint in natural gravels. Zone VI Trench 49 late Meso-Early Neo flint from natural features, domestic hearth associated refuse. HUMAN ACTIVITY EVIDENCE LOWER WESTERN SLOPES: Zone XI Trench 144 Meso-Early Neolithic worked flint in colluvium. Zone XI Trench 160 residual Early Prehistoric worked flint - possible focus nearby. Zone XI Trench 161 residual Early Prehistoric worked flint in Pit fill - possible focus nearby. HUMAN ACTIVITY EVIDENCE UPPER WESTERN SLOPES: Trench 185 Early Pre-historic worked flint in colluvium possible in situ horizons and foci nearby.	Much of the evidence for this period derives from 'ritual' monument types, and isolated pits on the well draining 2nd terrace gravels of the Oxford peninsula, any evidence of the environment, such as the Early Neolithic date from the basal deposits of a paleochannel channel in Zone VI are enhanced by the hints from residual finds in Zone Vc and Va of nearby human activity at the edges of channels in the Thames Valley Floor. Potential in-situ tool working on its' lower western slopes in Zone XI is notable and would significantly increase our knowledge of the domestic exploitation regimes etc of surrounding habitats. Much of the Neolithic flintwork has been attributed to the Late-Mesolithic - Early Neolithic transition - indicating activity in the landscape prior to the ritual monumental construction.	HIGH Regional and Local Significance. Mesolithic-Early Neolithic flintwork (some in situ and some disturbed) indicate rarely identified working / activity areas, both within the valley floor, the lower and upper western slopes. An increase in assemblage size, and further opportunities for C14 work may clarify the broad transition date. In combination the artefacts indicating exploitation of the environment of the valley and its' slopes, and the environmental evidence presenting the wider landscape in which these activities are taking place, would enhance each other significantly and greatly further understanding of this under-recognised and poorly represented period.

Table 7 Bronze Age Period overall summary

period (with Generic Date Ranges)	Chronology	Landscape	Burials/ritual	Settlement	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
Bronze Age (Early 2400 - 1500 BC; Middle 1500 - 1100 BC; Late 1100 - 700 BC)	Much of the chronology of this period in this area is dominated by evidence gained from the funerary monuments on the Oxford promontory. Metalwork types and composition are also significant, as is the introduction of Beaker Ware.	At Port Meadow yellow-brown un-gleyed clays were recorded at the base of two of the Bronze Age barrows indicating drier conditions in the area during their construction (probably in the Early Bronze Age), while at King's Weir (a short distance to the north) the evidence suggests wetter conditions during the later Bronze Age. By the Late Bronze Age to Middle Iron Age a shallow lake had formed over much of the St Aldates area and evidence of common reed has been recorded from organic sediments on its bed (Robinson and Lambrick, 1984). The environmental data currently points to a land-use model for the Corallian ridge of localised pastoral farming with perhaps small scale arable activity by the Middle-Late Bronze Age.	Monumental funerary construction in the Early Bronze Age on the Summertown Radley gravel terrace with extensive barrow cemeteries (broadly 2200-1600 BC). Limited evidence for Late Bronze Age activity on the Corallian ridge including a Late Bronze Age urn at Iffley and a fragment of Deverell-Rimbury pottery from Minchery Farm, Littlemore (notably located away from the 2nd gravel terrace complex). Ritual/funerary complex activity on the 2nd gravel terrace ceases to be respected by the local population- date unknown but evidence for the silting up of ditches by the Late Bronze Age – Early Iron Age transition. There are also indications of funerary monuments in the valley floor just upstream from the FAS at Port Meadow.	Evidence for late Beaker domestic activity on the edge of the flood plain at the Hamel (circa 1500 BC). Evidence for Early Bronze Age settlement on Oseney Island just to the north of Minster Ditch	It should be noted that a significant quantity of Bronze Age metal artefacts have been recovered from nearby Radley, providing some of the earliest dates for metallurgy in the county. Copper wire ring straps and a gold-covered bead from Barrow Hills, Radley, are dated to 2490-2200 BC and referenced as the earliest metal find in the country. A bronze dagger from Radley is one of a group from Oxfordshire, that have been dated to 2460-2040 BC, currently the earliest evidence for the use of Bronze (Bayley, Crossley and Ponting 2008: 42). The Upper Thames is therefore a significant area for the study of early metal usage.	ENVIRONMENTAL EVIDENCE VALLEY FLOOR Zone Ib Trench 4 EBA 2200 -2030 cal BC (-1.60m BGL) and 2270-2030 cal BC (-1.80m BGL). Peat in paleochannel. Zone Ib OA111(BH) EBA 2115-1900 cal BC Paleochannel. Zone Va Trench 24 (also in Trench 33) EBA 1880-1640 cal BC (-1.14m BGL) Peat in paleochannel. Zone Va OA109(BH) LBA 1000-835 cal BC (-1.50m BGL) Paleochannel. Zone 5b Trench 29 EBA 2200-2030 cal BC (-1.60m BGL). Paleochannel. Zone VI Trench 56 EBA 2300-2060 (-1.80m BGL) Paleochannel. Zone VI OABH104A EBA 2200-2025 cal BC (-2.50m BGL) and OABH104B MBA 1435-1290 cal BC (1.70m BGL) Paleochannel. HUMAN ACTIVITY EVIDENCE VALLEY FLOOR Zone Ia Trench 7 EBA 2030-1890 cal BC Pit/tree-throw with charcoal and hazelnut. Zone VI Trench 51 LBA 1080-910 cal BC Timber Post Alignment. HUMAN ACTIVITY EVIDENCE LOWER WESTERN SLOPES: Zone VII Trench 68 MBA-LBA 1210 - 1010 cal BC Pit [6804] with refuse (pottery, bone, worked flint, charcoal). Zone XI Trench 146 EBA (pottery) Ditch. Zone XI Trench 151 LBA-EIA 730-390 cal BC posthole round house (pottery). Zone XI Trench 155 MBA 1390-1130 cal BC cremation.	HIGH Local and Regional Significance, and possibly HIGH National Significance. Significant environmental data combined with the start of settlement, land division and human burial activity (without the associated monumental constructions which are otherwise characteristic of such discoveries) in the area.	Significant evidence for environment and Thames channels systems throughout the Bronze Age is present within the valley floor. The discovery of a contemporary MBA unurned cremation, and post alignment - possibly a walkway/platform (utilitarian or ritual?), which is contemporary with the metalwork discovery in Minster Ditch to the north is notable. The possibility that the settlement in round houses of the lower western slopes in the central part of Zone XI starting in the Late Bronze Age and possibly continuing throughout the Iron Age is interesting when considering changes in material culture, changing land use in response to cultural and environmental events/trends, locations and migration of settlements. A M-LBA pit in the valley floor in Zone VII is intriguing (given that it is one of only a handful of 'domestic' features from all periods in this location), and perhaps indicates a period where the valley floor was less wet. The people living in these settlements were contemporary with the barrow cemetery that developed on the Oxford promontory.

Table 8 Iron Age Period overall summary

period (with Generic Date Ranges)	Chronology	Landscape	Burials/ritual	Settlement	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
Iron Age (Early 700 - 400 BC; Middle 400 - 100 BC; Late 100 BC - 43 AD)	C14 dating of the Middle to Late Iron Age has posed problems in the region due to a flat calibration curve for this time period. A radio-carbon date from peat recovered at 89-91 St Aldates, produced at date of to 760-50 cal BC (Dodd ed. 2003: 10-11, 425). Early and Middle pottery forms and fabrics are fairly rough and similar to Saxon material. Smaller sherds are friable and hard to date accurately. Oxford is also notable for being located on a border area between three significant tribal or dynastic groupings that emerge from the coin record in the Late Iron Age.	Archaeological investigation within the City area has identified further palaeochannels throughout the floodplain and environmental evidence has provided information on the local fluvial sequences. The importance of palaeochannels in providing a sequence of alluviation in the Upper Thames Valley was first discussed by Robinson and Lambrick (1984) when it was suggested that human activity such as woodland clearance and agricultural activity was reflected in patterns of ancient flooding and alluviation.	Most human remains in the Upper Thames are found as pit burials and disarticulated human bone within or adjacent to Iron Age settlements though some human remains from the river itself could be of this period (Lambrick with Robinson 2009). No late Iron Age cremations or high status burials have been found in the Oxford area, but again this is unsurprising given their very limited occurrence in the Upper Thames (Lambrick with Robinson 2009: 316-9).	The distribution of sites indicate several areas of Iron Age activity across the different geologies of the LAA. For example on the 1st gravel terrace/flood plain at Port Meadow, at the Wolvercote Viaduct site (on alluvium) and Whitehouse Road (on a low gravel island in the floodplain but not alluviated); on the 2nd terrace gravels in the University Parks/Parks Road area and at Middle Way Summertown; to the south east on the Corallian Ridge at the King of Prussia site, Rose Hill, Bernwood First School, Barton and Blackbird Leys on clay. Nationally important Middle Iron Age settlement remains survive at Port Meadow, including extant round house earthworks and associated waterlogged deposits. The Iron Age grazing and stock management regimes at Port Meadow are of particular note because they appear to mirror subsequent patterns of use from the Late Saxon period onwards.	The Whitehouse Road site produced tooth made into an awl and a grooved and polished sheep metapodial, thought to be for weaving or thong stretching (Underwood- Keevil 1993a). The Minster Ditch dagger sheath, demonstrate the quality of craftsmanship achieved by Iron Age metal smiths, and leather workers for specialist high status objects. For most ordinary settlements metal working did not rise to more than blacksmithing to make or mend tools and other objects. A small amount of lining slag, hammer scale, fuel ash slag and a possible mould or crucible were recovered from the Middle Iron Age open settlement at Whitehouse Road (Salter 1993). Fragments of Lower Greensand and Lower Calcareous grit querns recovered at the Whitehorse Road site (Roe 1993) are typical of the local exchange network for these objects.	ENVIRONMENTAL EVIDENCE VALLEY FLOOR: Zone Ib Trench 4 EIA-MIA 490-260 cal BC Paleochannel (1.6-1.62m bgl). Zone Va Trench 24 MIA 360-120 cal BC Paleochannel (1.29-1.39m bgl). Zone XIII Trench 203/BH1004 MIA-LIA 170-0 cal BC Paleochannel (1.55-1.56m bgl). HUMAN EVIDENCE VALLEY FLOOR: Zone VII Trench 61 LIA (pottery) Natural Feature. Zone VII Trench 87 IA? (pottery) Pit. Zone XIIIa Trench 198 LIA? pottery in Natural feature. HUMAN EVIDENCE LOWER WESTERN SLOPES: Zone XI Trench 142 IA? (pottery) Pit. Zone XI Trench 149 MIA - LIA (pottery) Pit (pottery, metal, bone, charcoal). Zone XI Trench 151 LBA-EIA 730-390 cal BC (and pottery) posthole round house. Zone XI Trench 158 MIA-LIA (pottery) Ditch. Zone XI Trench 161 MIA-LIA (pottery) Ditch, and LIA Pit. Zone XI Trench 162 MIA-LIA 356 - 61 cal BC Earliest in sequence- ring-gulley part of round house (pottery, bone, charcoal); latest ring-gulley in sequence (only EPH pottery prob residual) therefore stratigraphically later than MIA-LIA. HUMAN EVIDENCE UPPER WESTERN SLOPES: Zone XII Trench 194 LIA (residual pottery in Med/PM feature) Ditch. Zone XII Trenches 185 and 188 residual IA? - LIA pottery	The evidence from the FAS evaluation is contemporary with the Middle Iron Age settlement at Whitehouse Road, however on FAS there is an earlier element to the settlement - where questions of continuity land use and settlement in the flood plain and western slopes of the Thames throughout the Iron Age could be addressed. A water channel is evident and would illuminate details of the water course regime in the flood plain - although these seem to be at distance from the area of settlement. Well-preserved environmental evidence allowing for wider landscape commentary is possible.	High Local and Regional significance. The discovery of settlement activity in the form of circular post-hole structures from as early as the Late Bronze Age - Early Iron Age transition in the central part of Zone XI, plus the larger amount of evidence from the Middle - Late Iron Age to the SE of this in the form of ditches, pits and roundhouse ring gulleys on the lower western slopes of the Thames Valley. Stratified settlement activity with phases of occupation separated by an episode(s) of colluviation, seen in Trench 162, raise the possibility of preservation of floors and occupation deposits that are usually truncated by ploughing. If the evaluation is representative then there is a hint that later Iron Age settlement moves southwards along the valley sides. Some of the undated ditches in Zones VII and XI probably relate to this settlement and hint at a possible rectilinear arrangement of fields extending from the lower slopes into the flood plain.

Table 9 Roman Period overall summary

Generic Date Ranges	Chronology	Landscape	Burials/ritual	Settlement and routeways	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
Roman (Early 43 - 120/130 AD; Middle 120/130 250 AD; Late Roman 1 200 - 410 AD / Late Roman 2 250 - 410 AD)	Rapidly changing and distinct pottery forms and fabrics form the basis for the Roman chronology. C14 dating suffers from a flattish calibration curve that is less accurate than the pottery chronology. Stratified C14 samples would assist Bayesian refinements to C14 determinations and chronologies.	In the Roman period, deposition of alluvial clay continued along the banks of the shallow lake at St Aldates filling much of the low lying landscape (Booth et al. 2007: 19). Excavation evidence and parch mark evidence suggests an extensive cleared mixed farming landscape on the 2nd gravel terrace. In the wider Upper Thames Valley the general pattern is for agricultural intensification until the mid-2nd century with more grazing on wetter areas of the floodplain and cultivation extended on to the higher areas of the floodplain (Booth et al. 2007: 21). An increase of seasonal flooding and alluviation led to an abandonment of some of these areas in the late 3rd and 4th centuries to the Late Roman period (ibid.: 26). Roman land management practices in the Oxford area are poorly understood with only fragmented evidence from isolated sites. It has been suggested that the south-east and east Oxford kiln sites were not favoured locations for intensive agricultural activity due to the poor quality of the soil and the possibility of dense woodland cover in the area (ibid.: 307).	There are no recorded temple sites within the Oxford City Area. Small distributions of inhumations and cremations on the 2nd gravel terrace appear to be broadly grouped in several areas indicating rural cemeteries of various sizes.	There is only limited evidence for settlement activity on the Cherwell and Thames flood plains, however the Roman evidence for small scale farmsteads and field systems within a similar low-lying Thames Valley landscape at Yarnton is entirely possible. The nearest recorded urban settlements are located ten miles north-east of Oxford at Alchester (Bicester), and six miles to the south-east at the Roman town of Dorchester-on-Thames. To date no conclusive evidence for high status (villa or farm) occupation has been recovered from the Oxford City area. On the 2nd gravel terrace there is evidence of agricultural activity comprising fragments of possible field systems and enclosures, with concentrations of pottery pointing to domestic settlement but there is an absence of excavated domestic structures. The Roman road network must have crossed the Thames at some point. Several potential sites have been proposed for a ford. The most commonly held theory places a ford on the site of the Grandpont at St Aldates, but there is limited evidence for this. An alternative route, is suggested, heading out from Westgate across to Osney Mead (Dodd 2003: 5). An east-west route across the Thames Floodplain to the south of the city is hinted at by evidence of a possible ford east of the Abingdon Road noted by Durham (1984).	The Roman pottery industry (1st-4th century) is located on the eastern (and to a lesser extent the southern) side of the Oxford area, with 30 kilns recorded the industry is orientated on the Dorchester to Alchester road encompasses an area of production that stretches on a north-south alignment from the southern fringes of Otmoor as far as Dorchester, and on an east-west alignment for almost five kilometres. The evidence for Roman pottery production extends well beyond the Oxford LAA boundary. Iron slag consistent with rural smithing were recovered from Stowford Road, Barton (Salter 2003). Small amounts of iron work have been recorded from sites in Oxford; the collections are generally unexceptional (Scott 2000; Powell 2003; Allen 2005).	ENVIRONMENTAL EVIDENCE VALLEY FLOOR: In Zone VI Trench 42, Roman pottery and came from fills of a Paleochannel, a broad Roman C14 date came from organic fills of the same channel from adjacent BH1050 at a depth of c 1.60m BGL. HUMAN EVIDENCE VALLEY FLOOR: In Zone VII a metalled routeway with side ditches, orientated NE-SW, associated with a square enclosure (first noted as a cropmark) was recorded, and dated to the Early - Middle Roman period. Fills of the features were alluvial in nature, and allude to seasonal flood or the onset of wetter valley floor conditions in the Mid - Late Roman period. Firther SE in Zone VII in Trenches 98 and 99 a ditch running parallel to the aforementioned trackway dated to the Middle - Late Roman period, this ditch may be associated with a parallel ditch c 25m further east (Trenches 101 and 102). Between these ditches in Trench 98 was a small surface of rough limestone, possibly part of a causeway of contemporary date. Both ditches and the stone surface were covered/filled with alluvial deposits. HUMAN EVIDENCE LOWER WESTERN SLOPES: Trench 142 Zone XI a single ditch orientated to run down slope (NNE-SSW), and a single ditch in Trench 160 (orientated WNW-ESE) and apparent as a c 200m+ long geophysical anomaly were dated to the broad Roman period. These may be contemporary with other ditches on the lower western valley slopes and hint at a rectilinear pattern of fields, perhaps part of a small farmstead in this topography. The trackways may belong to this landscape use. HUMAN EVIDENCE UPPER WESTERN SLOPES: no Roman material came from this area.	Questions regarding the pattern of land use and settlement in the flood plain and western slopes of the Thames could be explored. The possibility of a routeway crossing the valley within the scheme area can not be ruled out. A water channel is evident and would illuminate details of the water course regime in the flood plain. Well-preserved environmental evidence allowing for wider landscape commentary is possible.	The Roman remains have a High Local Significance, with moderate Regional significance in relation to a possible routeway. Roman material culture from the evaluation is very limited, however, a road or trackway demarkated by side ditches, orientated NE-SW perpendicular to the valley and river courses (perhaps only part of local agricultural activity, but possibly crossing the wider floodplain), along with an associated square enclosure dated by C14 have been identified.

Table 10 Saxon Period overall summary

period (with Generic Date Ranges)	Chronology	Landscape	Burials/ritual	Settlement and routeways	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
Saxon 410 - 1066 (Early 410 - 650 AD; Middle 650 - 850 AD; Late 850 - 1066 AD)	In the past, chronology was established on the basis of ceramic type series. Increasingly the use of stratigraphic sequences and scientific dating techniques has enabled more exact and refined chronologies to be prepared. Scientific dating of well stratified sequences, at an intensity sufficient to provide secure insights into phasing, is a high priority at sites where pottery sequences cannot be expected to provide the same level of resolution and confidence.	Examination of the alluvial sequences of the Thames Floodplain has produced evidence indicating an intensification of agriculture during the 9th and 10th centuries, suggesting the development of open fields during this time (Robinson and Lambrick 1984: 813; Robinson 1992; 2001; Hooke 1988:124-31,135-6; Blair 1994: 126-8). Environmental samples from Oxford provide evidence for crops, diet and domestic activity for the Late Saxon period (See Dodd ed. 2003: 46), but physical evidence for the development of open field systems across the LAA remains fragmentary. The available environmental evidence suggests that by the end of the Roman period a series of islands had been created within the reed swamp covering much of the floodplain to the south of St Aldates (Dodd ed. 2003: 14). The data suggests a reduction of alluviation in the early Saxon period was followed by a reversal of this trend, with alluviation and sedimentation in the mid-late Saxon period (Robinson 2007). Evidence for land reclamation and channel management in the form of wattle fencing and possible clay dumps along St Aldates in the Saxon period has been recorded on a number of sites.	Nearly all the burials from this period have been found on the Oxford 2nd terrace promontory, the majority focussed on the developing settlement (s) in and around the end of the promontory.	Oxford probably had a pre-10th century settlement(s) associated with religious and royal centres, but it is the creation of the Late Saxon burh (c 900) that promotes the urban (defensive) form that then continues to dominate the area into the Medieval period. Evidence for control and navigation of the river channels is frequently circumstantial, relying on distribution patterns of pottery and coinage. It has been argued that the increased use of water mills in the late 10th-11th century meant an increased focus on improving and maintaining channels (Booth et al. 2007: 325). Reduced alluviation in the early Saxon period and extensive channel management by the Late Saxon period indicate that between the 5th and 11th century the Upper Thames opened up as gateway for trade and exchange (Blair 2010: 28). Can we further define the character and extent of the Thames crossing in the Middle-Late Saxon period; the pattern of channel management, the extent of gravel islands, the materials and form of structures employed to bridge and retain channels and landing areas etc.?	Evidence for crafts, trades and industry in the early-middle Saxon period comes largely from a small number of objects associated with textile working and grave goods suggesting the limited production and exchange of some luxury goods (See Material culture below). The investment of resources into the creation of a causeway or bridge across the Thames Floodplain in the middle Saxon period could be suggestive of a developing trade economy. By the early 11th century there is evidence for a dynamic trading and mercantile community at Oxford (Booth et al. 2007: Ch 6). The Domesday survey records that the County had a large numbers of water mills and fish weirs, with eels and salmon caught in abundance on the Thames.	ENVIRONMENTAL EVIDENCE VALLEY FLOOR: In Zone IV Trench 15, a Late Saxon - early Medieval 990-1150 cal AD date from a paleochannel fill (at 1.50m BGL) - later the channel is recorded as the County boundary. In Trench 39 Zone Vb a Late Saxon - early Medieval 1020-1160 cal AD paleochannel fill at 1.10m BGL. In Zone VII Trenches 72 and 64 obtained Early - Mid Saxon (430-620 cal AD) and Late Saxon (890 - 1010 cal AD) dates from fill (at 0.80m BGL) and a stake driven into the top fill (at c 0.90m BGL) respectively and are probably the same paleochannel. In Zone VIII Trench 113 the uppermost fill of a paleochannel at 0.97-0.98m BGL returned a Late - Saxon - early Medieval date 1020 - 1160 cal AD. Again in Zone VIII a Paleochannel Trench 127 dated two fills to the Middle - Late Saxon 770-970 cal AD and 780-990 cal AD the former from a piece of worked roundwood. HUMAN EVIDENCE VALLEY FLOOR: No non-organic artefacts dating to this period were found during the evaluation, except for the worked stake (770-970 cal AD) in Trench 127 Zone VIII, and another possibly contemporary roundwood stake (dated 890 - 1010 cal AD) driven into the top of a paleochannel in Trench 64 Zone VII. The latter stake underlay a rough limestone deposit which may have been part of a causeway (NNE-SSW). In Trench 113 Zone VIII another deposit of similar limestone rocks and possibly part of a causeway on a similar alignment was underlain by the fills of a Late-Saxon-early Medieval (1020 - 1160 cal AD) Paleochannel. HUMAN EVIDENCE UPPER WESTERN SLOPES: no Saxon material came from this area.	Questions regarding the pattern of land use and settlement in the flood plain and western slopes of the Thames could be explored. The possibility of a routeway crossing the valley within the scheme area can not be ruled out. A water channel is evident and would illuminate details of the water course regime in the flood plain. Well-preserved environmental evidence allowing for wider landscape commentary is possible.	High Local Significance - Low Regional Significance. The number of channels that returned Saxon dates suggests that the potential to understand local and wider environmental change over the period is good. The fact that one of these channels becomes the County Boundary, and 2 more of them indicate the presence of routeways/causeways across the floodplain from the western valley slopes in the direction of Oxford is notable. The evidence from Zone VIII Trench 113 possibly represents an early form/alignment of the Devils Backbone and is probably associated in the Medieval period with the settlement at South Hinksey. There is no apparent potential for evidence of human settlement or burial.

Table 11 Medieval Period overall summary

period (with Generic Date Ranges)	Chronology	Landscape	Burials/ritual	Settlement and routeways	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
Medieval 1066 - 1538 AD	Chronology is traditionally based upon pottery type series, often presenting broad ceramic periods, but an increased use of Dendrochronology, C14 (especially multiple dates from stratified sequences refined by Bayesian modelling) and other scientific dating techniques is refining site chronologies. Primary documentary records become pertinent.	The Thames flood plain retains substantial areas of ridge and furrow open fields system (clearly visible on LIDAR). The network of channels and other watercourses are part of a wider exploitation regime for the use of water for power, transport and natural resource and agricultural exploitation. The establishment of village centres at the Hinkseys demonstrates the evolution of Oxfords hinterlands.	During this period burials are principally restricted to consecrated ground associated with religious buildings where ritual activities take place.	Oxford is a major urban, trading, educational and religious centre and the focus for many overland routeways. Bulstake Stream was one of the principal navigation channels of the River Thames after the Castle and Osney mills were constructed in the early Medieval period. There is evidence for navigation on the Thames at Oxford dating at least to the 11th century, however it appears to have become impassable by the 14th century. The village of Hinksey, formerly part of Berkshire, was first mentioned in Domesday when its principal manor was held by the Benedictine Abbey at Abingdon (Page and Ditchfield 1924: 405). The neighbouring village of South Hinksey was not mentioned separately until 1316 when the Abbot of Abingdon was returned as lord of North Hinksey and South Hinksey (ibid.). At the Dissolution, the property of Abingdon Abbey at Hinksey and Seacourt was returned to Crown. A ford over a previously broader river channel between the modern Hinksey and Bulstake streams was called Oxenforde in 1352; this is one of many fords from which Oxford might have taken its name (Page and Ditchfield 1924: 406). There was a ferry at North Hinksey by 1370 and in 1467 John Heyns, the ferryman, obtained permission from Osney Abbey to build a causeway from Botley Road to the ferry (OHER 4527).	The Medieval period sees a very significant increase in specialisation and production of a huge variety crafts and material culture. Imported goods increase significantly.	ENVIRONMENTAL EVIDENCE VALLEY FLOOR: In Zone IV Trench 15, a Late Saxon - early Medieval 990-1150 cal AD date from a paleochannel fill (at 1.50m BGL) - later the channel is recorded as the County boundary. A Paleochannel in Zone V Trench 39 returned a similar Late Saxon - early Medieval date 1020-1160 cal AD. The largest collection of Medieval pottery from the evaluation, dating to c 1150 - 1250 was found on the edge of a paleochannel in Trench 42, Zone VI, with adjacent borehole in the same channel BH1050 returning a Late Medieval - early Post-medieval date 1460 - 1630 cal AD. In Trench 113 Zone VIII another deposit of similar limestone rocks and possibly part of a causeway on a similar alignment was underlain by the Late-Saxon - early Medieval (1020 - 1160 cal AD) fills of a Paleochannel. HUMAN EVIDENCE VALLEY FLOOR: In Zone II the Botley Mill and associated channels were not located due to movement of trenches and significant depths of Modern Made Ground. In Zone IV Trench 20 revealed a well made surface of limestone and river pebbles with evidence for wheel ruts. Nearby in Trench 19 small patches of soft ground were stabilised by similar but more discrete limestone surfaces. A third less well lain surface was recorded in Trench 113. Each of these 3 surfaces had Medieval horseshoes overlying them. Trench 64 in Zone VII also contained a stone surface (NNE-SSW) with a Late Saxon terminus post quem from an underlying wooden stake. In Zone VIII Trench 120 an east-west ditch was dated to 1225 - 1400. Zone X Medieval causeway (surfaces, structures and drainage ditches). HUMAN EVIDENCE UPPER WESTERN SLOPES: Zone XII Trench 179 Pit 1225 - 1400. Trench 186 Ditch 1255 - 1450. Poss Medieval ditch in Trench 194, as well as other	Understanding the changing environment and shifting patterns of the waterways are possible. The exploitation of the valley floor for agriculture and livestock along with the development and continuity of small settlements (the Hinkseys) on the lower western slopes (above the flood line), and the channeling of waterways to power mills, and the use of waterways for trade - all have a relevance to the evidence from Oxford FAS. The discovery of a number of stone surfaced causeways is particularly notable - some may be simply for access to the flood meadows for pastoral and agricultural exploitation for the villages of South and North Hinksey, but others are more robust and may have formed the principal route into Oxford from the western valley slopes.	The remains of the Old Abingdon Road causeway (and the association with the Scheduled Monument) have a Medium-High National significance. The remainder of the evidence recovered suggests a High Local Significance and Medium Regional significance. The number of channels that returned Late Saxon - Early Medieval - late Medieval - early Post-medieval dates suggests that the potential to understand local and wider environmental change over the this period is good. One of these channels significantly becomes the County Boundary. A total of 2 possible and 1 definite stone causeways were revealed. The best with wheel ruts, which is referenced in documentary records, was in Zone Va Trench 20, with outlying patches of stone surface in Trench 19 probably part of the same route, both had Medieval horseshoes on them. Two more probable stone surfaces, possibly 'farm tracks' or causeways across the floodplain from the western valley slopes in the direction of Oxford were found in Trench and Zone VIII Trench 113 again associated with a medieval horseshoe and possibly represents an early form/alignment of the Devils Backbone and is probably associated in this period with the settlement at South Hinksey. Evidence of potential precursors to the 'Devils Backbone' and the ditch in Trench 160, plus the pit, and ditches in Zone XII suggest elements of the utilisation of the immediate surroundings probably by the inhabitants of the Medieval settlement of South Hinksey. Other undated features are likely to belong to this period. Botley Mill and its' associated channels are likely to partially remain.

Table 12 Post-medieval and Modern Periods overall summary

Generic Date Ranges)	Chronology	Landscape	Burials/ritual	Settlement and routeways	Craft and material culture	Summary of results from Oxford Flood Scheme	Research Agendas Significance	Concluding significance from the project
P Med 1538 - 1799 and Modern 1800 - present	Pottery and Clay pipes provide excellent dating tools during these periods. As do primary cartographic and documentary evidence.	The trend and eventual move away from waterpower and a manualised rural economy, coupled with Oxfords suburban growth, and new transport links changed the appearance and use of the landscape considerably.	During this period burials are in the main restricted to consecrated ground associated with religious buildings where ritual activities take place, or in the Modern period to municipal cemeteries	The industrial period brought the demise of the watermill in the later 19th century, and the introduction of canals and then railways. The Modern Period saw a hugely expanded road network and unprecedented urban growth.	Industrialisation of manufacturing processes and a massive increase in production and trade throughout this period see a step change in material culture. Many craft activities change beyond recognition or die out.	ENVIRONMENTAL EVIDENCE VALLEY FLOOR: Modern features and finds from topsoil and alluvium were found in Zone I (Trench 1), Zone II (Trench 10), Zone IV (Trench 15), Zone V (Trench 44), Zone XI (Trench 160). HUMAN EVIDENCE VALLEY FLOOR: Infilled watercourses associated with Botley Mill in Trench 10, Zone II. In Trench 25 Zone Va Hinksey Causeway was flanked by ditches with Modern finds in them. The Cropmark enclosure? to the north of Zone Vc and parallel ditch anomaly leading south from it to Trench 53 was Modern 18/19th century. HUMAN EVIDENCE LOWER WESTERN SLOPES: HUMAN EVIDENCE UPPER WESTERN SLOPES: A single ditch in Zone XII Trench 198 was 17-18th century	A shift from water power in the industrial period, the creation of the canal network and the installation of the London train line all had an affect on the waterways and their maintainance and flood regimes upon the Thames valley area crossed by the scheme.	Low to medium local significance, except for the Post-medieval phases of the causeway and associated structures below Old Abingdon Road which are assessed as of High Local and Regional significance and by their association with the Scheduled Monument Medium National Significance.

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