Chapter 8: Discussion

Introduction

The A421 Improvements extended for a distance of 13km across the clay landscape of Marston Vale to the south-west of the valley of the River Great Ouse at Bedford. The project afforded an opportunity to investigate a landscape that was not well known, particularly in comparison with the archaeology of the river gravels. Whereas the valley has seen many investigations, not least the recent large-scale excavations in advance of construction of the Southern and Western Bypasses and housing developments at Biddenham Loop, development within the Vale has been less frequent and, with the exception of Marsh Leys, has comprised only small investigations. Understanding of the archaeology of the Vale has also been hampered by the poor visibility of cropmarks on landscapes of Oxford Clay (Mills 2007, 142-3; 2003, 17). The transect across the Vale that was provided by the A421 Improvements therefore represented a linear sample across the landscape that was particularly welcome.

Needless to say, the A421 Improvements suffered from the same disadvantages that affect all such projects: the alignment was not selected on archaeological grounds and the investigations were restricted to the footprint of the development. In fact, none of the settlements that were investigated were completely explored, as all extended beyond the limits of the Improvements. In addition to this, all the remains had been affected by truncation by medieval and modern ploughing, as was attested by the evidence for ridge and furrow cultivation that was recorded throughout the investigations.

Following a thorough programme of geophysical survey and field evaluation a total of nine sites were selected for further investigation, either as open area excavation or strip, map and sample excavation. Although Site 6 (Trenches 97-99) produced no significant archaeology and Site 6 (105) and Site 9 were also disappointing, comprising only a small group of pits and an undated field system respectively, the remaining six investigations produced evidence for activity during the Iron Age and Roman period. Useful information was also provided by the geophysical survey and field evaluation of the proposed borrow area at Berry Farm, although the site was ultimately not investigated further because extraction of the proposed borrow pit was deemed unnecessary. The remains recorded at these sites formed a particularly coherent group as a result of their common geographical and topographical settings and their similar chronology and have provided significant evidence for the occupation of the Vale during these periods.

Chronology

Issues of chronology are of course fundamental to all archaeological studies, and particularly to a project such as the A421 Improvements, where a chronological framework is necessary in order to correlate between the individual sites, comprehend contemporary similarities and differences, and analyse developments and trajectories. This is all the more important as there are clearly a number of distinct horizons involved, including the initial colonisation of Marston Vale and the impact of the Roman conquest as well as evidence for other episodes of reorganisation of the landscape (below). The principal sources of chronological information for the individual excavations were provided by stratigraphic relationships and ceramic dating evidence. These were supplemented by radiocarbon dates at Site 3 and Site 5, and more particularly at Site 4 (Trench 54), where the establishing of eight radiocarbon determinations enabled Bayesian modelling to be used to refine the chronology of the middle Iron Age enclosure (Griffiths and Naysmith, Chapter 6).

Worked flint was recovered from most of the sites, albeit only in small quantities, but derived entirely from residual contexts within later features or from the ploughsoil, and although a distinct late Mesolithic/early Neolithic element was identified in this assemblage little more could be concluded from this evidence than that some low-level activity had taken place within the area of the Improvements during this period. No features of this date were identified.

The recovery of six Roman coins from Site 2, Site 3 and Site 7 added little beyond confirming the dates already obtained from the associated pottery. Although a few other artefacts that were recovered were chronologically diagnostic, such as the brooches from Site 2 and Site 4 (Trench 54), they were few in number and their contribution to the understanding of the chronology of the sites was of very minor significance in relation to that of the ceramic evidence.

Medieval ridge and furrow cultivation was ubiquitous throughout the area of the Improvements, surviving as earthworks at Lower Shelton (Heatley, Chapter 7) and elsewhere as plough-levelled subsurface features that were detected by the geophysical survey and exposed by the stripping of each excavation area. The furrows were dated by their form and generally were not associated with any artefactual material. Features of more recent date were present on several sites, including boundary ditches at Site 2, Site 4 (Trench 54), Site 4

(Trench 61) and Site 6 (Trenches 97-99), a large pond at Site 3, and hollow-ways at Site 4 (Trench 54) and Site 4 (Trench 61). These features contained little artefactual evidence as they were agricultural in function and situated away from areas of habitation, but small quantities of pottery or building material provided dates in most cases.

Most of the remains uncovered, however, spanned the Iron Age and Roman period (Fig. 8.1). The first part of this period is particularly problematic in terms of dating, both in the Bedfordshire region and nationally (Dawson 2007, 59; Haselgrove *et al*. 2001, 2-3; Willis 2006, 89). This is due to several factors, including the conservatism of pottery traditions, the paucity of metalwork finds, the scarceness of datable imported artefacts before the late Iron Age, and the problems with the radiocarbon calibration curve between *c* 800-400 cal BC. This report, like most published projects from the region, adopts a tripartite division of the Iron Age based ultimately on Knight's (1984) dating scheme, and based predominantly on ceramic evidence. Pottery assigned to the middle Iron Age (*c* 400-100 BC) was characterised by ovoid jars and slack-shouldered jars or bowls, which were usually made in sandy or shelly fabrics. Pottery assemblages of late Iron Age date (*c* 100 BC-43 AD) were characterised by grog-tempered fabrics, though sandy and shelly fabrics were still important. Across the A421 Improvements these were present mainly as jars and bowls, including new, often wheel-thrown forms such as bead-rimmed jars, lid-seated jars, necked jars, and carinated bowls. The beginning of the Roman period was signalled by the importation of continental wares such as samian and amphorae and the widespread local manufacture of kiln-fired, wheel-thrown pottery. In practice, the divisions between the periods are less clear-cut than this implies, and correlating the relative dates provided by the pottery with calendrical dates is problematic; technologically middle Iron Age pottery continued in use during the late Iron Age, and there is likely to have been a lag of unknown duration between the Roman invasion and the adoption of Roman ceramics, particularly at rural farmsteads such as those investigated here.

As regards the individual sites, the earliest dated feature was a cremation burial at Site 5 dated by radiocarbon to the early Iron Age, but this was an isolated feature and was not associated with the main phase of occupation. Site 4 (Trench 54), Site 4 (Trench 61) and Site 6 (Trench 105) all produced middle Iron Age pottery. The pottery at Site 4 (Trench 54) suggested that the site was abandoned by *c* 100 BC, although a small quantity of material continued to be deposited in the upper fills of the enclosure ditches into the later 1st century BC or 1st century AD. Bayesian modelling of the radiocarbon dates produced results that were consistent with the ceramic dating and indicated that the site was occupied between the mid 4th century and the 2nd century BC. The pottery at Site 4 (Trench 61) and Site 6 (Trench 105) indicated that occupation potentially extended a little later, into the late Iron Age (*c* 100 BC-AD 43), although no specifically late Iron Age phase of occupation was identified.

Four sites appear to have been first occupied during the late Iron Age. The sites at Site 3, Site 5, and Berry Farm Borrow Area all began at this time, and although a small quantity of middle Iron Age bowls were recorded at the north-eastern complex at Site 2 they occurred only as residual material in later features, and it is likely that the main phase of occupation started during the late1st century BC. A radiocarbon date of 350-40BC was obtained for a dog burial within a ditch at Site 3 which formed part of the late Iron Age enclosure complex, and the ceramic evidence indicates that the true date of deposition lies in the latter part of the range. Occupation at all these sites continued into the early part of the Roman period before they were abandoned during the late 1st century, with the exception of the north-eastern complex at Site 2, where activity continued on a much reduced scale into the early part of the 2nd century.

The south-western complex at Site 2 was established around the middle of the 2nd century, and it is possible that it was a direct replacement for the north-eastern complex. The settlement at Site 7 was also established at this time, and for the remainder of the Roman period these were the only settlements that were occupied. At Site 2 the level of deposition declined during the late Roman period, and at the same time the ditches of the enclosure complex at Site 7 appear to have been completely silted up, although the overall level of deposition here actually increased at this time as the waterholes were used for the disposal of refuse from a domestic focus that lay beyond, but presumably

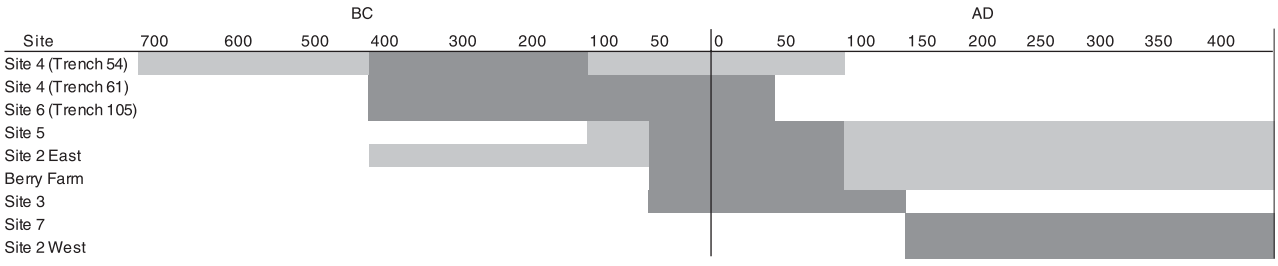

Fig. 8.1 Summary of the main periods represented at each site

close to, the excavation area. The latest deposition at Site 7 was dated to the 4th century by the presence of products of the Oxford pottery industry, but the complete absence of 4th-century coins, which are usually a common site find, suggests that occupation did not last long into the century.

Settlement forms

The sites excavated as part of the A421 Improvements included a range of settlement forms, exemplifying both variations in form between contemporary settlements and changes in the character of settlement over time. The fact that only a narrow slice of each site was excavated, due to the linear character of the project, makes classification of their forms somewhat problematic, as in no instance was the entire extent of the settlement exposed. A further difficulty is caused by the fact that even where Iron Age sites in the south Midlands have been excavated on a larger scale, they defy simple classification, often combining enclosures with areas of unenclosed occupation or oscillating over time between enclosed and unenclosed phases (Rees 2008, 64-8). Clearly a range of settlement forms was in use, and this is reflected in the characters of the sites excavated at the A421 Improvements. The settlements encountered encompassed a possible single discrete enclosure at Site 4 (Trench 54), open settlements at Site 2, Site 4 (Trench 61), Site 5 and possibly Site 6 (Trench 105), complexes of conjoined enclosures at Site 2 and Site 3 and a larger complex of enclosures at Site 7. The site at Berry Farm was less extensively investigated but appeared to consist of parts of two neighbouring complexes of conjoined enclosures, and Site 9 comprised an undated field system.

Discrete enclosure at Site 4 (Trench 54)

The middle Iron Age site at Site 4 (Trench 54) has been characterised as a discrete enclosure settlement, although it is possible that ditch 17721 integrated the enclosure into a wider enclosure/boundary system. Even if this were the case, however, the size of the ditches that defined the enclosure, and the provision of multiple circuits, mark out the enclosure as a distinct entity, as the size of the ditches encircling the settlement enclosure at Flitwick (Luke 1999) similarly distinguished it from its subsidiary enclosures.

The enclosure possessed several concentric ditch circuits and appeared to be subcircular or oval in form, although its full plan was not exposed as its western and northern extents lay beyond the limits of the excavation area. The shape and multiple ditch circuits make this site rather dissimilar from most of the contemporary enclosed settlements in Bedfordshire, where subrectangular enclosures appear to have been more common, as at Biddenham Gold Lane (Dawson 2004, 9-12) and Willington (Pinder 1986), the latter abutted by a smaller triangular enclosure, while at Shillington (Dawson 2004, 12-17) a pair of subrectangular enclosures flanked a trackway or boundary ditch, and the site at Topler's Hill (Luke 2004) comprised a group of conjoined enclosures more reminiscent of the late Iron Age/early Roman farmsteads at Site 2 and Site 3 (below). In general, the small number of middle Iron Age settlements in Bedfordshire and the surrounding region the plans of which are known in detail, and their varied character, make definition of a 'typical' form problematic. Although no direct parallel can be cited for the enclosure at Site 4 (Trench 54), individual characteristics of the enclosure are shared with other sites: an oval enclosure of similar dimensions to the inner ditch circuit and similarly enclosed by a discontinuous ditched boundary has been recorded by a combination of geophysical survey and evaluation trenching at Flitwick (Luke 1999), and contemporary settlements with multiple concentric enclosure ditches have been excavated at Draughton and Blackthorn in Northamptonshire (Grimes 1958; Williams 1974). The unexcavated part of the enclosure at Site 4 (Trench 54) lay within the area of the geophysical survey but no features were detected here, as indeed had been the case for the site as a whole. This is surprising in view of the substantial size of some of the ditches, particularly those that defined the eastern side of the enclosure in its final phase, and presumably indicates that the fills of the ditches were very similar in composition to the surrounding Oxford clay substrate from which they were ultimately derived. The site had been subject to ploughing during the medieval and modern periods, as a result of which few internal features survived.

Enclosures of this type are typically interpreted as the farmsteads of individual family or kin groups (Cunliffe 2005, 262; Speed 2010, 43; Willis 2006, 101). No evidence for buildings or other structures survived within the enclosure but the domestic character of the site was apparent from the material recovered from the ditches, which included bones from the usual domestic species, some of which bore butchery marks indicative of both primary dismemberment of the carcass and division into individual portions, and pottery vessels that may have served a range of functions including storage, cooking and serving. One jar exhibited burning that probably resulted from its placement on the hearth, and a flat slab of limestone that may have been used as a hotplate also provided evidence for domestic activities. The only features identified within the enclosure were a handful of pits, several of which were of substantial depth and would have been suitable for use as grain silos, although no definite evidence for such a function was found. Some indication of the features that existed within the enclosure may be obtained by analogy with the similar enclosure at Flitwick. The interior of the latter site was investigated only by means of two evaluation trenches, but the two large roundhouses

identified, comprising ring gullies and in one instance a number of internal features (Luke 1999, 82), may provide some indication of the sort of evidence that has been lost to ploughing at Site 4 (Trench 54).

The discontinuous and overlapping form of the enclosure ditches that characterise the site presented particular problems relating to the number and sequence of circuits. In the south-western quadrant, for example, there were only two circuits, but in the south-eastern quadrant there were four, and the ditch segment that formed the inner circuit on the northern side of the enclosure wrapped around the outside of the ditch that defined the eastern part of the inner circuit and thus became part of the second circuit. With the exception of the final phase of the enclosure, which comprised two particularly substantial ditches that enclosed its eastern side and cut across several of the earlier circuits, only a single stratigraphic relationship existed to elucidate the sequence of ditch circuits on the northern side of the enclosure. In the absence of such relationships, the sequence on the southern side was inferred by analogy with the northern sequence. The enclosure appears to have originated as a much simpler monument comprising a single ditch circuit measuring *c* 40 x 30m (Phase 1, Fig. 8.2), which was subsequently expanded and elaborated by the addition of further circuits (Phase 2), although it is not possible to be certain whether the latter development occurred as a single event or was a more piecemeal process. It is also unclear whether the earthworks of the earlier enclosure was preserved and incorporated into the later design, although it could be argued that the generally concentric nature of the ditch circuits, particularly on the southern side of the enclosure, suggests that this was the case. The Phase 3 ditches were particularly substantial and appeared to represent a reinstatement of the

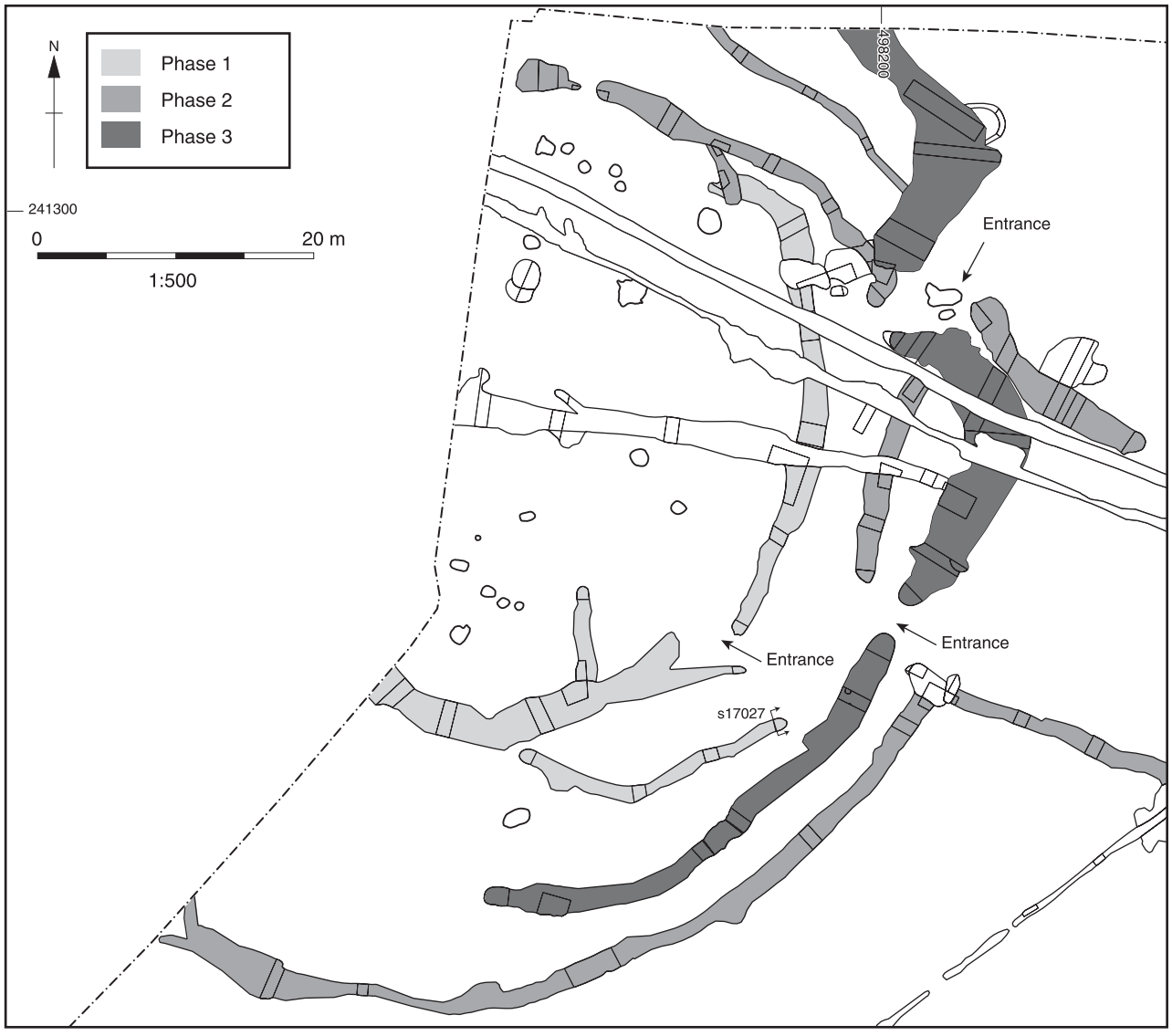

Fig. 8.2 The development of the middle Iron Age enclosure at Site 4 (Trench 54)

eastern facade of the enclosure on an almost monumental scale. Although their construction clearly entailed the slighting of some of the earlier earthworks, the absence of corresponding ditches encircling the southern part of the settlement suggests that the existing earthworks in this part of the site were retained. It is perhaps noteworthy that comb-decoration, which is considered to be a late feature, was recorded only on pottery from the Phase 2 and Phase 3 ditches. Bayesian modelling of the radiocarbon dates from the fills indicated that the Phase 1 and Phase 2 ditch circuits were constructed between the early 4th and early 2nd centuries BC. Due to the form of the calibration curve in this period and the consequently wide and substantially overlapping date ranges assigned to these features it was not possible to establish how much time elapsed between the initial construction of the inner enclosure and the subsequent addition of the outer ditch circuits. The Phase 3 ditches had been dug by 210-130 BC, the date obtained for a horse skull that was placed on the base of ditch 17496, and the pottery from their upper fills indicated that they did not completely silt up until the mid 1st century AD.

The motivation for enclosing settlements within earthwork boundaries has been discussed by numerous authors (Bowden and McOmish 1987; Hingley 1990; Rees 2008; Speed 2010). The existence of contemporary unenclosed settlements, such as those at Site 4 (Trench 61) and Site 5, suggests that such features were not needed for reasons of security, either against hostile forces or wild animals, and so a function rooted in social convention or symbolism is more likely, perhaps as an expression of the status or independence of the inhabitants. The substantial size of the Phase 3 enclosure ditches and the monumental design of the eastern entrance in this phase would certainly fit with such an interpretation. The ditch circuits at Site 4 (Trench 54) may also have served a more mundane purpose, at least during Phase 2, when the outer circuits may have enclosed an area sufficiently large to accommodate a substantial amount of the community's livestock, either as an area of enclosed pasture or during over-wintering. The entrances to the enclosure may have been designed with such a function in mind. The main entrance into the Phase 1 enclosure was situated on its south-eastern side and was associated with an outwork or small annex that may have been used as a pen for livestock. Corresponding breaks in the later ditch circuits, though slightly off-set from the original causeway, suggest that this entrance continued to be used, and the outermost circuit was associated at this point with an antenna ditch that gave the site something of the appearance of a banjo enclosure, and which may have had a role in funnelling livestock into the entrance. A similar observation has been made regarding the arrangement of the southern entrance to the enclosure at Flitwick (Luke 1999, 83). The Phase 2 ditch circuits also included a new, eastern entrance (created to the north of the original one) which was associated with an external segment of ditch that may have served a similar function to the antenna ditch at the south-eastern entrance. Interestingly, if the corresponding part of the original, inner ditch circuit was maintained as a functioning earthwork, this entrance would not have provided access to the interior of the enclosure. Although it is possible that all or part of the inner ditch had been filled in, this arrangement could alternatively be part of a livestock management system in which animals were driven into the eastern entrance and channelled to the south through a race formed by the inner and outer ditch circuits to a drafting gate at the south-eastern entrance from which they could be directed into the inner enclosure, the adjacent annex or the southern part of the outer enclosure as appropriate. The layers of sandstone cobbles recorded in hollows within the eastern entrance and tipping into a pit adjacent to the south-eastern entrance may indicate that the traffic passing through the entrances was sufficient to warrant the provision of metalled surfaces. The design of the enclosure may therefore have been intended to facilitate the management of livestock, perhaps indicating that the settlement had a primarily pastoral economy. The paucity of evidence for arable production (below) would certainly be consistent with this interpretation.

During the currency of the Phase 3 enclosure, the settlement experienced a substantial conflagration, evidence for which was preserved in the ditch that enclosed the south-eastern sector. A thin layer of black, charcoal-rich soil was identified which is likely to have derived from burning of vegetation that was growing within the ditch, but the main concentration of the fire was situated beyond the feature and was evidenced by a more substantial layer of pink, burnt soil that overlay the black layer. The deposit was found throughout almost the entire 40m length of the ditch, and although it clearly was not burnt *in situ* within the ditch, its 'clean' composition, with little evidence for mixing with other soil, indicates that it had not moved far from the location where it was burnt. The most plausible explanation is that this material had slumped into the ditch from an adjacent bank formed from the ditch up-cast, and that the main focus of the fire had been located on the bank. A clay bank would obviously not burn easily, and this suggests that the focus of the fire was a more combustible material situated on the bank, possibly a timber fence or palisade surmounting the earthwork. It should be stressed, however, that no positive evidence was found for the conjectured palisade, such as charcoal or postholes, and it is not possible to be certain whether the destruction was deliberate or accidental. Bayesian modelling of radiocarbon dates from this feature indicated that the conflagration took place between 350-170 cal BC.

Middle Iron Age open settlements at Site 4 (Trench 61), Site 5 and Site 6 (Trench 105)

The settlements at Site 4 (Trench 61) and Site 5 were represented by roundhouses and pits, and that at Site 6 (Trench 105) by a concentration of pits alone. Because of the absence of any enclosure ditches around them, or associated field systems, either within the excavation areas or the evaluation trenches or geophysical surveys of the surrounding area, they are characterised as open settlements, and they bear comparison with examples excavated in the immediate vicinity at Biddenham Loop (Luke 2008, 39), East Stagsden (Dawson 2000c, 21-40) and Area 1 of the Bedford Western Bypass (Albion Archaeology 2008). The limited ceramic evidence indicated that Site 4 (Trench 61) and Site 6 (Trench 105) were predominantly of middle Iron Age date, although occupation may have continued into the late Iron Age, while the settlement at Site 5 was entirely Iron Age in date.

All three sites had been substantially effected by medieval and modern ploughing, with the result that only a sparse group of truncated features survived at each. The surviving features at Site 4 (Trench 61) comprised part of a roundhouse gully, a possible four-post structure and three pits, two of which were substantial enough to have been used for grain storage, while the settlement at Site 5 was represented by two partial roundhouse gullies and a group of shallow pits. The function of the pits at the latter site was uncertain, although three were filled by dark, charcoal-flecked soil which may represent the disposal of refuse from domestic or agricultural activities. The distribution of features at Site 4 (Trench 61) may have derived from the division of the settlement into discrete zones dedicated to different activities, with the two storage pits being situated 35m south of the roundhouse and the possible four-post structure 20m north of it. The excavations at both sites were confined to the corridor of the Improvements and exposed only part of each settlement, the full extent of which were not established. The features at Site 4 (Trench 61) extended over a distance of 70m from north to south, but their proximity to the edges of the excavation area indicated that they continued beyond these limits, and at Site 5, roundhouse gully 6042 was only partially exposed and clearly extended beyond the south-eastern edge of the excavation.

At Site 6 (Trench 105) the only features identified were pits. The small number of features at this site and the relatively small volume of artefactual material from them do not demand a domestic interpretation, and they may represent an off-site activity area, similar to the area of late Iron Age pits to the north of the main domestic focus at the north-eastern complex at Site 2 or the peripheral activity areas associated with Farmstead 3 at Marsh Leys (Luke 2011, 39-42). Although such an activity area may have been used for non-domestic purposes, its presence may nevertheless indicate that an area of occupation was situated nearby.

The absence of substantial features such as boundary ditches renders open settlements difficult to detect, as the ephemeral roundhouse gullies often do not form substantial cropmarks. They were, however, a common element of the settlement pattern of the Great Ouse Valley during the Iron Age (Dawson 2000b, 115), the prevalence of which is becoming increasingly apparent as more examples are revealed by the stripping of large open areas associated with substantial developments such as the A421 Improvements, Biddenham Loop and Bedford Western Bypass.

Possible late Iron Age open settlement at Site 2

The earliest features at Site 2 appeared to belong to an open settlement dating from the late Iron Age which preceded the early Roman enclosure complex (Fig. 8.3). Occupation here began during the late 1st century BC or the first half of the 1st century AD. The features formed a rather disparate group that consisted of three activity areas scattered over a distance of more than 200m, comprising a roundhouse, only part of the ring gully of which survived, with a complex of intercutting quarry pits located *c* 60m to the south and a loose scatter of relatively shallow pits to the north. A ditch with an L-shaped plan that was located between the roundhouse and the quarry pits may have defined two sides of a small enclosure or pen that was completed with hurdles or other archaeologically undetectable barriers. The quarry pits appeared to represent an area dedicated to small-scale and *ad hoc* clay extraction, but the function of the pits in the northern part of the excavation was uncertain. No evidence was found within the excavation area for contemporary boundary ditches, and the ditches recorded by the geophysical survey all appeared to form part of the early Roman enclosure system. It is, therefore, likely that the late Iron Age phase of the settlement was neither enclosed nor associated with ditched enclosures or fields. The small artefactual assemblage recovered from the surviving features provided little opportunity to analyse the economy of the settlement.

Although ditched enclosures became increasingly numerous during the late Iron Age, open settlements remained a significant component of the landscape (Dawson 2007, 68). Contemporary settlement at East Stagsden, *c* 10km north of Site 2, comprised a similar range of features (Dawson 2000c, 127). The clear zoning of activities at Site 2 was also apparent at Stagsden, with the main area of pit digging situated a short distance away from the roundhouses and enclosures. This settlement also included an L-shaped ditch similar to that at Site 2 (Dawson 2000c, fig.17). The two contemporary farmsteads excavated at Marsh Leys comprised similar open settlements accompanied by individual enclosures (Luke 2011, 139), and the handful of late Iron Age features excavated at Beancroft Road, Marston Moretaine

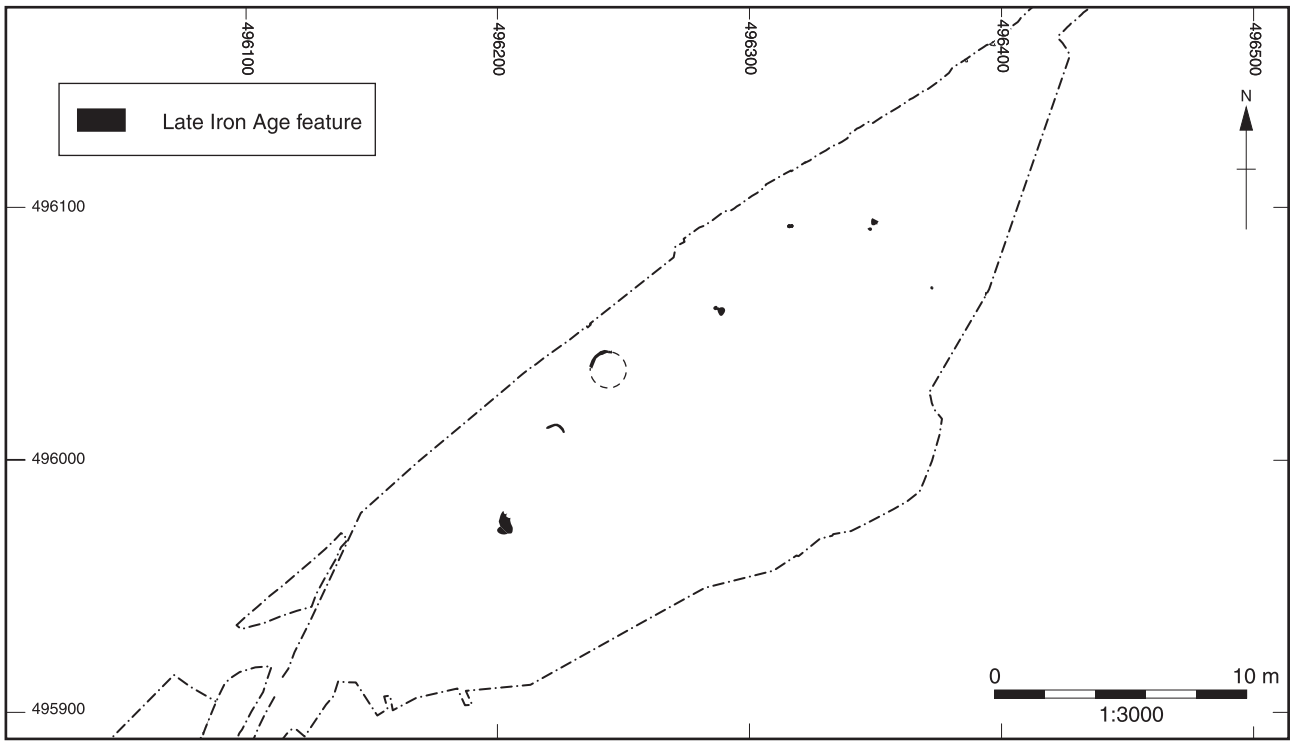

Fig. 8.3 Plan of the late Iron Age settlement at Site 2

may have been all that survived of another open settlement (Shotliff and Crick 1999).

The late Iron Age settlement at Site 2 was relatively short-lived, being soon swept away after the conquest when it was replaced by a complex of conjoined enclosures (below). This contrasts with the situation at Marsh Leys, where the the late Iron Age arrangements at both settlements continued until the mid-2nd century (Luke 2011, 139). However, both the ceramic evidence and the apparent retention of some late Iron Age boundaries in the post-conquest reorganisation of the site indicate that these changes represent an unbroken development of the site rather than evidence for any period of abandonment, and this phenomenon of continued occupation in a re-organised form is common to all the examples of this settlement type.

Conjoined enclosure complexes at Site 2, Site 3 and Berry Farm

Settlement during the late Iron Age and early Roman period was characterised at the A421 Improvements by complexes of conjoined enclosures. Settlements of this type were located at Site 2, Site 3 and Berry Farm and were the only sites of this period that were found, the earlier settlements at Site 4 (Trench 54), Site 4 (Trench 61) and Site 5 having by this time been abandoned (Fig. 8.4). Part of a similar complex has been excavated within Marston Vale at Wilstead (Luke and Preece 2010), as well as examples elsewhere in the Great Ouse Valley at Norse Road, Bedford (Edgeworth 2001), Ursula Taylor Lower School, Clapham (Dawson 1988) and Wavendon Gate (Williams *et al*. 1996). None of the complexes at the A421 Improvements was fully explored: excavation at Site 2 and Site 3 was restricted to the footprint of the Improvements, although the results were supplemented by geophysical survey, and the site at Berry Farm was investigated only by means of geophysical survey and evaluation trenching.

The excavation at Site 2 exposed three conjoined enclosures that lay at the eastern limit of a complex that the geophysical survey indicated extended to the north and west beyond the footprint of the Improvements. The enclosures were of varying shapes and sizes and abutted a ditched boundary that defined the northern edge of the complex. The northern boundary continued to the east beyond the three enclosures before petering out. It is possible that the complex originally extended further in this direction, but no features survived in this area. The results of the geophysical survey indicated that the enclosures were adjoined on their western side by a larger rectilinear enclosure within which lay a smaller rectilinear enclosure. The results of evaluation trenching by Albion Archaeology had confirmed that these features were of early Roman date, contemporary with the enclosures in the open excavation area (Albion Archaeology 2006). The larger enclosure appeared to be subdivided by a ditch that cut across the inner enclosure on a NW-SE alignment. The two features therefore cannot have been contemporaneous and provide evidence that the complex was modified over time, although their

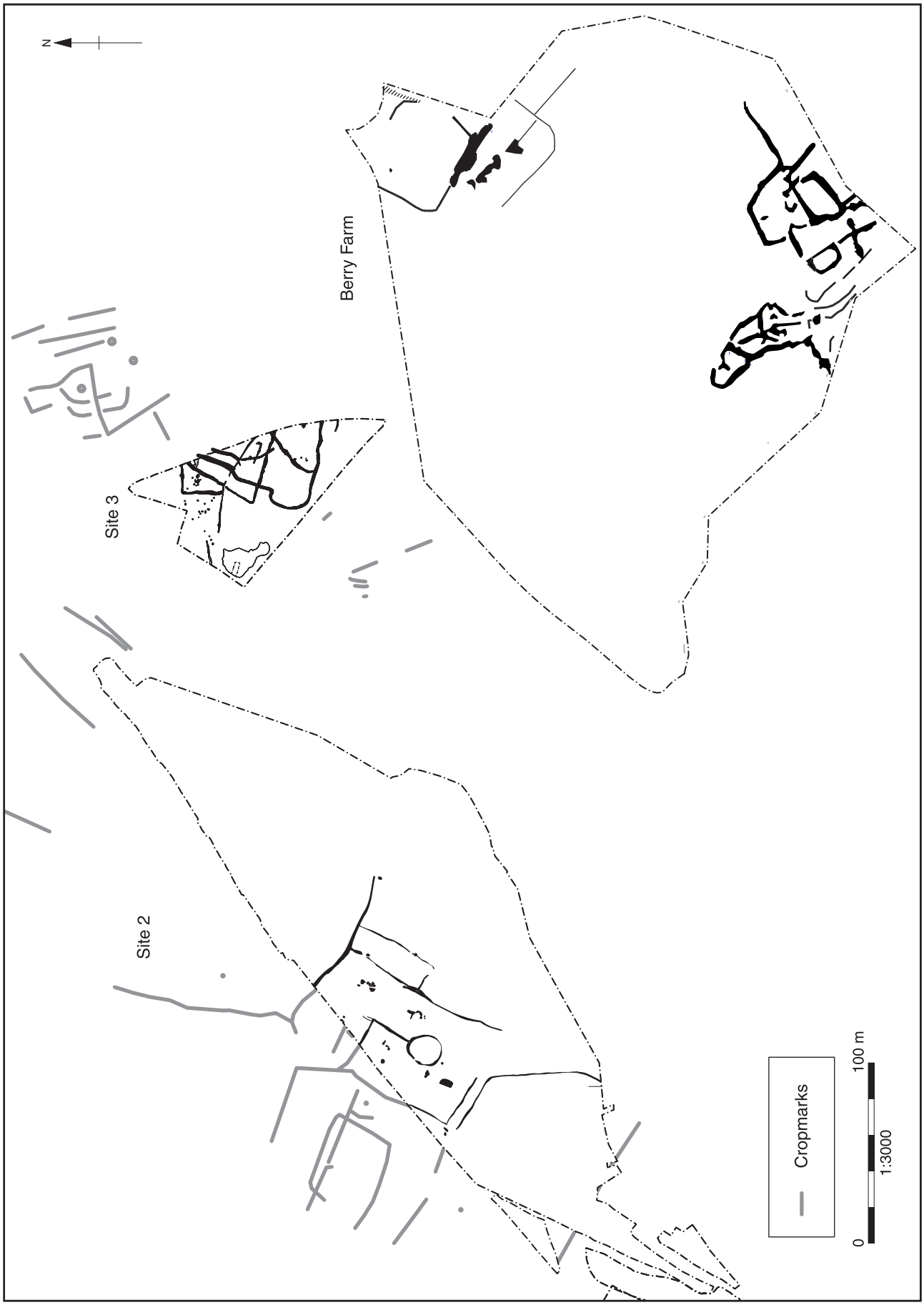

Fig. 8.4 Plans of the late Iron Age/early Roman enclosure complexes at Site 2, Site 3 and Berry Farm

sequence is not known and the pottery recovered from the ditch during the evaluation was of the same broad date as that from the enclosure. The excavation also produced possible evidence that the final arrangement of enclosures was the result of gradual development rather than a single deliberate design, although the sequence was not entirely clear and this evidence may alternatively have resulted from the piecemeal recutting of parts of the ditches, as had certainly happened at Site 3.

The largest of the three enclosures within the excavation area was the main domestic focus of the settlement. A particularly large roundhouse was situated at its centre, and the deposition of domestic waste in the form of pottery and animal bone was concentrated on this part of the site. The only element of the roundhouse that survived was the drip gully, which had been redug on one occasion. The domestic character of the building was indicated by the assemblage of more than 900 sherds of pottery that was recovered from its fills, which contained comparatively more types associated with dining and consumption, such as flagons, beakers, bowls and platters, and conversely fewer storage jars, than were found in other features. The roundhouse gully also contained a large assemblage of 5kg of animal bone, presumably representing the remains of food consumed within the building. The northern half of the enclosure was bisected by a ditch, which presumably divided it into areas of different usage, although the precise nature of these uses was not evident. Several groups of pits and postholes were scattered around the enclosure, as well as two shallow, soil-filled hollows, but again there was no evidence as to their precise functions. A droveway extended along the southern side of the enclosure. The western end of the droveway may have fed into the large enclosure recorded by the geophysical survey, while at its eastern end one of the flanking ditches turned southward to form a boundary that extended away from the complex for *c* 60m, before continuing beyond the southern edge of the excavation area. This arrangement may have been designed to funnel livestock into the southern corner of the large enclosure, bypassing the area of domestic habitation.

The only evidence for the use of the other two enclosures that lay within the excavation area was a group of shallow pits or hollows in the enclosure to the north of the domestic area that had been used for the disposal of a large quantity of burnt chaff, most likely crop-processing debris that had been used to fuel ovens or hearths. It is not known whether this material was generated by domestic fires in the roundhouse or derived from agricultural or industrial activities within the enclosure, although no evidence for such activities was identified.

Around the end of the 1st century, the domestic focus was abandoned and the ditches that defined the enclosures that lay within the excavation area were left to silt up. A small amount of 2nd-century pottery was recovered from the upper fills of the ditch that formed the northern boundary of the complex and from the surface of the droveway, and a scatter of pits were dug at this time to the north of the complex, suggesting that some level of activity may have continued in the unexcavated part of the settlement. It is not certain that this activity was domestic in character but it appears to have included some small-scale metalworking, as debris from a forge had been discarded in the northern boundary ditch.

The area excavated at Site 3 encompassed only the south-western corner of the enclosure complex. The layout of the part of the complex that was exposed was similar to the contemporary complex at Wavendon Gate (Williams *et al.* 1996) in that it was bounded by an outer boundary ditch, the area within which was subdivided by further ditches into subsidiary enclosures. The whole of one of these internal enclosures was exposed, as well as parts of two others. The absence of features within the enclosures suggests that they were agricultural in function, and a pastoral function seems to be indicated by the arrangement of the boundaries that divided them, the initial layout of which was subsequently re-organised to create a droveway that would have facilitated the movement of livestock to and from the south-western enclosure whilst bypassing its northern neighbour. Parts of the various boundary ditches that defined and subdivided the complex had been subject to piecemeal recutting, representing periodic maintenance of the boundaries, and one of the recut ditches contained part of a leg from a juvenile dog that yielded a radiocarbon determination of 350-40 BC (SUERC-30625; 2120±35BP) which, combined with the ceramic evidence, indicates that the site was occupied from the first half of the 1st century BC. Shortly after the introduction of Roman ceramics, the boundaries were replaced by a new arrangement of ditches, although the orientation of the complex was maintained and there was no evidence that the reorganisation was associated with a break in occupation. Perhaps the greatest change in the layout of the complex was the absence of internal divisions, at least within the area exposed by the excavation, from which we can perhaps infer an increase in herd size or a change in grazing strategies. The reorganisation also included the addition of a triangular enclosure that contained a small cremation cemetery of four burials, each of which was interred within a ceramic urn and accompanied by at least one accessory vessel. A further activity area was represented by a scatter of pits to the west of the enclosure complex, although no evidence was found for their date or function. No evidence was found in either the late Iron Age or Roman phases for domestic settlement, which was presumably therefore situated in a part of the complex that lay beyond the limits of the excavation.

The form of the parts of the complex that lay beyond the limits of the excavation area is elucidated to some extent by the geophysical evidence

from the area to to north-east, which indicates that the complex extended for at least a further 80m in this direction (Fig. 8.4). The survey results show a series of major boundary ditches oriented NNW-SSE and ENE-WSW that divide the area into rectilinear blocks, as well as a group of more curvilinear boundaries. The boundaries in the excavated area are integrated into this arrangement by a linear feature in the south-western part of the survey area that is likely to correspond with either the outer boundary ditch of the late Iron Age complex or its early Roman counterpart. It is tempting to speculate that the curvilinear features represent parts of the late Iron Age complex and that the linear features are of Roman date, as this distinction in the forms of the ditches certainly holds true in the excavated area. It is unfortunate that the area to the east of the excavation area lay beyond the footprint of the Improvements and thus beyond the limits of the investigation, as it is clear that features identified both in the excavation and the geophysical survey area continue into this area but neither the extent nor the character of this part of the complex is known.

The two complexes of ditched enclosures at Berry Farm were recorded through geophysical survey and evaluation trenching but were not subsequently excavated as the material from the proposed borrow area was not required. The full extent of neither complex was identified as both extended beyond the limits of the proposed borrow area. The southern complex comprised two elements: its eastern part consisted a group of conjoined rectilinear enclosures of varying sizes, which were bounded to the west by an open space beyond which lay further conjoined enclosures of smaller and more irregular shape. The features identified at the northern edge of the survey area comprised a large rectilinear enclosure with possible internal subdivisions, on the southern side of which was situated a second possible enclosure. Due to the nature of the investigations at this site the detailed information recovered was necessarily more limited than at the other complexes. Dating evidence was limited, but the pottery from both complexes dated broadly from the late Iron Age-early Roman period, and the intercutting of some features indicated that they were in use for some length of time. No evidence was found that directly elucidated the functions of the enclosures, but the pottery and animal bone recovered are likely to derive from domestic occupation, and it is reasonable to infer that some of the enclosures also had agricultural functions. The proximity and apparent contemporaneity of the two complexes suggests that they may have served complementary functions, although precisely how they were related to each other is not known.

Developed farm complexes at Site 7 and Site 2

The farmsteads at Site 7 and at the south-western complex at Site 2 both extended beyond the footprint of the A421 Improvements and consequently the areas that were excavated do not constitute the full extent of the settlements (Fig. 8.5). Boundary ditches were recorded at Site 7 that clearly extended beyond the limits of the excavation area to both north and south, although nothing is known of the remains in these areas. The features investigated at Site 2 formed the south-eastern part of a complex that extended to the north-west beyond the area of the excavation, where further features were identified by the geophysical survey, although it is not certain whether the features from the geophysical survey represent the full extent of the remains. At Site 7 the geophysical survey did not extend beyond the limits of the excavation area. Both settlements were established during the early-mid 2nd century on sites that had not previously been used.

Site 7

The settlement at Site 7 was the easier to characterise as a greater proportion lay within the excavation area. It belonged to a class of farmstead that includes both settlements at Marsh Leys as well as Biddenham Loop Farmsteads 13 and 20 and the farms at Peartree Farm and Odell. All these settlements were founded or substantially re-organised at about the same time and to similar designs comprising a complex of domestic and agricultural enclosures adjoining one side of at least one major linear boundary or trackway. They differed from the earlier conjoined enclosure complexes in having a more open layout in which the enclosures were not incorporated into a single bounded complex. At Site 7 the major boundary was oriented NE-SW, and the farmstead comprised a group of at least four enclosures abutting its south-eastern side and further enclosures flanking a subsidiary boundary that extended towards the south-east, as well as two successive oval structures that may have been either agricultural buildings or palisaded enclosures. The precise function of the enclosures could not be definitely ascertained, although the range of shapes and sizes presumably reflects a corresponding range of domestic and agricultural activities. A large quantity of burnt chaff had been dumped in the ditch surrounding Enclosure 7, and presumably had been burnt within the enclosure; it is not certain, however, whether it had been used as fuel to fire hearths or ovens or represented the burning of unwanted crop processing waste. Another interesting aspect of the arrangement of the complex was the group of enclosures that adjoined the main boundary, which comprised two long, narrow enclosures alternating with two larger ones. This appeared to represent two pairs of enclosures, each consisting of one large and one narrow enclosure, and the two pairs were separated by the most substantial boundary ditch in the complex. This would seem to indicate that each pair comprised two enclosures that were functionally linked in some way, although their exact purpose is unknown, as is the reason for the juxtaposition of

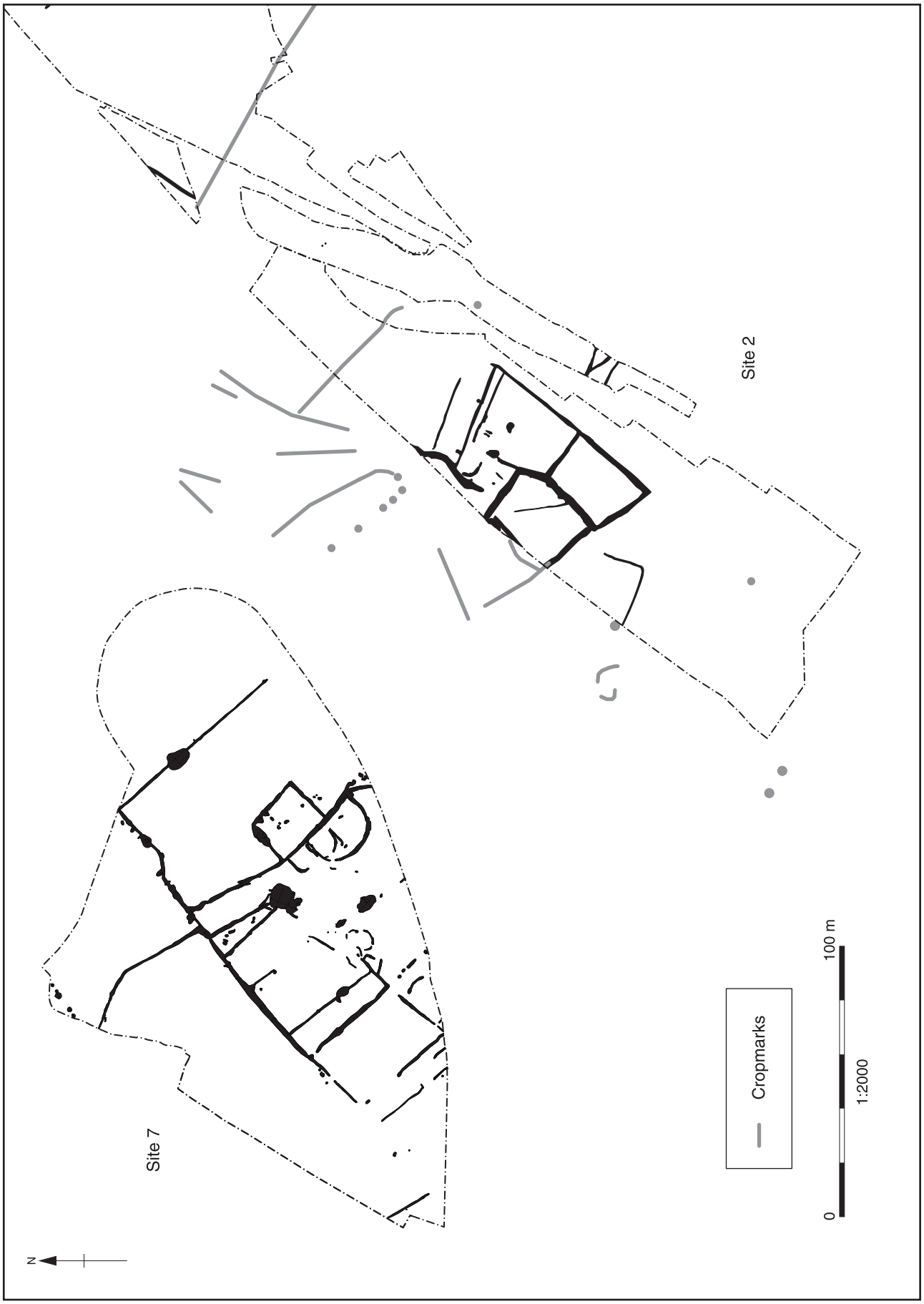

Fig. 8.5 Plans of the middle-late Roman developed farm complexes at Site 2 and Site 7

two such pairs. The complex was extended to the north-east at some point during the 2nd by the construction of a large, rectilinear enclosure. The enclosure measured 60m from north-east to south-west and at least the same distance from north-west to south-east and was not subdivided, forming a very large field comparable to the largest examples at Marsh Leys (Luke 2011, 148).

The refuse recovered from the fills of ditches and pits left little doubt that this was a domestic settlement, but no definite buildings were identified and the residential area was not identified. Pottery and bone were deposited in greater quantities in the ditches of the enclosures that flanked the subsidiary boundary, but not sufficiently so to confidently identify these enclosures as domestic, and the near absence of material from the possible oval structures indicated that they were not domestic in function. This contrasts with the situation at Marsh Leys, where two rectangular buildings were identified as well as three other possible examples (Luke 2011, 155), and at Odell, where a series of roundhouses were eventually replaced with a substantial rectangular farmhouse (Dix 1980, 16). The remains of any such buildings at Site 7 had presumably been destroyed by medieval and modern ploughing, which was evidenced by furrows that extended across the excavation area. The effects of ploughing had also severely reduced the enclosure and boundary ditches, which as a consequence were typically very slight and in places discontinuous. It was particularly noticeable that the features became shallower toward the south-western end of the excavation area, and it is not certain whether the end of the features in this part of the site represents the original arrangement or whether further remains had been completely destroyed. The similar sites were not sufficiently regular in plan to provide an indication of where the domestic buildings were likely to have been located; the domestic area at Odell was initially situated within a distinct, subrectangular enclosure but later moved to a more open part of the complex (Dix 1981, fig. 2), and at Marsh Leys the enclosures within which the buildings were set were not manifestly different from those with more agricultural functions (Luke 2011, fig.9.4). It is, of course, possible that the domestic focus lay beyond the limits of the excavation.

By the 3rd-century the ditches that defined the enclosures had fully silted up, and the only features dating from the later part of the Roman period were three large waterholes and a group of three burials. However, although the ditches were not maintained, the deliberate placement of the waterholes on the enclosure boundaries and the location of the burials alongside a boundary suggest that the interiors of the enclosures were being kept clear of obstructions. It is likely therefore that the enclosures continued in use, enclosed by hedgerows or fences that have left no archaeologically detectable trace. It is possible that each waterhole was in use for only a short period of time, as the pollen evidence from waterhole 15185 indicated that it was not kept clear of weeds, and was presumably no longer in use as a source of fresh water, by the time the initial layer of silt accumulated at its base. The disused features were then utilised as convenient receptacles in which to dispose of domestic refuse, which was presumably generated nearby, although no buildings or other incontrovertibly domestic features survived within the excavation area. Indirect evidence for buildings nearby was, however, provided by the insect assemblage in waterhole 15735, which included types that thrive in hay or other cut vegetation used as litter in buildings or stables.

Site 2

The south-western complex at Site 2 was rather more difficult to understand from the excavated evidence, as only a small part of it was exposed within the area of the excavation. The complex clearly extended to the north-west, where the geophysical survey recorded further boundary ditches. The boundaries appear to define a series of somewhat irregular rectilinear enclosures adjoining the eastern side of a substantial linear feature that may have been a hollow-way, but the features have a rather disjointed appearance, perhaps due to the nature of the clay geology, and it is difficult to escape the impression that they do not represent a complete or coherent plan of the remains in this area. In particular, it is difficult to be certain whether the site comprised a single complex of conjoined enclosures like the late Iron Age/early Roman settlement 200m to the north-east or a more open arrangement similar to Site 7. The excavated area encompassed four conjoined enclosures situated at the southern tip of the complex, and the geophysical evidence indicates that at least one similar enclosure adjoined their north-western side, possibly with larger enclosures to the north. It is clear from the small size of the artefactual assemblage that the excavated area was not used for domestic activities, and these enclosures presumably represented a peripheral area with agricultural functions, while the domestic area lay in the unexcavated part of the settlement.

The only excavated enclosure that contained positive evidence for its function had been used for crop processing. A pair of poorly preserved ovens were probably used for drying grain, although they may alternatively have been two flues from a single, larger oven. One was filled with burnt cereal chaff, representing the use of crop processing waste as fuel, and a large quantity of chaff had also been deposited in an adjacent ditch. Indeed, the quantities of wheat chaff in all the samples from this enclosure suggest that there was a large spread of waste material across the area. Close to the ovens was a partially paved hollow. It is uncertain whether this feature was originally an open hollow or the remains of a partly sunken building, and it may have been a threshing floor or a storage shed. Much

of its base comprised bare clay, but one end had been paved with a single large, flat slab of limestone measuring 1.4m by 1.1m and a mixture of smaller limestone slabs and sandstone cobbles. It is uncertain whether this mixture of surfaces was deliberate or simply the result of the opportunistic use of available materials. A similar large, flat slab of limestone was found among a dump of smithing debris within a ditch at Marsh Leys (Luke 2011, 165) and it is possible that the example at Site 2 was similarly associated with craft activity.

Buildings

Buildings were elusive on most of the sites, and the only type definitely identified was the roundhouse. One example was recorded at Site 4 (Trench 61) and two each at Site 5 and the north-eastern complex at Site 2. A small, presumably nondomestic circular structure was located at Site 4 (Trench 54) and hollow 20049 at the south-western complex at Site 2 and Structures 15742 and 15433 at Site 7 may also have been buildings, although this is far from certain.

Roundhouses are the archetypal building type of the Iron Age and Roman period and are assumed to have primarily served a domestic function (Pope 2008, 222-3). All the roundhouses at the A421 Improvements were of late Iron Age date except Roundhouse 2708/2709 at Site 2, which dated from the late 1st century AD. Each was represented primarily by a ring gully, which is likely to have been dug to catch rainwater falling from the eaves rather than representing the foundation for the wall of the building itself. Possible structural feature were associated with the buildings at Site 5, where five discrete features were situated in the vicinity of roundhouse 6021 and a single posthole lay within the footprint of roundhouse 6042. The structural character of the former group is not certain, however, as only the truncated bases of the features had survived, and they need not have been contemporary with the roundhouse as at least one other pit demonstrably belonged to a phase of occupation that preceded the building. Roundhouses in the region are in fact characterised by an absence of surviving structural features, and are usually represented only by the eaves gully (Webley 2007b, 59). The buildings within the eaves-drip gullies were presumably constructed without the use of substantial footings, and within Marston Vale the builders may have taken advantage of the availability of good quality Oxford clay to construct walls of cobb or wattle-and-daub. The sites had been substantially truncated by medieval and modern ploughing, and consequently only part of the circumference of the gully of each of the Iron Age examples survived. The only possible evidence for an entrance was at the western end of the surviving part of the eaves-drip gully at Site 4 (Trench 61), which ended in a square-ended terminal. This is somewhat at odds with the predominantly eastern or south-eastern orientation of roundhouse entrances, but such divergent orientations are not unknown. At Farmstead 2 at Marsh Leys, for example, roundhouse G57 had a south-facing entrance and roundhouse G73 faced north-west (Luke 2011, 152).

The early Roman roundhouse 2708/2709 at Site 2 was represented by a significantly more substantial eaves-drip gully than the earlier examples. It measured up to 2.25m wide and 0.56m deep. The gully was not a true circle and was particularly large, with dimensions of 17 x 15m. A survey of Iron Age roundhouse gullies in the Bedfordshire region indicated a typical diameter of 8-12m, with only a few larger examples (Webley 2007b, fig. 3.3), and the only larger roundhouse known in the region was the example at Luton Road, Wilstead, which measured 18m in diameter (Luke and Preece 2010, 153). Both larger examples date from the early Roman period, perhaps indicating a trend for larger roundhouses at this time, although there is not enough evidence to be certain of how typical these buildings were. The building at Site 2 was constructed during the second half of the 1st century AD, possibly the third quarter of the century, and the gully had been re-excavated on one occasion, but it is not known whether this was associated with an episode of repair or rebuilding of the roundhouse itself. A possible entrance was located on the north-western side, where a 1m break was present in the later circuit, but this is quite narrow for a roundhouse doorway and so may not have been the main entrance; possibly a primary entrance elsewhere on the circuit was accessed via a bridge of planks or logs with no break in the eaves-drip gully. The domestic debris deposited within the roundhouse gully makes clear its domestic function.

The structure at Site 4 (Trench 54) was situated a short distance outside the middle Iron Age enclosure and comprised a ring gully with a diameter of only *c* 2.5m, the western half of which had been destroyed by Phase 3 enclosure ditch 17719. Its small size precludes a domestic function and suggests that it was an ancillary structure, perhaps with an agricultural or storage function. A slightly larger, though still small, circular structure of similar date, with a diameter of *c* 5m, has been recorded at Bedford Western Bypass Area 1 (Albion Archaeology 2008), and a similarly sized example dating from the late Iron Age/early Roman period was excavated at Marsh Leys Farmstead 2 (Luke 2011, 155).

Evidence for buildings from the middle and late Roman period was decidedly elusive, as has been noted at other rural sites in the region (Luke 2008, 58). This could simply mean that buildings were no longer provided with eaves gullies, but alternatively the traditional roundhouse may have been superseded by other types of building that were constructed using a technique that left little trace, such as the ephemeral rectangular structures

identified at Marsh Leys (Luke 2011, 155). No buildings of this type were encountered at the settlements on the A421 Improvements, but it is possible that partially paved hollow 20049 at the south-western complex at Site 2 represented the remains of a sunken-floored building, or one whose floor had become concave through wear. A building at Yarnton, Oxfordshire, identified in similar circumstances, was represented by only a well-preserved floor surface within a shallow hollow with no surviving evidence of a superstructure (Robinson and Hey 2011, 40). A possible building surviving only as a clay surface has been recorded at Peartree Farm (Albion Archaeology 1995). Unlike the example at Yarnton, hollow 20049 did not produce a significant concentration of domestic debris, but a structural interpretation receives some support from a possible posthole at its northern end. If it is indeed the remains of a building, the paucity of material culture would indicate a non-domestic function.

The character of structures 15742 and 15433 is uncertain, but like hollow 20049 they were oval in plan. The gullies that defined them may have been foundation trenches, supporting either a wall of split timbers if they represent buildings or a fence of wooden pales if they were stock enclosures. As with hollow 20049 the absence of occupation material precluded a domestic interpretation.

Landscape

Settlement pattern

No evidence was found for permanent settlement before the middle Iron Age. Due to the wide date ranges ascribed to middle Iron Age pottery it is not possible to be certain how rapidly colonisation occurred, but the three sites of this period identified within the area of the A421 Improvements, at Site 4 (Trench 54), Site 4 (Trench 61) and Site 5, represent a quite dense distribution of settlements, and if they were typical of the area as a whole it would appear that Marston Vale was quite extensively settled during this period. This project has provided the most significant evidence for middle Iron Age settlement thus far recorded in the Vale, the only other known site being a small group of features at Marston Moretaine (Shotliff and Crick 1999, 35), but this apparent absence of remains may in part be due to the relative absence of fieldwork beyond the immediate environs of Bedford and the poor visibility of cropmarks on the heavy clay soils.

The number of occupied sites at the A421 Improvements increased from three to four in the late Iron Age, all of which represented new foundations as the sites that were occupied during the middle Iron Age were now abandoned. This coincided with the earliest occupation at several other sites in Marston Vale, at Marsh Leys (Luke 2011, 139), Wilstead (Luke and Preece 2010, 151) and Woburn Road, Marston Moretaine (Connor 2000), as well as continued occupation at Beancroft Road, Marston Moretaine (Shotliff and Crick 1999, 41), and formed part of a more general increase in settlement density that has been noted both in Bedfordshire (Dawson 2007, 66) and beyond (Cunliffe 2005, 265; Willis 2006, 107). The increase in the number of settlements would necessarily have required a greater uptake of land, presumably entailing clearance of more of the Vale's surviving woodland, although some woodland regeneration may also have taken place where settlements had been abandoned. The latter phenomenon would have provided a context for the ash identified at Site 3, as this tree requires fairly open conditions and is a coloniser of secondary woodland.

The settlements at the A421 Improvements that were occupied during the late Iron Age all continued into the early Roman period, but by the first half of the 2nd century all four had been abandoned, to be replaced by newly established settlements at Site 7 and the south-western complex at Site 2. A similar situation was recorded at both Wilstead and Woburn Road, Marston Moretaine, and although both farmsteads at Marsh Leys continued in occupation there appears to have been a major reorganisation of the landscape at this site, including the layouts of the farmsteads themselves. In fact the new layouts of the farmsteads at Marsh Leys were strikingly similar to that at Site 7, suggesting that a new model for the design of rural settlements had been adopted. These settlements each appeared to be associated with major landscape boundaries including one example that extended for at least 530m and linked Farmstead 4 at Marsh Leys with Bedford Western Bypass Area 11 (Luke 2011, 168 and fig. 9.17), and although the total number of settlements in use had been reduced compared to the early Roman period it seems probable that much of the landscape was now agricultural.

Communications

The communities that occupied the settlements within Marston Vale were, no doubt, integrated into larger social groups and exchange networks, but little is known of the routeways that connected them. The Vale was certainly off the beaten track as regards the main network of roads established during the Roman period. The principal routes that passed through Bedfordshire were Watling Street, which crossed the south-western part of the county en route from London to Chester, and a by-road of Ermine Street that crossed the eastern edge of the county, passing through Baldock, Sandy and Godmanchester, neither of which passed close to Marston Vale (Simco 1984, 63-5).

It is likely that during both the Iron Age and the Roman period rural settlements such as those within the Vale were linked by a network of less formal tracks that were of purely local significance and which have left little trace in the archaeolog-

ical record. The enclosure of parts of the landscape during the Roman period may have entailed the creation of boundaries that significantly effected movement through the Vale, preventing passage through certain areas or in certain directions and perhaps cutting off pre-existing routes. However, such boundaries can also function as routeways, channelling movement along their length and promoting the development of pathways beside the boundary earthwork (Tullett 2010, 113-4). It may be significant in this respect that the settlements established during the 2nd century at Site 7 and Marsh Leys Farm are associated with major boundaries along which such routeways may have extended. Indeed, at Farmstead 2/4 at Marsh Leys Farm these boundaries were defined by parallel ditches that presumably bounded either side of such a track (Luke 2011, 145-6), and the settlement at Peartree Farm was associated with a similar trackway (Albion Archaeology 1995). Such obvious physical evidence for a trackway was lacking from Site 7 but by analogy with these sites it is possible that a pathway extended alongside the boundary along the north-western edge of the enclosure complex, defined by ditch 15986. If this were the case, the subsequent construction of ditch 15985, which cut laterally across the earlier boundary, may have resulted in a significant reorganisation of the pathways by which the settlement was accessed.

Environment

The evidence from the geophysical survey and evaluation trenches indicated that the spaces between the settlements were more or less devoid of archaeological remains, and it is likely that they were occupied by a mixture of woodland, scrub and open pasture. The distribution of these differing environments is, however, unknown however. In addition, there may have been areas of arable cultivation that were not enclosed within archaeologically detectable boundaries. At Marsh Leys a low level scatter of pottery was recorded in the modern ploughsoil around the farmsteads that may have derived from manuring of otherwise undetectable arable fields.

The abundance of oak among the charcoal recovered from all of the sites suggests that mature oak woodland was present, a phenomenon that has been observed at other contemporary sites in Bedfordshire (Cartwright 2004, 288-90). Blackthorn and hawthorn were also common, as well as field maple, suggesting that some of the area surrounding the sites consisted of open woodland or scrub. Ash was also recorded at Site 3, and it is possible that together they formed areas of mixed deciduous woodland – oak, ash, maple and blackthorn being the staple woodland of most of the Midlands today (Rackham 2003). It is likely that much of the woodland was managed in order to provide the timber requirements of the local communities, and certainly trimmed oak log 15791, from late Roman waterhole 15735 at Site 7, appeared to be from a tree grown in managed woodland. However, the same feature also produced plank 15790, which probably came from a tree that grew in wildwood conditions, indicating that areas of natural woodland persisted at least until the early 2nd century, when this piece is likely to have been felled. The occasional fragments of willow/poplar suggest collection of wood from damp areas, and hence that some of the areas surrounding the sites may have been prone to waterlogging. Pollen evidence from waterhole 15185 at Site 7 indicated a decline in tree cover during the late Roman period, possibly representing clearance resulting in an almost treeless landscape.

The immediate environs of the settlements may have been enclosed by boundaries of several forms in addition to the ditches that formed their most obvious manifestation during the excavation. Indeed, the molluscan evidence that the ditches at Site 3 and at the south-western complex at Site 2 were themselves being grazed indicates that they did not form an effective barrier to livestock and so an additional barrier such as a hedgerow or fence would have been necessary for the enclosures to have had any practical use. The shade provided by such a boundary would explain the presence of shade-demanding molluscs in one of the samples from the outer boundary ditch of the late Iron Age enclosure complex at Site 3. The sloe/blackthorn, wild cherry, maple and ash identified in the charcoal assemblage may have derived from hedgerows, the latter two being the most common hedgerow trees in the east Midlands and the Chilterns (Rackham 2003). Evidence for two forms of boundary was preserved in waterhole 15735, comprising a group of oak fencing pales and material that may have derived from a 'dead hedge', a barrier formed by driving stakes into the ground, between which are clasped prunings of assorted light material. The molluscan evidence from Site 2, Site 3, Site 4 (Trench 54) and Site 7 indicated that the ditches held standing water, at least seasonally, as might be expected given the poor drainage of the clay substrate, but the greater distance of the A421 Improvements sites from the Elstow Brook appears to have insulated them against the rise in water levels that effected the settlements at Eastcotts and Marston Park, Marston Moretaine during the late Roman period (Shepherd 1995, 7; Chapman *et al*. 2011, 364).

Environmental evidence from the waterholes at Site 7 provided an indication of the immediate surroundings. The pollen assemblage from waterhole 15185 was characteristic of an open landscape with ruderal communities typical of habitation sites and footpaths, together with some grassland, probably used for pasture, while the insect remains indicated that waterhole 15735 was surrounded by bare, muddy ground populated by nettles. The

concentration of dung beetles in the latter feature was indicative of a dense concentration of grazing animals around it.

Agriculture and economy

All the sites investigated on the A421 Improvements were small rural farmsteads. Evidence for cultivation of cereals was identified in the form of crop processing debris that had been preserved by charring or by preservation in waterlogged conditions, and also cereal pollen recovered from late Roman waterhole 15185 at Site 7. Indirect evidence was also recorded in the form of a grain weevil in a sample collected from late Roman waterhole 15735. The remains of domestic animals were recovered from all of the sites apart from Site 9 and the evaluation at Berry Farm Borrow Area.

Evidence for agricultural activity was also provided by elements of the infrastructure of the farmsteads. Livestock may have been accommodated within the outer enclosure circuit at Site 4 (Trench 54), and the enclosure complexes at Site 2, Site 3, Site 7 and Berry Farm probably had agricultural functions, although the precise use of individual enclosures are not known. They may have been used for cultivation, as paddocks, for horticulture or any combination thereof, although the dung beetles from waterhole 15735 at Site 7 and the molluscs at Site 3 and the south-western complex at Site 2 clearly indicate that they were grazed by livestock. The middle Roman ovens and paved hollow within Enclosure 4 at Site 2 indicate that this was an area used for crop processing, and dumps of burnt crop processing debris deposited in a group of pits and hollows dating from the early Roman period at this site and in a 2nd-century enclosure ditch at Site 7 attest to similar activities at these settlements. The sickle blade from Site 4 (Trench 54) may have been used to harvest crops, and the querns from Site 2, Site 3 and Site 7 were clearly used in processing grain. In practice, it is perhaps likely that an annual cycle was implemented in which livestock were grazed on the stalks of the harvested fields, thus providing both fodder for the animals and manure for the field, and so any attempt to distinguish between fields used for cultivation and those used as pasture is artificial.

The evidence was not evenly spread among the sites, however. The majority of the animal bones came from Site 2, Site 3, Site 4 (Trench 54) and Site 7, with only insignificant quantities from the other sites, and the plant remains assemblages were restricted to Site 2, Site 4 (Trench 54) and Site 7. This is likely to reflect the character and preservation of the surviving features rather than a lack of agricultural activity at the other sites, on which only a small number of plough-truncated features survived. It is likely that all the settlements practised mixed farming regimes of cultivation and husbandry, although the relative importance of the two cannot be established with any certainty.

Cultivation

Apart from the dumps of burnt crop processing waste at Site 2 and Site 7, plant remains were generally sparse and only a fairly broad-brush impression of the arable crops grown can be established. Indeed, even soil samples from deposits that appeared to have good potential for preservation of charred plant remains frequently produced very disappointing results when processed. This is a common phenomenon at sites situated on clay geology, and is generally attributed to the mechanical properties of the resultant soils, with freeze-thaw and wet-dry cycles in particular being implicated in the physical attrition of the charred remains, until it is rendered too comminuted for collection.

Little evidence was found for the crops grown during the middle Iron Age at Site 4 (Trench 54). No deposits were uncovered that were directly associated with cultivation or crop processing and only a sparse background noise of charred plant remains incorporated incidentally into the fills of pits and ditches was identified. The preservation of this material was almost universally poor and provided little evidence for the crops from which it derived. The sickle blade recovered from enclosure ditch 17718 provided indirect evidence for the harvesting of crops, and the phytolith evidence indicated that straw, presumably derived from arable crops, was dumped into the enclosure ditches after use.

No late Iron Age features produced significant evidence for plant remains, but evidence from the Roman period indicated that the main crop grown was wheat, which, in the instances that could be identified to species, was predominantly spelt. This was the most common type of wheat grown in southern and central Britain during the Iron Age and Roman period (Jones 1991, 31-2) and similarly dominated the assemblages at Marsh Leys (Luke 2011, 162) and Biddenham Loop (Luke 2008, 63), as well as other contemporary sites in Bedfordshire such as Haynes Park (Luke and Shotliff 2004, 121), Stagsden (Scaife 2000a), and sites on the Great Barford Bypass (Poole 2007a, 153). Emmer formed a minor component of the wheat remains. This species had been the main wheat crop during the Neolithic and Bronze Age but by the Roman period probably survived only as a weed of the spelt crop. The discrete dumps of charred plant remains at Site 2 and Site 7 consisted predominantly of chaff, and so are likely to represent the disposal of crop processing waste that had been burnt to fuel ovens or hearths.

No deposits of crop-related material was recovered from the late Roman period, which is unsurprising given the limited number and range of features from this period. The evidence from nearby sites such as Marsh Leys and Biddenham Loop, however, suggests that cultivation practices are likely to have remained substantially unchanged.

Barley and oats were encountered both at Site 4 (Trench 54) and in Roman contexts at Site 2 and Site 7, albeit only in small quantities. It is difficult to evaluate the significance of these species as neither requires heat to process them beyond possibly drying a damp or 'green' crop and so they are less likely than wheat to be accidentally charred and thus preserved within the archaeological record. Barley was a common crop during the Iron Age and Roman period (Jones 1991, 23; 1996, 32) and has been recorded at Marsh Leys (Luke 2011, 162) and Biddenham Loop (Pelling 2008, 285), and so is likely to represent a crop. Most of the oats could not be identified to species and so could be the wild form, growing as a weed among other crops, but the cultivated variety was definitely recorded in a middle Roman context at Site 7.

Flax may also have been grown. Only a single seed was identified, from a middle Roman context at the south-western complex at Site 2, but the scarcity of remains of this plant may be due to the fact that, like barley and oats, fire plays no part in its processing and so preservation of charred material is less likely to occur. It was a commonly grown crop during the Roman period for the production of oil and for fibres for linen (Tomlinson and Hall 1996).

Legumes may have formed another part of the diet. Legume seeds were present at Site 4 (Trench 54) during the middle Iron Age but it was not possible to identify them to genus or species and they were present in such small numbers that it is difficult to interpret them as a potential cultivated crop. Garden pea was identified in early and middle Roman contexts at the north-eastern complex at Site 2 and a single fragment that may have been either garden pea or broad bean was recovered from a middle Roman context at the south-western complex. The quantities involved are extremely small and indicate no more than the practice of small-sale horticulture for consumption within the settlements.

Husbandry

None of the sites were occupied throughout the Iron Age and Roman period. Site 4 (Trench 54) was in use during the middle Iron Age, Site 3 and the north-eastern complex at Site 2 during the late Iron Age and early Roman period, and Site 7 and the south-western complex at Site 2 during the middle and late Roman period, although the latter site makes a relatively minor contribution to our understanding of the late Roman period. Considered together, however, they provide an indication of the changes in animal husbandry during these periods.

Cattle and sheep/goat were by far the most abundant species in all periods, but the relative importance of these two changed over time. Cattle were the most numerous species during the middle Iron Age at Site 4 (Trench 54), where they accounted for nearly two thirds of the identifiable bones. Across the A421 Improvements as a whole, sheep became increasingly abundant at the expense of cattle during the late Iron Age, and nearly reached parity during the early Roman period. This general pattern reflects trends in animal husbandry that Albarella (2007, 391) has recorded for this period in a survey of sites in the Midlands and East Anglia, but contrasts slightly with the situation at both Marsh Leys and Biddenham Loop, where the predominance of cattle was never challenged (Luke 2011, 163). From the 2nd century onward the evidence indicates a substantial resurgence in cattle, which remain predominant for the rest of the occupation of these sites and reach 81.9% of identified bones at the late Roman settlements at Site 2 and Site 7. The existing predominance of cattle at Biddenham Loop similarly increased during the late Roman period (Luke 2008, 63). This concentration on cattle made the best advantage of the local conditions, as the low-lying and relatively poorly drained clay landscape would have been well suited to pasturing cattle, whereas sheep fare less well in damp conditions. This phenomenon may form part of a regional or subregional trend, as the predominance of cattle at several sites in the Milton Keynes region has been noted previously in relation to possible specialisation in cattle breeding (Holmes and Rielly 1994, 531). Husbandry regimes a short distance downstream, to the north-east of Bedford, on the other hand, may have been rather different, as the sites on the Great Barford Bypass produced assemblages that were dominated by sheep/goat (Holmes 2007, 362).

The ageing data indicates a mixed strategy that combined slaughter of some animals for meat while other individuals were retained for their secondary products, the most important of which are likely to have been manure and traction, the latter evidenced by pathological conditions recorded from the middle Iron Age at Site 4 (Trench 54), the early Roman period at Site 2 and the late Roman period at Site 7. The paucity of evidence for dairying is consistent with results from the rest of the country that suggest that there was little taste for dairy products (Hesse 2011, 241-2). The mortality profile was fairly constant throughout all periods, suggesting that this represents traditional husbandry strategies originating in the Iron Age that continued to be practised at least until the late Roman period, when there was some evidence from the epiphyseal fusion data at Site 7 for a greater emphasis on the production of prime beef.

The bones of sheep and goat are difficult to distinguish but it is likely that most such remains came from sheep as the only evidence for goat was a single horn core from a middle Iron Age context at Site 4 (Trench 54). As with cattle the ageing data for sheep/goat was limited, but the evidence indicates no clear peak in the age of slaughter. Some were culled at the optimum age for meat (2-3 years) but a significant proportion were kept to a greater age, presumably for wool and milk and as breeding stock. First year mortalities may represent lambs that had not grown to full size but were neverthe-

less slaughtered for meat, perhaps as part of autumn/winter culls designed to manage the size of flock that required overwintering. Wool may have been a major product, but generally the strategy indicated by the mortality profile is non-intensive, providing all the commodities to be gained from sheep without specialising in one at the expense of the others. Such a system would have been easy to maintain, with little need for the provision of winter fodder, and in which most surplus animals were culled in their first year. The absence of neonates may indicate that the animals were not brought into the settlements for lambing but, as with the similar absence of neonatal calves, it is possible that this results from the poorer survival of the bones of young animals. There was no evidence in the ageing data to suggest that sheep husbandry practices varied between sites or changed over time.

Pigs were kept in small numbers for their meat, but were not a major element of the subsistence strategy, and the only evidence for domestic fowl came from the south-western complex at Site 2, where a single individual had been deposited within an oven dating from the middle Roman period. Both species were more common in towns and villas than on low status rural settlements (Hesse 2011, 233; Maltby 1997, 421), and it is possible that they were viewed as being more appropriate to urban environments than as farm animals.

The only other domestic animals for which evidence was found were horse and dog, although neither appears to have been used for human consumption. Both species were ubiquitous at all sites and in all phases, albeit only in small numbers. The horses were not normally slaughtered until they had reached an age where they are likely to have been past their prime or had debilitating injuries or illnesses, which suggests that they were kept for use as draught or pack animals. Further evidence for such a use was provided by pathologies identified at Site 7. With the exception of one distal radius in the late Roman assemblage at Site 7 all horse remains came from adult animals and this, along with the small quantity of remains, suggests that the settlements were not maintaining breeding herds but were obtaining individual adult animals when needed.

The evidence from butchery marks indicates that at Site 4 (Trench 54) the processing of carcasses was carried out entirely with knives, and that this practice continued at the late Iron Age sites. During the Roman period cleavers were introduced at Site 2 and Site 7, although only two instances were recorded at the former site. At Site 7 cleavers were used for disarticulation, although knives were also used for this task with equal frequency, and skinning, filleting and portioning were carried out exclusively with knives. The adoption of cleavers during the Roman period is a widespread phenomenon and has also been recorded at Marsh Leys (Maltby 2011, 125), Biddenham Loop (Maltby 2008, 283) and Great Barford (Holmes 2007, 336, 342, 349, 353), although at these sites marks from knives are less prevalent than at Site 7. The use of cleavers is closely associated with urban and military settings, where it probably represents professional butchers with a large turn-over of carcasses (Maltby 2007; Seetah 2006). Familiarity with these techniques presumably spread to rural sites such as Site 7 from the local towns at *Magiovinium*, Sandy and Dunstable, although contact with the military cannot be ruled out, perhaps through local men returning after military service.

Other resources

In addition to the crops and livestock maintained at the settlements, the communities of Marston Vale also exploited a wide range of resources from the landscape around them. Some of these resources are likely to have been partly or entirely managed, the most obvious examples being woodland and hay meadows.

The management of woodland during the late Roman period was attested at Site 7 by some of the worked wood that had been disposed of in waterhole 15735. The timber used for the oak fence pales is likely to have come from managed woodland, and the trimmed oak log was from the top of a small, fast-grown tree typical of managed woodland where small timber and firewood was regularly cut. The willow and poplar roundwood is likely to have originated from less formally managed willow pollard or scrub. The narrow tree-rings and straight grain of the plank from a box-like structure, in contrast, suggests that areas of wildwood were also exploited for more substantial trees. Roundwood, mostly of blackthorn-type plants, was the main source of fuel for hearths and bonfires, and probably represents a mixture of underwood collected from the woodland floor and material from hedge trimming. Oak was used for the early Iron Age cremation at Site 5, and also dominated the charcoal assemblages from middle Iron Age pit 17007 at Site 4 (Trench 54), a late Iron Age pit at Site 5 and a late Iron Age ditch fill at Site 3. These deposits are likely to represent material that was burnt in a specific activity for which oak was selected due to its longer burning properties.

Hay would have been required as fodder, particularly for overwintering livestock, and may also have been used as litter or for insulation in a domestic setting. By its nature it leaves little direct evidence, but the remains of *Craspedolepta nervosa* nymphs, which are usually found in dry grassland, were identified in samples from late Roman waterhole 15735 at Site 7, where they probably arrived on cut hay that was disposed of in this feature after being used in the settlement.

There was little evidence that the diet was supplemented through hunting. Although deer remains were found in Iron Age and Roman contexts at Site 4 (Trench 54), Site 2 and Site 7, they were mainly in the form of antler fragments on

which neither the burr or pedicle were represented, and so it it is not possible to be certain whether they derived from hunting or from the collection of shed antlers. Deer bones from two middle Roman contexts at the south-western complex at Site 2 may have come from hunted animals. It is possible that hunting was the preserve of the elite and that the inhabitants of these farmsteads were not of sufficient status to be entitled to hunt.

No evidence was found for the gathering of wild plant sources such as nuts or berries, and fish were also completely absent. Dobney and Ervynck (2007) have argued that fish was not regarded as a suitable food source by Iron Age people, and although fish become more common on sites of the Roman period, their absence from the Roman phases at the A421 Improvements, which has also been noted at Marsh Leys (Luke 2011, 163), may indicate that this attitude persisted.

Geological materials that were used in construction or in other domestic activities were obtained from a number of different sources. Both the shelly limestone that provided a flat piece of uncertain function at Site 4 (Trench 54) and the Oolitic limestone used as paving in middle Roman hollow 20049 at Site 2 and for a block of possible building stone during the late Roman period at Site 7 are likely to come from exposures in the sides of the Great Ouse Valley north-west of Bedford. A local source is likely for pebbles such as the quartzite pebble rubber from a late Roman waterhole at Site 7 or the sandstone pebbles used for the metalling of the entrance to the enclosure at Site 4 (Trench 54) and as cobbling in middle Roman hollow 20049 at Site 2. Such pebbles could have been obtained from the bed of Elstow Brook or one of its tributary streams, or from the boulder clay on the higher ground that surrounded the Vale. The geology on which the settlements were situated provided a ready source of good quality clay, which in modern times has given rise to a major brickmaking industry. In addition to its use in pottery manufacture, the main use for clay would have been as a construction material in daub and cobb structures. Extraction was recorded at the north-eastern complex at Site 2, where a group of intercutting pits were interpreted as clay quarries, and at Site 7, where clay exposed in the sides of the ditch defining Enclosure 7 was exploited, and a large, amorphous pit may also represent an area of quarrying. Waterhole 15735 at Site 2 produced some evidence that materials may have been obtained from greater distances during the late Roman period, in the form of a large slab of Totternhoe stone from the southern tip of Bedfordshire and two rotary quern fragments and a millstone fragment all in Millstone Grit, which are likely to originate from Derbyshire.

Exchange

It is difficult to assess the extent to which the production at each settlement was intended for trade rather than serving the immediate needs of the resident community. Certainly husbandry practices appear to have been designed to achieve a balance between each of the products offered by the livestock (primarily meat, traction and wool) without concentrating on a specific one, and this might suggest that the main concern was subsistence, each settlement aiming to be self-sufficient in as many products as possible. By the Roman period, if not earlier, however, the demands of taxation would have required that each settlement generate surplus produce beyond its immediate requirements.

The material culture at all the sites was rather poor, but nevertheless some of the commodities present probably arrived through trade, and presumably were exchanged for agricultural produce. Pottery is the most abundant artefact at all the settlements and may act as a proxy for the level of trade in which they were involved. During the Iron Age there is no evidence that any of the vessels were not locally produced, although the decorated copper alloy strip at Site 4 (Trench 54), the fragments of lava quern from a late Iron Age pit at Site 3 and the mid 1st-century AD brooches from Site 2 and Site 4 (Trench 54) indicate that the absence of traded goods during this period was not absolute. The lava quern is likely to have originated from the Continent, most likely Germany, although such material was widely exchanged and is quite common on sites of this period (Peacock 1980, 49). A small number of non-local vessels arrived from Verulamium and South Gaul during the early Roman period, particularly at Site 2, and the quantity increased during the 2nd and 3rd centuries to *c* 20% of the vessels in use at Site 2 and Site 7, by which time pottery was also arriving from the Nene Valley and the Alchester-Towcester area. During the late Roman period the sources of pottery became more diverse with the addition of wares from the Oxford region, Dorset, Hadham (east Hertfordshire), and Mancetter-Hartshill (Warwickshire). This increase in traded goods may be evidence for a greater integration of the settlements into wider trade networks and is an almost universal phenomenon at this time. It does not, of course, mean that the communities of Marston Vale had direct contact with the areas from which these goods originated, but suggests that they were exchanging their produce at markets where such products were available. Markets may have been located at the nearest towns at Sandy, *Magiovinium* and Dunstable, although how urban these settlements were and whether they acted as local market centres are unresolved issues.

The settlements are also likely to have been involved in more local exchange networks with the neighbouring communities around Marston Vale. It is interesting in this context that farmsteads at Marsh Leys and Kempston Church End have produced unusually substantial evidence for iron working, perhaps suggesting that they possessed

forges that provided services for the neighbouring communities (Luke 2011, 165). Evidence for pottery manufacture is also limited to a small number of sites, such as Site 3 and Farmstead 5 at Biddenham Loop (Luke 2008, 201-5), and it is possible that this too was a practice in which a few sites specialised for local trade.

Craft activities

Carpentry would have been one of the most important craft activities at all the settlements, essential in construction and also for fencing and making agricultural and other craft tools. Most of the evidence for these activities has not survived, but an assemblage of timber that had been disposed of in a disused waterhole at Site 7 provided an indication of some of the techniques in use during the late Roman period. The material was a mixed group that included a plank from a box-like structure that may have been part of a well-lining, a group of oak fence pales, pieces of roundwood and assorted off-cuts. The plank and fence pales had been cleft radially from the log and the very thin pales could only have been made with specialised tools: a 'froe' and a 'break'. The froe is a cleaver-like tool with a handle set at 90° to the blade, known from at least one Roman tool hoard (Goodburn 2011c) and the break is a simple holding device used to hold the poles or billets to be cleft. More detailed shaping had been carried out with both saws and axes.

Remarkably little evidence was uncovered for metalworking at any of the sites. While items such as the decorated copper alloy strip at Site 4 (Trench 54) and the brooches found there and at Site 2 and Site 3 were probably manufactured elsewhere and obtained through trade, it is inconceivable that rural farmsteads such as those recorded at the A421 Improvements did not have access to a smithy for more day-to-day needs, such as the manufacture, repair and ultimate recycling of agricultural tools. Four smithing hearth bottoms and a piece of what might be another were recovered from a small area of the north-eastern complex at Site 2. The material came from the upper fill of boundary ditch 2475 and from a pit that cut the ditch, and was deposited during the 2nd century, when the ditches of the enclosure complex had all but silted up. The absence of hammerscale indicates that metalworking was not carried out at this location, so the ditch was presumably being used as a convenient receptacle in which to dispose of debris generated elsewhere. It is unlikely that this material would have been transported far for disposal, however, so the metalworking may have been carried out nearby. This would have been consistent with the tendency for smithing to be restricted to peripheral areas of the settlement (Hingley 1997, 12). Smithing at the south-western complex at Site 2 during the late Roman period was attested by three hearth bottoms and a tiny amount of undiagnostic slag recovered from the fill of an enclosure ditch, again without hammerscale, but otherwise the only evidence for metalworking came from tiny quantities of slag at Site 3 and Site 7, and from the fill of a medieval furrow at Site 4 (Trench 54). Although it is possible that metalworking was carried out in areas of the farmsteads that lay beyond the limits of the excavations, such small quantities of smithing debris may indicate that it was not a major activity on these settlements. A much larger assemblage of metalworking debris was uncovered at one of the farmsteads at Marsh Leys and also at Kempston Church End, and it has been suggested that some settlements may have possessed a dedicated forge that provided iron working services for the surrounding area (Luke 2011, 165).

It is somewhat surprising that more substantial evidence was not found for the manufacture of pottery, since Marston Vale is situated on a source of good quality clay and much of the pottery assemblage came from local, though unidentified, sources. No kilns were located within any of the excavation areas but the two kiln bars that had been disposed of within an early Roman ditch at Site 3 had presumably been used in a kiln situated somewhere nearby. Three vessels at Site 7 that appeared to be wasters or seconds may indicate that potting was undertaken at this settlement also.

Animals would have been an important source of material in addition to their dietary significance. The remains of a leather shoe with a hobnail sole, of a type common in Roman Britain, was recovered from a late Roman waterhole at Site 7. It is not certain that the shoe was made at the site rather than being obtained through trade, but the piece of waste leather found with it is certainly suggestive of leather working taking place nearby, and the bone point/awl found at the same site may have been a leather-working tool. Antler working during the Iron Age was attested by sawn-off antlers at Site 4 (Trench 54) and Site 2, and similar evidence from the Roman period was recorded at Site 7, but the small number of pieces suggests that this was only an occasional activity. The only finished product was the head of a rake cut from an antler recovered from a late Roman waterhole at Site 7. Bone working was indicated by a bone point or awl from the same site, and a goat horn core at Site 4 (Trench 45) that had been chopped off mid-horn may be evidence for the working of horn.

Butchery practices have been alluded to above, but milling would also have been a regular element of food preparation. Fragments of quern were recovered from Site 2, Site 3 and Site 7 and a piece from a mechanically operated millstone was also found at the latter site (although the fragment appeared to have been brought to the settlement for use as a sharpening stone rather than indicating the presence of a mill). No hearths or ovens survived, but much of the charcoal within other features is likely to have derived from fuel used in such domestic contexts, and some of the structural fired clay may have come from clay ovens. Heat-

discoloured stones were a common find within feature fills – such as the group deposited in roundhouse gully 2709 at the north-eastern complex at Site 2 – and had probably been used as pot-boilers. A sandstone slab with a circular burnt and blackened mark on one face may have been used as a hotplate. A large proportion of the ceramic vessels were probably used for cooking, positive evidence for which was recorded on numerous vessels in the form of burning resulting from being placed on the hearth. In addition to this, a jar from Site 2 contained a burnt deposit which may be a food residue, and a vessel at Site 7 with a limescale-like deposit across its internal surface had been used to boiling water. Two white-ware mortaria at Site 7 had patterns of burning that suggested that they had been inverted over cooking vessels set on the hearth in the manner of a *testum*. In this form of cooking, reconstructed by experimental cooking from descriptions in *Apicius*, an oven is created by heaping hot embers on top of and around a vessel inverted and placed over an upright vessel (Grocock and Grainger 2006, 77-82).

Social practices

Although buildings interpreted as shrines have been excavated at Biddenham Loop and Marsh Leys Farm (Luke 2008, 227-31; 2011, 159-60), the most common form of evidence for ritual activity at Iron Age and Roman rural settlements comes from 'special deposits' – deposits of material that appear to have been placed deliberately rather than representing random dumps of rubbish. These deposits were presumably associated with religious or secular rituals that occurred at the level of the individual household or settlement, although it is clear from their relative scarcity that they were far from an everyday event, and they may represent special occasions in the life of the community that occupied the settlement. Identifying such deposits is not straightforward, but several possible examples were recorded at the A421 Improvements.

The most intriguing instance came from the ditch enclosing the north side of the early Roman cremation cemetery at Site 3, where a replica of a samian Drag. 37 bowl had been placed on the base of the ditch along with the articulated skull and vertebral column of a cow and a group of horse leg bones. The latter formed a discrete bundle and may have lain within an organic container that has not survived, while the cattle remains were deliberately placed with the vertebra aligned along the base of the ditch. Although the pot and the two groups of bones lay close together they were not in direct contact and it is not certain whether they were deposited together in a single event or represent an accumulation of material placed on separate occasions. The association of these remains with the boundary enclosing the cemetery strongly suggests that they derive from activities that formed part of the funerary ritual or from subsequent rituals commemorating the dead. Alternatively, they may represent evidence for a class of ritual activity that is increasingly being recognised at cemeteries during the Roman period that is not strictly funerary in character, although it remains uncertain whether such deposits represent commemorative rites or other forms of ritual in which the power of the dead was to be invoked (Barber and Bowsher 2000, 19-20; Booth *et al*. 2010, 504-5; Cool 2004, 457-60). It is particularly unfortunate that the 2m intervention in which the remains were exposed was the only part of this side of the enclosure ditch that was excavated, as it would be useful to know whether further such deposits existed in the rest of the feature.

The majority of the material identified as possible special deposits comprised deposits of animal bone. Inevitably there is some difficulty in distinguishing between deliberate, ritualised deposition and more mundane rubbish disposal, but a number of deposits stood out from the background noise of domestic refuse, either by virtue of the character of their contents or due to their context. An example of the latter was represented by the two skulls, one horse and one bovine, from one of the ditches that enclosed the middle Iron Age settlement at Site 4 (Trench 54). A cattle skull was similarly found in the main ditch circuit at Sywell Aerodrome, Northants (Rees 2008, 71). A second cattle skull recovered from the upper fill of the ditch may also have been a special deposit, as may cattle skulls from two other enclosure ditches at the settlement, although these instances are less certain. A further possible special deposit of a cattle skull was located on the base of a late Roman waterhole at Site 7, in association with a jar. It is possible, however, that these objects formed part of the overlying deposit, which comprises a more mixed assemblage of animal bone and pottery that represent more mundane refuse disposal.

Burials of complete articulated carcasses were very rare on the A421 Improvements, as in southern Britain more widely (Morris 2008, 39), presumably reflecting a desire to maximise exploitation of every aspect of the animal. The burial of a horse at Site 3 is therefore unusual and may represent a special deposit. It finds a parallel at Marsh Leys Farm (Luke 2011, 161). An articulated horse leg from a middle Roman ditch at Site 7 may also have been a special deposit. Dogs were a common subject for special deposits, particularly during the Roman period (Rees 2008, 153), and burials of complete skeletons were recorded at Site 2 and Site 7, as well as an articulating leg from a late Iron Age ditch at Site 3.

A possible special deposit that did not comprise animal remains was represented by two pots that had been stacked one inside the other in a small pit at Site 2 during the early Roman period. The base of a third vessel was also recovered, but its association with the first two was uncertain. A similar deposit, comprising six complete pots of late Roman date placed inside each other in two groups, was set in a beam slot or small pit at Site 8 on the Great Barford Bypass (Poole 2007a, 155).

The significance of such special deposits is difficult to determine with any certainty. Cunliffe (1992) has suggested that deposits in grain storage pits at Danebury were intended as propitiatory offerings, giving thanks for the successful preservation of the grain, while Hingley (1990, 100-1) has emphasised the association of special deposits with enclosure boundaries. It is likely that they represent a range of practices, the nuances of which have yet to be fully realised. The special deposits on the A421 Improvements came from a range of feature types. The majority were recovered from ditches, but this may simply reflect the relative scarceness of pits, particularly pits large enough to be grain storage pits (which may have been rendered impractical by the high water table and poor drainage qualities of the clay geology). The location of the two skulls on the base of the enclosure ditch at Site 4 (Trench 54), however, is certainly suggestive of a role as some form of foundation deposit associated with the establishment of the enclosure boundary. Most of the deposits represented the remains of livestock species, which would certainly be typical of the characteristically agricultural associations of such deposits (Rees 2008, 71) and could suggest an association with rites connected with the fertility of crops and livestock. The predominance of dog burials during the Roman period is somewhat at odds with this suggestion and may require a different interpretation, although it is possible that these burials represent no more than the disposal of the remains of dead animals that were of no further use, as dogs were not eaten.

Burial

Burial of the dead is one area of human behaviour that yields evidence for ritual and belief systems in an ostensibly explicit form, although in practice interpretation of this evidence is far from straightforward (Ucko 1969). The burials and other human remains from the A421 Improvements were relatively small in number but nevertheless extended from the early Iron Age to the late Roman period and broadly reflect the changes in funerary practices in the region during this period.

The cremation burial at Site 5 was the earliest feature recorded during the Improvements, having yielded a radiocarbon determination of 770-400 BC. No contemporaneous remains were identified and the burial thus appeared to be an isolated feature. It is of course possible that associated activity was located nearby, beyond the limits of the excavation, but this is entirely speculative. The apparently isolated location of this burial may be typical for such features, as the few known examples in the vicinity are generally situated either in areas that were peripheral to settlement, as at Biddenham Loop (Luke 2008, 34), or in proximity to earlier funerary monuments, as at Village Farm (Albion Archaeology 1995), the Bunyan Centre, Bedford (Steadman 1999, 29) and Broom (Cooper and Edmonds 2007). It is also possible that the ostensibly isolated location at Site 5 held some significance to the community that carried out the burial, and the placing here of these remains may itself have formed part of the process of imparting significance to this place. Funerary practice during the early part of the Iron Age is at present poorly understood and may have been quite varied (Dawson 2007, 62), but simple cremation burials like that at Site 5 and the others mentioned above appear to have formed a distinct, though perhaps not common, element of it. The quantity of bone recovered from the burial at Site 5 was very small, amounting to only 96.5g, and represents only a small proportion of the total produced by cremating a complete body, which McKinley (2000, 404) has calculated as 1000-3600g. The feature had certainly been truncated by the effects of medieval and modern ploughing but it is uncertain whether this had resulted in the loss of the majority of the cremated remains or whether only a token amount of material from the pyre had been collected for burial. In the latter case, the presence within the burial of bones from all parts of the body may indicate that some care was taken in the selection of the bone for burial.

Evidence for activity dating from the middle and late Iron Age was recorded at every site on the A421 Improvements apart from Site 7, but no formal burials from this period were identified. This absence of burials is characteristic of the period in the Bedfordshire region (Dawson 2007, 65) as across much of Britain (Cunliffe 2005, 543), and suggests that mortuary rites took a different form, which did not involve the creation of a grave in the conventional sense. Disarticulated human remains, on the other hand, often comprising no more than single bones or bone fragments, are a common discovery from settlements of this period, and these remains have been interpreted as evidence that the corpses of at least part of the population underwent a rite that involved deliberate defleshing in order to reduce the remains to dry bones (Carr and Knüsel 1997). On the A421 Improvements, disarticulated human bones were recovered from non-funerary features at Site 4 (Trench 54) and at Site 5. At Site 4 (Trench 54) the middle part of the shaft of an adult femur was recovered from the middle fill of enclosure ditch 17345 during the evaluation stage of the investigation, and during the excavation stage a group of five skull fragments were recovered from the upper fill of enclosure ditch 17719. The remains from Site 5 comprise part of the shaft of an adult human right femur from pit 109105 and the upper two thirds of a human left femur from ring gully 6021. In this instance the ring gully cuts the pit, indicating either that both bones were originally deposited in the pit and the left femur was subsequently disturbed when the ring gully was dug or that this location within the settlement was used for the deposition of human remains over an extended period. The bone from the ring gully was much

smaller and less robust than the piece from pit 109105 and so it is unlikely that they came from the same individual. Similar deposits have been recorded at Biddenham Loop, where skull fragments were found within the fills of an enclosure ditch at Farmstead 2 and in two pits at Farmstead 3 (Luke 2008, 44), and at Topler's Hill, where a pit contained two fragments from a humerus (Luke 2004, 48). A severed head was deposited in a well at the farmstead at Odell (Dix 1981, 22). The presence of these bones on sites that are otherwise domestic in character is unlikely to be coincidental, and indicates that either the process of excarnation occurred within the settlement or that the remains of individuals who had been excarnated elsewhere were brought into the settlement, perhaps for use in religious rites or to be curated as relics. What is less certain is whether their eventual deposition in pits and ditches was deliberate, forming a particular example of the ritual deposition within settlements discussed above, or whether their inclusion in the fills of these features was incidental. The fragmentary state of the bones found at Site 4 (Trench 54) and Site 5 might argue that they were incorporated accidentally, perhaps mixed in with the soil with which the features were filled, but several authors (Cunliffe 2005, 543; Fitzpatrick 1997b, 82; Hill 1995, 105-8) have discussed the similarities in the treatment and deposition of human and animal remains in special deposits, and have suggested that even individual human bones should be interpreted as deliberate deposits. The limited range of bones found in the deposits may be evidence for the selection of specific elements for burial. The deposition of fragments of skull at Site 4 (Trench 54) and Biddenham Loop may have been associated with the importance of the head in Iron Age belief (Aldhouse Green 2001, 93-110), or the skull and long bones may simply have been the most easily recognised elements, used as a token to symbolise the entire individual (Wilson 1981, 150).

Burial of a more formal and more easily recognised type reappears on the A421 Improvements during the late Iron Age, in the form of a possible cremation burial at Site 3. The remains comprised a very small quantity of cremated bone, amounting to only 0.2g, which was associated with an almost complete, though fragmented, pedestal jar and a large jar with a perforated base, all of which had been deposited within an enclosure ditch. The latter vessel would have been a suitable size for use as an urn, and pedestal jars were commonly placed as ancillary vessels, so this group may well represent a disturbed burial. The only identifiable bone was a fragment from a phalanx, the size of which suggested that it came from an adult. The deposit also included 6g of burnt animal bone that may be the remains of an offering that was placed on the pyre, but the fragments were too small to permit identification to species. It is not certain whether this group represents an *in situ* burial that had been placed within the ditch silts and has been disturbed by subsequent ploughing, or whether it was deposited in the ditch in the fragmentary condition in which it was found, perhaps having been disturbed from an original place of burial elsewhere. A contemporary burial has been recorded nearby at Beancroft Road, Marston Moretaine, where the cremated remains of an adult were interred in an urn of indeterminate form accompanied by two jars as accessory vessels (Shotcliff and Crick 1999, 35-5). A similar cemetery comprising four urned and two un-urned cremation burials has been excavated at Marston Park (Chapman *et al.* 2011, 364). These burials appear to owe nothing to the tradition of cremation burial that existed in the region during the early Iron Age, typified by the example at Site 5, but instead represent the introduction into the area of a new form of cremation rite during the 1st century BC and the 1st century AD. As such they form part of a wide range of novel practices and items that arrived at this time, including coinage, new ceramic forms and new forms of metalwork, which together provide evidence for widespread changes in late Iron Age society associated with much closer contact with the continent (Cunliffe 2005, 600-5; Dawson 2007, 65; Hill 2007).

Evidence for cremation burial dating from the early Roman period was provided by a small cremation cemetery of four burials located within a triangular enclosure at the edge of the enclosure complex at Site 3. Similar small cremation cemeteries dating from the late 1st-early 2nd century are known at Marsh Leys, where Farmstead 2 was associated with a group of seven burials (Luke 2011, 158) and Biddenham Loop, where a cemetery comprising 16 cremation burials was situated 60m from Farmstead 6/8 and groups of two and three burials were associated with Farmstead 5 (Luke 2008, 51). All these cemeteries were situated in peripheral locations, at the edge of, or a short distance from, the settlements with which they were associated, and this arrangement is part of a tradition that has been recognised elsewhere in southern Britain (Pearce 1999, 153-4). The cemetery at Site 3 differs from these other nearby examples in that it is set within a ditched enclosure. The central location of the burials within the enclosure, and the absence of other features, suggest that it was an area specifically set aside for burial. This would certainly be consistent with the absence of domestic or other mundane activity indicated by the particularly small assemblages of pottery and animal bone recovered from the enclosure ditches (Biddulph, Chapter 3). The general paucity of material from this area also emphasises the unusual nature of the deposition of the bowl and cattle and horse bones placed in ditch 3344 (above). The clearest parallels for such a cemetery enclosure have been found on the Great Barford Bypass, where the early Roman cemeteries at Site 4 and Site 8 were both bounded by ditches (Poole 2007b, 88 and 123). The absence of

ditched enclosures at the other cemeteries need not imply that they were not clearly defined, as their repeated use demonstrates that they formed areas that were reserved exclusively for burials.

The burials appear to have been interred over a period of little more than a generation, burials 3030, 3031 and 3050 containing vessels that dated from the second half of the 1st century and the group from grave 104802 dating from the later part of that period or the early 2nd century. They exhibited a marked consistency in burial rites, each containing the cremated remains of a single adult buried within a ceramic urn and accompanied by two accessory vessels, except for burial 3050, which included a single accessory vessel. The female in burial 3030 was the only one of the group whose sex could be established. The accessory vessels were predominantly dining forms, comprising a beaker and a platter in burial 3030, a similar combination in burial 3031 and a bowl and a flagon in burial 104802. Insufficient survived of the vessel in burial 3050 to enable its form to be identified. They exhibited a range of fabrics, including coarse reduced wares, white ware, oxidised ware, and samian ware. This range of forms and fabrics contrasted markedly with that of the rest of the pottery from the site, which was dominated by greyware jars, as is usual for a rural farmstead of this date. This suggests that vessels associated with dining were deliberately selected for deposition with the burials, either because they were used during the funeral, as part of a funerary meal, or for symbolic reasons associated with provisioning the deceased for the afterlife (Biddulph 2002). A similar contrast between the funerary and non-funerary pottery has been noted at the cremation cemetery associated with Farmstead 6/8 at Biddenham Loop (Luke 2008, 52), as well as at Sites 4 and 8 on the Great Barford Bypass (Stansbie 2007, tables 8.27-30), and at the 2nd and 3rd-century phases at Ruxox (Dawson 2004, 131-43; Parminter 2004a, table 9.19). The preference for dining vessels is not a universal trait, however. Although the assemblage from graves at Biddenham Loop differed from that at Site 3 it included a wider range of types, including those recorded at Site 3 but with jars also present and a higher proportion of bowls (Luke 2008, 52). Jars were also well represented at the similarly dated cemetery at Great Barford Site 8 (Stansbie 2007, 248-9).

In two of the burials beakers had been used for the cremation urn rather than the more usual jars, but both beakers were quite large and were adequate to the task. There is less evidence for deliberate selection of the vessels used as urns, which unlike the accessory vessels are more utilitarian types that were commonly found among the non-funerary pottery. This also appears to have been the case at Marsh Leys (Luke 2011, 158) and Biddenham Loop (Luke 2008, 52).

Further evidence for the provision of food as part of the funerary rites was provided by a carpal or tarsal from a large mammal and a fragment from a medium mammal long bone which were mixed in with the cremated remains in burial 104802. Both bones were burnt and may represent the remains of offerings that had been placed on the pyre and were collected accidentally along with the rest of the remains for burial.

During the same period, the remains of a perinatal infant – consisting of part of a humerus and a rib fragment from fill 2467 and a small fragment of cranial vault and part of a tibia from fill 2468 – were buried in pit 2465 at Site 2. The remains of infants have been recorded at several other sites in the area: the partial skeleton of a human foetus formed part of a special deposit within the fill of an early Roman enclosure ditch at Biddenham Loop Farmstead 5 (Luke 2008, 55), and four contemporaneous infant inhumations were recorded at Great Barford Site 8 (Poole 2007b, 127). These unburnt infant remains contrast with the contemporary cremation burials, which were all of adults, and suggest that the rite of cremation was considered to be inappropriate for such young children. This is a pattern that has been observed more widely in Britain at this time (Philpott 1991, 101), and is also mentioned by Pliny in reference to burial practices in Italy (*Nat. Hist*. VII, 15).

Evidence for funerary practice during the middle and late Roman periods was confined to Site 7. A group of eight fragments of burnt bone recovered from enclosure ditch 15753 provide evidence for the continued practice of cremation during the 2nd century, although no formal burials of this date were uncovered.

Three inhumations, all of adults, were recorded. Grave 15230 contained a Nene Valley colour-coated ware beaker that dated from the late 3rd-early 4th century, and the spatial proximity of the other burials suggested that they should be of a similar date. They were, therefore, contemporary with the three large waterholes that represent the final phase of activity on the site, and were dug some time after the final silting of ditch 15985, beside which they were located, although it is possible that the boundary with which the ditch had been associated was still defined by a surface feature such as a bank or hedge. They had been severely effected by medieval and modern ploughing, particularly grave 15341, in which only the torso and left arm survived. None was buried in a coffin. Two burials were of females aged over 30 years and the individual in burial 15230 was a probable male of undetermined age. All three were buried in extended positions, although the female in grave 15061 lay on her right side. The latter individual was interred in a large, subcircular pit rather than than the more conventionally shaped graves that were provided for the other burials. On her right arm she wore a copper alloy bracelet or armlet of a 1st-century form, which must have been at least 200 years old at the time of the burial. The armlet was of a type that Crummy (2005, 96-101) has suggested may have been *armillae*, military awards for soldiers

rather than jewellery for women, although this is not certain. Regardless of whether this was the case, or indeed whether the community living at Site 7 during the late 3rd-early 4th century would have recognised such an award, the object may have been a treasured heirloom. The location of these burials beside a boundary ditch is typical for late Roman burials on rural sites (Esmonde Cleary 2000, 137-8; Pearce 1999, 153-4), and the contemporary burials at Marsh Leys (Luke 2011, 159) and Biddenham Loop (Luke 2008, 62) lay in similarly peripheral locations, beside boundaries or in the corners of fields.

The small number of burials recorded on the A421 Improvements is clearly insufficient to account for more than a very small proportion of the population of the settlements with which they are associated. In many cases it is likely that further burials still lie undisturbed in areas that were beyond the footprint of the Improvements and so were not subject to excavation. However, the results from other sites in the vicinity where more substantial areas have been excavated, such as Marsh Leys, Biddenham Loop and Bedford Western Bypass, suggest that such additional burials are unlikely to increase the number to any substantial degree. The small number of burials appears to be a genuine phenomenon, and indicates that throughout most, if not all of the period represented by these sites the remains of most of the population were disposed of in a way that has left no archaeologically identifiable trace. The disarticulated bones at Site 4 (Trench 54) and Site 5, which appear to result from excarnation, may be evidence that this rite was widely practised, and that these few remains were deposited, whether deliberately or accidentally, within archaeological contexts while those of most of the population were not (although other explanations are possible, including burial in rivers or cremation followed by the scattering of the ashes). Even when formal cremation burial was practised, during the early Iron Age and again later during the late Iron Age and early Roman period, the small numbers of burials recorded suggests that only a minority of the population was afforded this rite, and that excarnation or some other undetectable form of disposal continued to be the norm for the majority. The continued practice of excarnation into the Roman period would also explain the source for the disarticulated human bones recovered from five non-funerary deposits at Marsh Leys (Luke 2011, 161).

The living and the dead

Throughout the Iron Age and Roman period the dead were very much part of the day-to-day lives of the inhabitants of these rural settlements within Marston Vale, as they were for similar communities throughout Britain. The presence of disarticulated bones at the middle Iron Age settlement at Site 4 (Trench 54) is likely to indicate either that excarnation was carried out within the settlement or that the excarnated remains, or part thereof, were brought into the settlement, perhaps to be curated as relics, a constant reminder of the deceased individual and of the link between the current generation and the ancestors. Furthermore, the deposition of some of these remains within the fills of the ditches that defined the enclosure may have been intended to make them an integral part of the fabric of the settlement.

A change in the relationship between the living and the dead may have been signalled by the adoption during the late Iron Age and early Roman period of cremation. This new rite appears to have been reserved for only part of the population and so, for the first time, burial practice created a division in the rites afforded to the dead that perhaps mirrored a distinction in status in life. If excarnation was indeed still practised, there is no evidence that the resultant remains were deposited within the settlement. Cremation burials, in contrast, were very visible in the landscape of contemporary settlements, forming cemetery areas – whether enclosed as at Site 3 or open as at Marsh Leys and Biddenham Loop – that were clearly distinct from areas of more mundane use which were located in sufficient proximity to areas of domestic occupation to have been encountered on a daily basis. No direct evidence for grave markers – such as postholes associated with the burials – was found, but the clustering of the burials and the absence of intercutting of graves indicate that they were marked in some way on the surface. This may have enabled the graves of named individuals to be recognised, enabling the dead to retain their individual identity and thus emphasising the links between the living and named ancestors (Esmonde Cleary 2000, 137). It is possible that the deposition of the dead in such clearly defined and visible locations formed part of a strategy in which the burials of the ancestors served to legitimise claims to ownership of the land, particularly as the area had only been intensively colonised relatively recently. In this case, the apparent absence of such cemeteries after the early 2nd century may indicate that this was no longer necessary in the more developed landscape of the middle Roman period, or alternatively that changes to tenurial arrangements had rendered such claims inappropriate, perhaps by reducing these rural communities to the status of tenants (below).

During the late Roman period, when cremation was superseded by inhumation as the main form of burial, 'managed cemeteries' became the norm at urban centres (Thomas 1981) and even at smaller nucleated settlements such as the nearby 'planned village' at Kempston (Dawson 2004), but on rural farmsteads burials seem to have been more dispersed (Pearce 1999, 153-5). This is demonstrated by the three graves at Site 7, as well as the burials at Marsh Leys and Biddenham Loop, which tend to be more dispersed and isolated, and certainly do not form the sort of definite cemeteries that characterised the earlier period. As a result, these burials

appear to be more fully integrated into the landscape of enclosures and ditches associated with each settlement, and although they may no longer have played a part in establishing tenurial rights, they would still have been encountered and acknowledged on a regular basis and no doubt served as important landmarks. The significance that the community still attached to their ancestors is demonstrated by the armlet buried with burial 15061, an heirloom that served as a physical reminder of the generations of owners who had worn it previously, and, if is indeed an *armilla*, perhaps of a specific individual who was awarded this honour two centuries previously.

Status, identity and 'Romanisation'

The settlements investigated at the A421 Improvements were all situated toward the lower end of the social scale and comprise rural farmsteads in contrast to the hillforts, oppida, villas and towns with which the elite of Iron Age and Roman society are typically associated. The scale of the sites suggest that each was occupied by a single family or kin group and their dependants, and the structural, artefactual and ecofactual evidence indicates that they were primarily involved in subsistence farming. The character of the settlements was typical of the region, and their material culture was unexceptional and predominantly utilitarian, with little evidence for exotic imports or luxury goods. Like most such communities, they were essentially conservative, with an adherence to traditional practices. It may, nevertheless, be possible to detect variations in status and cultural identity between settlements and over time.

The greatest variation in settlement form was found in the middle Iron Age, comprising open settlements at Site 4 (Trench 61) and Site 5 and the enclosed settlement at Site 4 (Trench 54). This is clearly a distinction that requires explanation. The absence of enclosures around the former sites suggests that such features were not necessary for reasons of security, either against hostile forces or wild animals, and the association of enclosure ditches with ritualised deposition, both at Site 4 (Trench 54) and elsewhere, indicates that they were acknowledged to be of more than mere practical significance. Bowden and McOmish (1987, 77) have argued that enclosure boundaries could be used to 'enhance the prestige of the settlement and its inhabitants', and such an interpretation could certainly be envisaged for the Phase 3 earthworks at Site 4 (Trench 54), which were constructed on a much more massive scale than the earlier circuits. Indeed, the features forming this phase of the enclosure seem to have been designed specifically to provide the eastern side of the settlement with a monumental façade, and to emphasise the eastern entrance, which was flanked by in-turned ditch terminals in an arrangement more akin to those found at hillforts than at rural farmsteads. Status need not, however, be equated in any direct or straightforward way with rank, and other authors have stressed that the symbolic significance of settlement enclosures may be more nuanced, representing the corporate identity and independence of the occupants (Hingley 1990; Rees 2008). The farmsteads of the late Iron Age and Roman period exhibited less evidence for variation in settlement form. It is possible, however, that the bounded form of the late Iron Age/early Roman complexes at Site 2, Site 3 and Berry Farm correspond to the relative isolation and perhaps independence of the occupants, whereas the later farmstead at Site 7, like the two neighbouring settlements at Marsh Leys and the farmstead at Area 11 of Bedford Western Bypass, appears to have been more fully integrated into a landscape connected by a network of major linear boundaries (which may mean that they were integrated into a wider community).

Little artefactual material was recovered that could provide evidence pertaining to issues of status and identity, and this paucity of material goods is likely to be indicative of the generally low status of the settlements and their relative lack of access to trade networks and luxury goods. It should, however, be cautioned that at none of the sites was the full extent of the settlement excavated and only at the north-eastern complex at Site 2 was the domestic focus identified. It is possible, therefore, that the full range of items deposited at the sites may not be represented in the excavated assemblage. The near absence of coins is particularly marked, with only six recovered in total compared to 44 at Marsh Leys Farmstead 3/5/7 (Guest 2011, 117). The paucity of 3rd and 4th-century coins, and their complete absence from Site 7 despite evidence that deposition continued there into the 4th century, is especially unusual as low value coinage was widely used at this time and is a common site find. It may suggest that coins were little used at these settlements. During the Iron Age, exchange is likely to have been embedded within social relations as a monetised economy had not yet been developed. Such traditional arrangements are likely to have continued into the early Roman period, but the lack of evidence for coin use during the later part of the period is unusual, even at rural farmsteads such as these. A similar situation was recorded at Marsh Leys Farmstead 4, where only three coins were recovered – in contrast to the numerous finds of coinage at the neighbouring farmstead. It is unclear whether the paucity of coinage indicates that exchange was still to some extent organised along traditional lines at these settlements or whether it is a reflection of their poverty, but if they were not using coinage to the same extent as most of their contemporaries, their access to markets and to traded goods would have been correspondingly restricted.

A comparison of the pattern of pottery use during the Roman period has been shown to correlate broadly with different site types and may provide a useful indication of their relative status

(Evans 2001; Willis 1998). The dominance of jars over more specialist dining forms recorded at the Improvements sites is typical of such rural farmsteads and contrasts with the values found at higher status settlements such as villas and military and urban sites. The absence of amphorae from the Improvements sites is also a typical trait of low-status rural settlements (Evans 2001, 33). From the 2nd century onward, Site 7 differed from this pattern, exhibiting a much lower use of jars than the contemporary occupation at Site 2 or at Great Barford Site 8. The overall percentage of continental imports at each site remained low at all the sites, amounting to 3% of the pottery assemblage at Site 7 and 2% at Site 2, the latter figure being identical to that recorded at Marsh Leys (Luke 2011, 166). The north-eastern complex at Site 2 produced an unusually high proportion of decorated samian ware, which at 17% compares well with the villa at Bancroft. This anomaly may, however, be a result of the small sample size at Site 2. The corresponding figure for Site 7 is 14% and is similar to those from other rural sites in Bedfordshire and the Milton Keynes area.

The conservative character of most of the pottery assemblages represents a continuation during the Roman period of native dining habits that had their origins in the Iron Age, with only a gradual adoption of more specialised dining wares. The evidence for the diet of the communities occupying these settlements similarly indicates a persistence of traditional practices with little evidence for the adoption of exotic foodstuffs. The animal bone assemblages at all of the sites were dominated by cattle and indicate that beef provided the bulk of the meat component of the diet, particularly when allowing for the greater meat weight yielded by cattle compared to other species. This pattern of consumption was established at Marston Vale during the middle Iron Age, as is demonstrated by the animal bone assemblage at Site 4 (Trench 54), and held sway throughout the Roman period. As has been discussed above, there was little evidence that the diet was supplemented through hunting. The deer remains consisted largely of fragments of antler which could have derived from hunting or from the collection of shed antlers, although deer bones from two middle Roman contexts at the south-western complex at Site 2 are more likely to have come from hunted animals. The remains of deer were completely absent from Marsh Leys (Luke 2011, 163), and only very small quantities were found at Biddenham Loop (Maltby 2008, 239, 284). It is clear from the finds at these sites that deer lived in Marston Vale during both the Iron Age and Roman period, and the paucity of evidence for the exploitation of so obvious a food source suggests that hunting may have been suppressed by taboo or legal restrictions. Villas often produce a relatively large number of bones from wild fauna (King 1991, 18) and evidence from writing tablets at Vindolanda depicts hunting as a popular leisure activity among the Roman elite (Mattingly 2006, 184). It is, therefore, possible that the communities who occupied the farmsteads at Marston Vale were not of sufficient status to be entitled to hunt. If this were the case, it is even possible that the bones at Site 2 provide evidence for poaching.

The burials at Site 3, Site 5 and Site 7 were of fairly common types and did not include more high status forms such as the Welwyn-style cremation burials that have been recorded at Old Warden, Stanfordbury and Felmersham (Simco 1973, 10). Although they contained the remains of individuals who had been given different burial rites to the rest of the community, this is likely to indicate no more than that they had been the head of a household or were members of the principal family in the settlement.

No evidence was found for disruption associated with the Roman conquest. The settlements that were occupied during the early part of the 1st century AD, at Site 2, Site 3, Site 5 and Berry Farm, all continued through the rest of the century apparently untouched by military and political upheavals elsewhere, although it is possible that social disruption occurred that was of a kind not easily detected archaeologically. When evidence for the Roman presence did appear, perhaps after a time lag (although the available dating evidence is not precise enough to be certain), it primarily took the form of the introduction of non-local pottery, particularly imports from South Gaul and romanized forms made in the Verulamium region. These types initially formed only a small proportion of the pottery at these sites and presumably represent the adoption by these communities of a small number of novel forms alongside the much larger quantity of traditional, locally made wares that continued to be used. Over the course of a generation or so the proportion of Roman wares – that is wheel-made, kiln-fired pottery – became dominant and by the early 2nd-century pottery of the late Iron Age tradition had been almost completely replaced. The adoption of romanised forms of pottery no doubt serves as a proxy for the introduction a much wider range of less robust goods for which direct evidence has not survived.

The most significant changes resulting from Roman rule that directly effected the communities of Marston Vale are likely to have been those pertaining to land ownership. This may have involved the re-allocation of land and the replacement of traditional systems of ownership with new arrangements based on Roman law, as a consequence of which some individuals would have found their status down-graded to that of tenants while the status of others correspondingly increased (Mattingly 2006, 354-5). The number of settlements in occupation in Bedfordshire appears to have decreased during the Roman period (Dawson 2007, 74), and this phenomenon presumably indicates that ownership of the land was being concentrated in the hands of a smaller proportion of the popula-

tion. It is difficult to definitely identify such tenurial changes archaeologically, but it is striking that the settlements that were occupied at the time of the conquest were all abandoned at the end of the century, or early in the 2nd century in the case of the north-eastern complex at Site 2, with new settlements established at Site 7 and the south-western complex at Site 2. At about the same time, the settlements at Marsh Leys and Wilstead also underwent substantial reorganisation (Luke 2011, 139; Luke and Preece 2010, 152). If these disruptions were indeed a consequence of changes in tenurial arrangements following the conquest the delay of a generation or two between the conquest, and the reorganisation of the settlement pattern may indicate that native traditions of ownership were not replaced immediately or that the ramifications of such changes took some time to take effect.

Historical trajectories

The aim of this section is to summarise the results of the investigations and to attempt to bring them together to construct a narrative history of the communities whose remains were uncovered, albeit an inevitably partial and imperfect one.

Before the Iron Age

The earliest evidence for human activity came from the worked flint that was recovered in small quantities from most of the sites. Much of this material was undiagnostic but a distinct late Mesolithic/early Neolithic element was identified that provided evidence for low-level but fairly widespread activity during this period. The precise nature of this activity is uncertain, as the flint derived entirely from residual contexts within later features or from the ploughsoil. No features of this date were identified, but the quantity of material recovered was clearly not sufficient to represent large-scale or long-term occupation. A similar situation prevailed at Marsh Leys (Luke 2011, 139). The absence of occupation is perhaps not surprising as the flat clay vale is very much unlike the topographic situations that were preferred for settlement at this time, which were most commonly either riverine sites immediately above the floodplain or good vantage points (Luke 2007, 26). Although Site 2 was situated in such an elevated location, overlooking the south-western tip of the Vale, the assemblage of flint was no greater than that recovered from Site 4 (Trench 54), within the Vale. The ephemeral nature of the evidence for activity of this period contrasts with the situation within the Great Ouse Valley, where flint concentrations recovered during field artefact collection have indicated the presence of several camps at Biddenham Loop (Luke 2008, 19-20), as well as individual examples at Bedford (Dawson 1988), Kempston and Clapham (Dawson 2000a, 47) and further down stream at Roxton (Taylor and Woodward 1985, 108 and 139). This contrast in the scale of occupation probably reflects the character of the environment. Although no studies of the palaeoenvironment within Marston Vale have been carried out, comparison with other parts of southern Britain suggests that its heavy clay soils are likely to have been dominated during prehistory by deciduous woodland, perhaps with alder carr in wetter areas (Scaife 2000b, 20). It is likely that the material at Marston Vale represents the residue of short-term, possibly seasonal, visits by hunting parties or other task-groups that ventured into the Vale from communities based at the camps along the river.

No evidence was identified for activity that could be securely attributed to the period between the late Mesolithic/early Neolithic period and the Iron Age, and this apparent lacuna reflects a pattern seen across much of the claylands of the south Midlands (L Webley pers. comm.). To some extent this could result from a failure of evaluation methodologies that typically rely on aerial photography, geophysics and low percentage evaluation trenching to detect the dispersed and ephemeral remains of sites of this period, which may lack the substantial dug features that characterise Iron Age and Roman settlements. However, the contrast with other clay landscapes in southern Britain, such as Essex, which have produced more substantial evidence for Bronze Age activity (eg Powell with Biddulph 2007), may indicate that these areas, including Marston Vale, were not used for permanent settlement at this time.

Middle Iron Age colonisation

Plentiful evidence has been found for occupation of the Great Ouse Valley during the early part of the prehistoric period but Marston Vale does not appear to have been colonised until the middle Iron Age. The early Iron Age cremation burial at Site 5 reminds us that the area was not *terra incognita* before this, although no evidence for earlier settlement has yet been found and it may have been only temporarily visited by transhumant or other mobile groups. The middle Iron Age colonisation is consistent with a wider pattern observed throughout the east Midlands of the river valleys filling up and settlement spilling over at this time into the clay areas beyond (Cunliffe 2005, 265). The precise origins of the settlers in Marston Vale are not known with any certainty. Although the simplest suggestion is that they came from the nearby part of the Great Ouse Valley, Hill (2007, 23-4) has suggested that infilling of vacant or sparsely populated areas may alternatively have occurred through people moving over longer distances. Consideration of such issues is hampered by the homogeneous character of contemporary material culture, particularly pottery, which is very similar over much of the east Midlands.

The colonisation of the Vale was characterised by individual farmsteads that were probably relatively self-sufficient economically, practising mixed farming regimes, although perhaps with a greater

emphasis on raising cattle in order to better exploit the natural characteristics of the Vale. The landscape may still have been substantially wooded, which would be consistent with Speed's (2010, 39) suggestion that irregular settlement enclosures such as that at Site 4 (Trench 54) are characteristic of new settlements established in largely wooded environments, in contrast to the more regular forms adopted by settlements that were fitted into landscapes that were already organised. Both open and enclosed settlements were recorded, and it is possible that the ditches that surrounded the settlement at Site 4 (Trench 54), and the items of decorative metalwork that were found at that site, were evidence that the inhabitants were of higher status than those occupying the open settlements at Site 4 (Trench 61) and Site 5.

Late Iron Age settlement expansion and the arrival of Roman rule

None of the three settlements that had been established at the A421 Improvements during the middle Iron Age continued to be occupied into the late Iron Age. This contrasts with the more typical trend for settlement continuity observed elsewhere in Bedfordshire and further afield (Dawson 2007, 67; Willis 2006, 107), perhaps suggesting some purely localised process of settlement dislocation occurred during the 1st century BC. It is interesting to note that, in contrast to the situation during the earlier period, there is little evidence for status distinctions between the settlements occupied during the late Iron Age and Roman period, although the significance of this is unclear. The late Iron Age settlements within Marston Vale were more numerous than their middle Iron Age predecessors, and were all new foundations at previously unoccupied locations, both at the A421 Improvements and elsewhere in the Vale at Marsh Leys (Luke and Preece 2011) and Wilstead (Luke and Preece 2010). The three late Iron Age settlements on the A421 Improvements and the site at Wilstead were of a new type that was added to the landscape in the form of farmsteads composed of complexes of conjoined enclosures. The multiple enclosures at each of these sites presumably represent the exercise of greater control over landuse, perhaps associated with more intensive agricultural strategies. None of the settlements appeared to have been materially affected by the imposition of Roman rule and all continued unaltered into the second half of the century.

Reorganisation during the 2nd century

When change came to Marston Vale, a generation or two after the Roman conquest, it entailed a wholesale reorganisation of the landscape. The existing farmsteads on the A421 Improvements were abandoned around the end of the 1st century or early in the 2nd century and in their stead two developed farm complexes were constructed. At about the same time the two farmsteads at Marsh Leys were reorganised along similar lines and that at Wilstead abandoned. Unlike the earlier farmsteads, the new settlements were not individual, isolated settlements, but were integrated into a complex of linear boundaries that subdivided the Vale into an organised landscape. This phenomenon could be viewed as the culmination of a process of agricultural intensification that started in the Iron Age and accelerated during the Roman period, with progressively larger areas of land being enclosed for agricultural use in response to a combination of a growing population and increased taxation. The 2nd-century arrangement remained in place until the late Roman period, when the settlements were abandoned. The precise date of this is uncertain, although it appears to have occurred during the early 4th century. It is equally uncertain what prompted this abandonment and how abruptly it occurred.

After the Roman period

Very little evidence was uncovered that dated from later than the Roman period, the only evidence for activity during the Anglo-Saxon period being a single spur dating from the 10th-11th century that was found at Site 2. The collapse of the Roman economy is likely to have been associated with a decline in population across southern Britain and it is possible, though by no means certain, that the Vale became substantially depopulated, with the main concentration of population in the local area reverting to the Great Ouse Valley and its immediate environs, as it had before the middle Iron Age. The dearth of Anglo-Saxon and medieval remains may also be attributed to the very different character of the settlement pattern during these periods, which is likely to have become consolidated at the sites of the historic villages that are scattered throughout the Vale. This pattern was a product of Anglo-Saxon and medieval social organisation and represented an entirely new arrangement that owed nothing to the prehistoric and Roman organisation of the landscape, thus emphasising the profundity of the break between these periods. Ultimately, medieval agriculture spread throughout the Vale, as was demonstrated by the ubiquitous evidence for ridge and furrow cultivation, recorded as earthworks at Lower Shelton, as subsurface features extending across each of the excavation areas, and by the geophysical survey between the excavations.