
Above the Fen Edge: Prehistoric activity on land west of Newark Road, Fengate, Peterborough

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Set within one of the most intensively excavated landscapes in the country, recent excavations at Fengate, Peterborough discovered significant prehistoric activity. Amongst a series of Neolithic and Early Bronze Age pits, one example yielded a substantial dump of burnt grain indicative of large scale cereal cultivation with major implications for the agrarian economy. Further elements of Fengate's renowned Middle Bronze Age field system were also revealed, together with dispersed features of the Late Bronze Age and Early Iron Age. This paper considers the findings in relation to those from neighbouring sites, providing a fuller picture of the Bronze Age landscape and offering a perspective on the nature of activity pre- and post-dating the field system.

Introduction

Between 2014 and 2018 Oxford Archaeology (OA) East conducted archaeological investigations at two sites to the west of Newark Road, Fengate, Peterborough (Fig. 1). Examining a total of 7.8ha through a combination of geophysical survey, trial trenching and excavation, these are amongst the largest fieldwork investigations undertaken at Fengate in recent years and explored one of the few remaining undeveloped parts of the local landscape.

The two sites lie on former recreation land, once part of the Perkins Engines industrial complex. Named Perkins South (3.4ha, centred TL 2150 9985) and Perkins North (4.4ha, centred TL 2139 0029), these areas are 250m apart and bracket the Broadlands site, which was subject to archaeological investigation between 1998 and 2006 (Nicholson 2012). Subsoil was present across the majority of the excavated areas, although no buried prehistoric soils were preserved. The impacts of former land use, disturbance and site levelling influenced the extent of mitigation work required. Following evaluation, a total of just over 1ha was excavated between 2016 and 2018, with three areas exposed at Perkins North, covering 0.8ha (Area A, 0.3ha; Area B, 0.1ha; Area C, 0.4ha), and one at Perkins South covering 0.2ha (Area D). The full results and related methodologies are detailed in a series of reports (Rees 2014; Moan 2018; Mason 2018a; 2018b; 2019), which can be freely downloaded from

the OA library <<https://library.thehumanjourney.net>>

Topographically, the area occupies low-lying terrace gravels between the 3–5m OD contours on the western edge of the Flag Fen Basin, with the land sloping east towards the fen-edge. Post-glacial development of this landscape is well documented (French 2001; 2003, ch. 7). From a dryland setting at the start of the Holocene, the Flag Fen Basin became progressively wet through the formation of an extensive freshwater peat fen, interrupted by episodes of marine inundation. Large scale drainage of this wetland commenced in the 17th century. The Perkins Engines sites were never on the fen-edge *per se*, lying some 500m west of the projected location of the fen-edge during the later Bronze Age (at c. 1m OD).

Archaeological Background

Notwithstanding the importance of the collections of prehistoric material made by Wyman Abbott in the south-western parts of Fengate in the early 20th century (Abbott and Smith 1910; Leeds 1922; Hawkes and Fell 1945; see Evans and Appleby 2008; Evans *et al.* 2009), large-scale investigations in the area began in the early 1970s, occasioned by development in the wake of Peterborough's New Town designation. Francis Pryor's pioneering investigations of 1971–8 focused on the southern and central parts of Fengate, south of Vicarage Farm Road (Pryor 1974; 1978, 1980; 1984). Work continued to be concentrated here until the late 1990s, when major investigations of the northern parts of Fengate, in the vicinity of the Perkins Engines site, began. Although these investigations revealed a remarkably full record of prehistoric activity, it is Fengate's later Bronze Age remains which have accorded it a special status at both a regional and national scale, with extensive systems of ditched fields, paddocks and enclosures extending for more than 2km along and adjacent to the fen edge, together with the western landfall of the internationally celebrated Flag Fen timber alignment and platform (Pryor 2001; Evans *et al.* 2009).

The immediate context for the recent work is provided by large scale programmes of trenching and



Figure 1. Northern Fengate, showing the location of the Perkins Engines excavations and earlier investigations, with major prehistoric features.

excavations in the northern part of Fengate (Fig. 1), which revealed parts of extensive Bronze Age field systems that have also been plotted from aerial photographs (Palmer 2004). Along Edgerley Drain Road, immediately to the east of the Perkins South investigations, trenching and monitoring to the north of Vicarage Farm Road (Vaughan and Trevarthen 1998; Evans *et al.* 2009, 116–121) revealed a minor embayment/inlet on the fen edge. To the north, a ditched driveway ran from the fen edge before turning northwards to join a set of ditched fields. These were centred on a very large rectilinear ‘strip paddock’, substantially exposed and investigated during area excavations in 2004–5 (Evans *et al.* 2009). These excavations also produced important evidence for earlier activity in the form of Neolithic and Early Bronze Age pits, as well as traces of Late Bronze Age settlement.

To the west, between the two subject investigations, work at the Broadlands site (Nicholson 2012) revealed a series of field system ditches, within which a major double ditched rectangular enclosure was set, similar in scale and morphology to the enclosures/compounds at Newark Road and the Depot site, in the southern part of Fengate (see Evans *et al.* 2009, 249, fig. 6.5). Evidence for pre-field system activity was scarce, although several discrete features of Late Bronze Age date were revealed, while a dump of contemporary pottery came from the upper fills of the enclosure ditch. Further traces of field systems in the immediate vicinity were revealed by small-scale investigations at the Global Doors and Paving Factory sites; here, single lengths of ditch were exposed within small areas subject to soil stripping (Pryor 2001, 37–8).

The Neolithic and Early Bronze Age

Despite the relatively large scale of the subject investigations, sparse activity predating the field system consisted of a few discrete features in both areas (Figs 2 and 3), notable amongst which was a substantial pit containing a very large deposit of charred cereal grain radiocarbon dated to the Early Bronze Age. Early activity is also indicated by a small assemblage of residual finds recovered from later features, the most significant of which was undoubtedly a fragment of a highly polished object recovered from a Middle Bronze Age ditch revealed during the Perkins South evaluation trenching (Trench 26; Fig. 3). Consisting of the tapering butt end of a very finely finished object (Fig. 4, no. 1), the item is relatively thin, with a maximum thickness of 16mm, and regular, well defined lateral facets up to 5mm wide. It has a straight, transverse break at its proximal end, while the butt end appears to have been removed by flaking. Made from a distinctive medium-grained green stone, it has provisionally been identified (macroscopically) as a jadeitite axehead, from a continental source in the Alpine region. Its character indicates an origin in the Late Mesolithic or Early Neolithic.

At the southern site, a few earlier prehistoric pits lay towards the centre of Area D (Fig. 3): four examples contained small quantities of Late Neolithic Grooved Ware pottery, while a fifth produced a substantial assemblage of Beaker pottery. Sampling of the pit fills yielded few preserved remains aside from wood charcoal. Although the pits associated with Grooved Ware may relate to a single episode of activity or occupation, a significant hiatus is likely to have occurred before the subsequent Chalcolithic/Early Bronze Age activity represented by the Beaker pit.

The earliest pits (211, 235, 239 and 254) were all sub-circular or oval in plan, but ranged considerably in size, measuring between 0.3–1.2m across and between 0.13 and 0.37m deep. Their infills appeared to represent deliberate backfilling with mid to dark grey/brown silty clays. The associated finds assemblages were modest and none of the pits produced more than seven sherds (24g) of pottery. Sherds with decoration (horizontal incised herring-bone and/or rows of short stabs, Fig. 5, Nos 1 and 2) and fabrics (medium hard with common small-medium grog and common sand) typical of Grooved Ware were present in each pit. A single base angle from pit 239 implies a tub-shaped vessel. The decoration types, fabric and forms are consistent with the Durrington Walls sub-style of Grooved Ware (Garwood 1999). Small quantities of similar pottery were also recovered residually from subsequent field system ditches (205 and 220), perhaps hinting at the presence of once fairly extensive scatters of material.

Pit 235 produced the largest individual lithic assemblage of 26 worked flints, dominated by small unretouched flakes, but including a fine diagnostically later Neolithic oblique arrowhead (Fig. 4, No. 2; Clark’s [1934] type F). More unusual was the very large quantity of burnt stone and flint recovered from pit 239, comprising more than 9.5kg of material dominated by sandstone cobbles/pebbles and fragments with some quartzite, but with relatively little flint. Small pieces of hazelnut (*Corylus avellana*) shell came from the fills.

Beaker pit 247 was cut on its eastern side by a field system ditch (291; Fig. 3, Section 1), but was evidently sub-rectangular in plan. It was a fairly substantial feature, measuring 1m across and up to 0.37m deep, with steeply sloping sides and a flat base. It was filled by two deposits of dark brown/grey silty clay which produced a substantial assemblage of Beaker pottery (90 sherds, weighing 554g), accompanied by a small flint assemblage (12 pieces). The latter includes simple hard hammer struck flakes and a burnt core fragment, alongside three removals exhibiting lateral or distal retouch and use-wear.

The pottery includes twenty-eight impressed, fingertip and fingernail decorated fragments (Fig. 5, Nos 3–6), five rims (simple, flattened and internally bevelled; Fig. 5, Nos 3 and 6) and two base pieces. The rim diameters measure 11–17cm, while the forms appear to be mostly flared necks with rounded bellies, although a rim fragment from one vessel has a

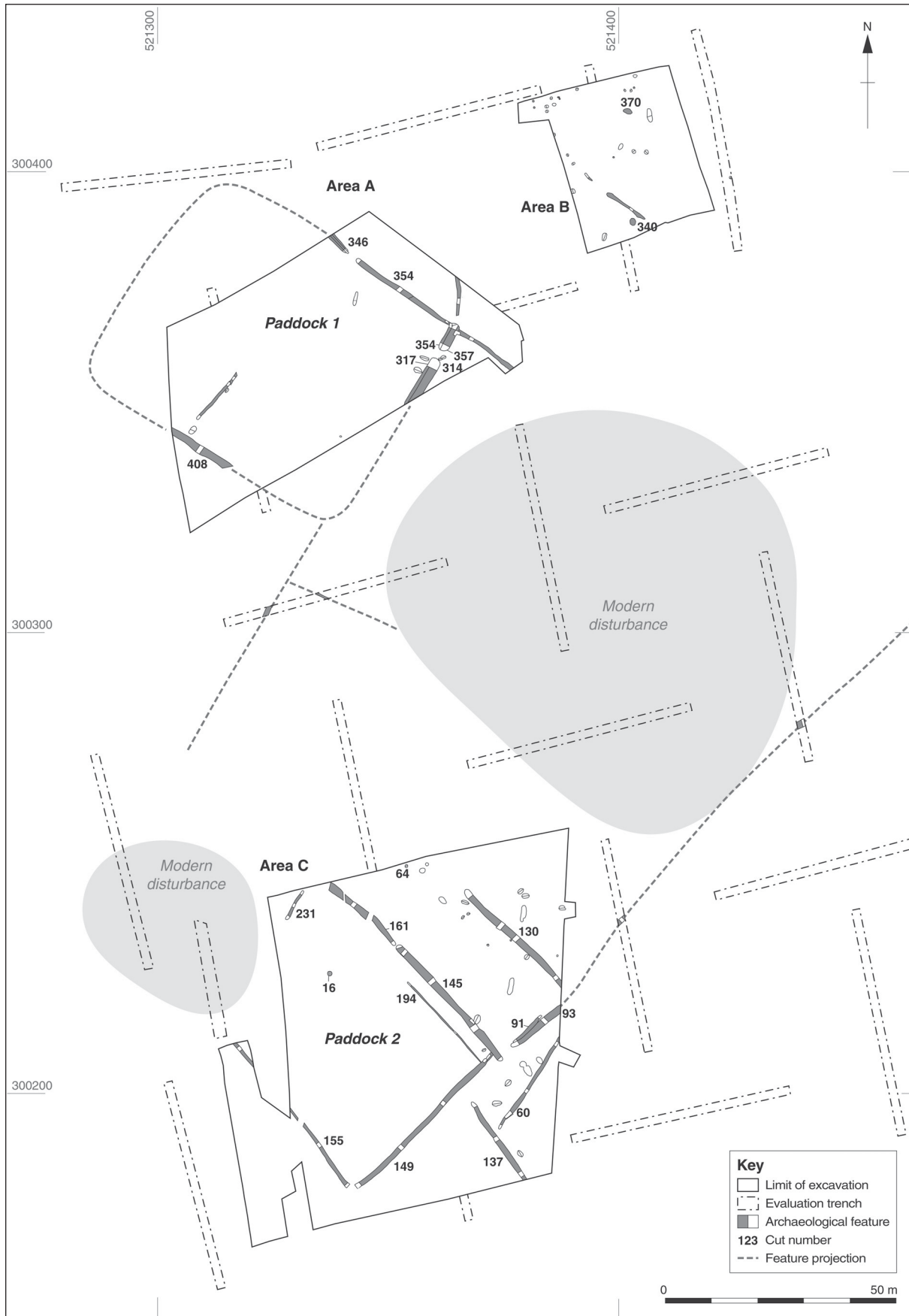


Figure 2. Perkins North (Areas A-C), showing prehistoric features.

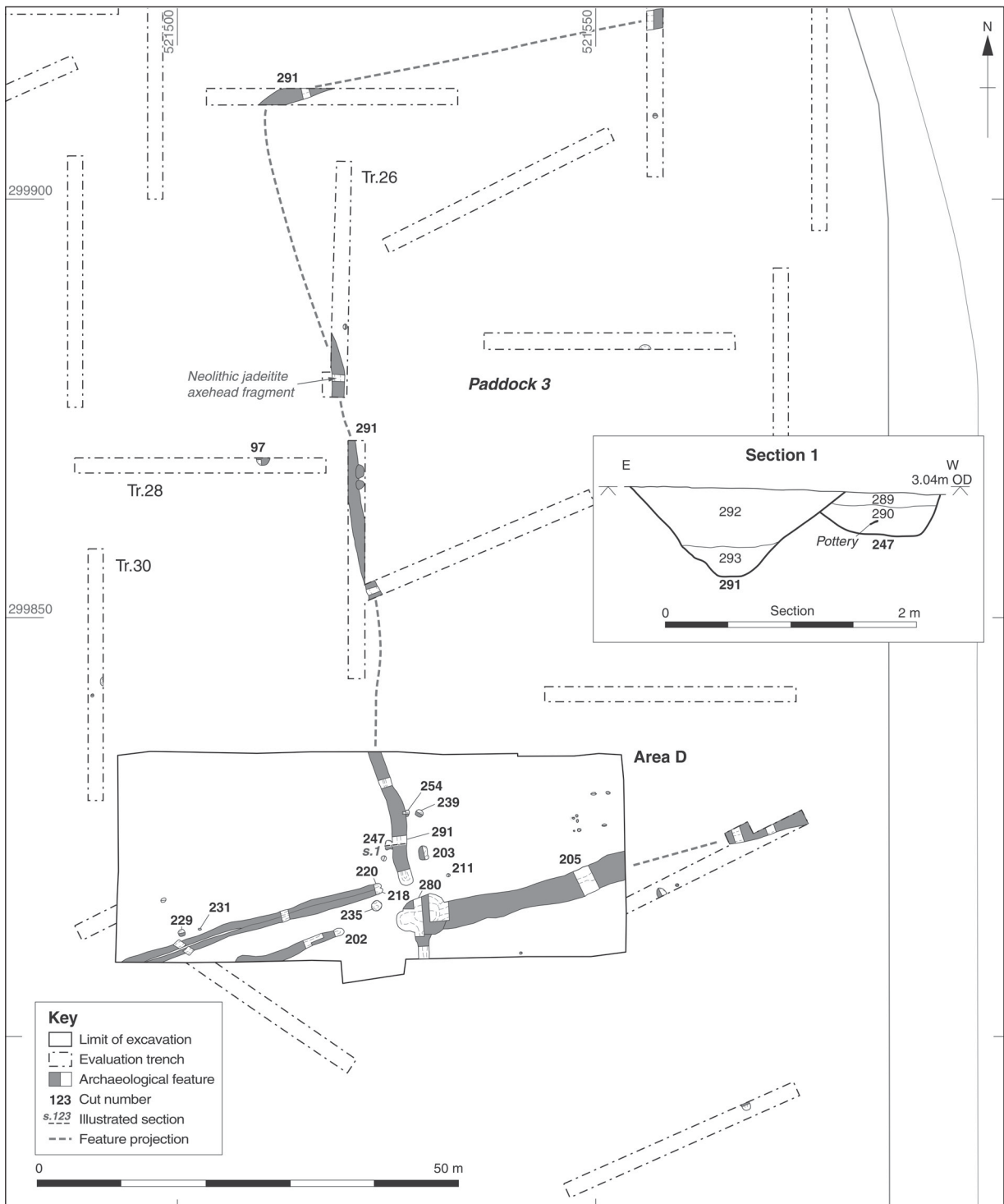


Figure 3. Perkins South (Area D), showing prehistoric features.

small collar. Many pieces have a softened, dissolved appearance with areas of decoration lost or worn away. The range of decorative motifs, rim types and wall-thicknesses suggests that the assemblage incorporates fragments from several different vessels, and that each vessel was only partially represented. This attribute in particular is indicative of the 'domestic' character of the assemblage (Bamford 1982; Gibson

1982). Two poorly-preserved indeterminate cereal grains were also recovered from the fill.

Some of the undated discrete features in this area were probably associated with Late Neolithic and Early Bronze Age activity. Particularly notable in this respect was a sub-rectangular pit (203) located just a few metres south of Grooved Ware pits 239 and 254, half sectioning of which produced a sub-

stantial assemblage of burnt flint and stone (7.1kg). Interestingly, the composition of this assemblage was markedly different to the burnt lithics from pit 239 noted above, and was overwhelmingly dominated by very small fragments of flint, with relatively little sandstone and quartzite. Further to the west, a small pit (231) produced four worked flints, none of which are strongly diagnostic but probably date broadly to the Late Neolithic/Early Bronze Age.

During trial trenching in the northern part of the Perkins South site, a large pit (97) was partially exposed in Trench 28 (Fig. 3). Measuring at least 1.7m in diameter, partial excavation revealed it to be up to 0.36m deep, with steeply sloping sides and a flat base. It contained three fills: the only find recovered was a single undiagnostic flint flake from its upper fill. However, bulk sampling of its thin (0.1m thick) basal fill of dark greyish brown silty sand produced a remarkable assemblage of almost pure charred grain, while similar material was recovered in lower densities from the feature's upper fill. A sample of 19 litres of the upper fill (94) produced a flot volume of 300ml, whilst 14 litres of sediment taken from the lower fill (96) produced an initial flot of 1 litre and a subsequent second flot (produced by re-floating the dried residue) of 1.5 litres – giving a total of 2.5 litres. The grains have been tentatively identified by their characteristic morphology as predominantly emmer wheat (*Triticum dicocum*), with minor components of naked and hulled barley (*Hordeum vulgare*). A large proportion of the grain displays evidence of insect infestation through visible entrance and exit holes and internal damage. Chaff elements of spikelet forks and glume bases are extremely rare and have been identified as emmer wheat chaff due to their characteristic morphology (after Jacomet 2006); the spikelet forks are typically 'splayed', and the glume bases are thin and double keeled. Occasional charred seeds of weeds such as goosefoots (*Chenopodium* sp.) and knotweeds (*Polygonum* sp.) were also noted. This deliberate dump of charred grain – consisting of a fully processed and cleaned crop – was initially assumed to relate to later prehistoric activity, but subsequent radiocarbon dating of a barley grain from this deposit returned a date of 1890–1730 cal BC (87.2% confidence;

SUERC-82214; 3466±24, Table 1), placing it firmly in the Early Bronze Age.

In contrast to the southern part of the site, few early features were found at Perkins North (Fig. 2). They consisted of three small undated pits which were cut by Middle Bronze Age ditches. A thin scatter of residual flintwork of Neolithic to Early Bronze Age date came from later features across the area (22 pieces in total), including two scrapers and several blades and blade-like flakes.

The Middle Bronze Age field system

Ditched boundaries relating to Fengate's Bronze Age field system were exposed across the subject excavations. Individual boundaries were defined by ditch segments of varying length and scale, with those fully exposed being between 7–42m long. Some of these were akin to small, gully-like cuttings, but others were more substantial, measuring up to 2.3m wide. Most, however, ranged between 0.8–1.2m in width and 0.4–0.8m in depth and displayed weathered U-shaped profiles with simple, sterile fill sequences of pale grey silty sands and gravels.

A fragmentary co-axial arrangement of ditched boundaries (aligned north-east to south-west, and north-west to south-east) was exposed at Perkins North (Fig. 2). Whilst disturbance across the centre of the site prevents detailed reconstruction of all the component field blocks, two substantial paddock-like enclosures were identified. To the north-west (Area A), three sides of a rectangular enclosure (Paddock 1) were revealed, with the paddock measuring 52m wide. Its north-eastern and south-western sides consisted of single phase ditches measuring 0.9–1.5m wide and 0.38–0.62m deep. That in the north-west was formed by a least two segmented lengths of ditch (346 and 354, which also formed an element of the south-eastern side), with a 2.3m wide gap between them. While this may have been an entrance, it was similar to other discontinuous ditch lengths observed on the site. The paddock's south-eastern side was delineated by further ditches (314 and 357), which were later re-cut (317 and 354) along the interior edge. The

Table 1. Radiocarbon dates from the Perkins Engines excavations.

Dates have been calibrated using the program OxCal v4.3 (Bronk Ramsey 1995; 2001; 2009) and the IntCal13 dataset (Reimer et al. 2013), with the date ranges rounded outwards to decadal endpoints.

Laboratory number	Radiocarbon age (BP)	δ13C (‰)	Calibrated date range (cal BC) (95% confidence)	Material	Context
SUERC-82214	3466±24	-24.8	1890–1730 (87.2%) 1720–1690 (8.2%)	Charred cereal grain: <i>Hordeum vulgare</i>	Lower fill (96) of pit 97, Perkins South
SUERC-84809	3046±26	-24.9	1400–1220	Charcoal: roundwood, <i>Rhamnus catharticus</i>	Upper fill (297) of ditch 155, Paddock 2, Perkins North
SUERC-82212	2813±24	-19.8	1030–900	Cremated bone (human)	Lower fill (17) of pit 16, Perkins North
SUERC-84810	2467±26	-24.3	770–430	Charcoal: <i>Prunus</i> cf <i>avium</i>	Fill (341) of pit 340, Perkins North

original ditches were over 2m wide and up to 0.85m deep, with the opposing terminals framing a fairly narrow (2m wide) entrance, the location of which was maintained in the shallower re-cut.

A second enclosure was revealed further south (Paddock 2, Area C), its four sides being delineated by various ditches (145, 149, 155, 161 and 231). The enclosure measured 52m (south-east to north-west) by 44m (south-west to north-east), with an internal area of 0.18ha. The two ditches defining the north-eastern side (145 and 161) had abutting terminals. Ditch 161 measured 1.1m wide but only 0.24m deep, whilst ditch 145 was more substantial at 2.3m wide and 0.8m deep. This ditch was flanked on the interior by a shallow, parallel aligned gully (194; 0.35m wide and 0.12m deep). Separated by a gap of 3m, the relationship and spacing between them suggests the presence of an internal bank and/or hedge.

Other potential banks or hedge-lines are perhaps implied by the spacing and arrangement of the ditch terminals of the various boundaries immediately south and west of Paddock 2. Whilst some 'gaps' could have been narrow entranceways, most were probably bridged by hedges or banks to achieve a functioning circuit. Similarities in the size, length and alignment of ditches 130 and 145 on the western side of Paddock 2 warrant mention: the north-west ends of both ditches terminated parallel to one another, suggesting that they may have been linked by a north-east to south-west aligned bank/hedge. Whilst it is tempting to view these as part of a small contemporary enclosure tacked on to the eastern side of Paddock 2 (bounded by ditch 93 and its small re-cut ditch 91 to the south), the sequencing is not entirely clear, and other arrangements may be envisaged. Indeed, the slightly variant alignment of ditch 60 in south-east corner of Area C, is a reminder that systems were not always configured in a uniform manner.

Associated with the ditches was a small assemblage of Deverel-Rimbury pottery, amounting to 18 plain body sherds (32g). Other finds were extremely scarce, comprising eight worked flints, a fragment of cylindrical loomweight (365g, Fig. 6) and 689g of animal bone (341g identified as cattle).

Despite fairly intensive sampling, very few charred plant remains were recovered from the various features. The only significant remains both came from ditches associated with Paddock 2. The sample from ditch 161 produced charred seeds of cleaver (*Galium aparine*) and hawthorn (*Crataegus monogyna*), perhaps indicative of the burning of hedgerow plants which were growing on banks associated with the ditch. Charcoal of purging blackthorn (*Rhamnus catharticus*) came from the upper fill of ditch 155, a sample of which was radiocarbon dated to the Middle Bronze Age, 1400–1220 cal BC (95% confidence; SUERC-84809; 3046±26 BP, Table 1); this may also represent the burning of hedgerows or scrub in the vicinity of the enclosure.

Investigations at Perkins South exposed ditched boundaries on a predominantly north to south and east to west axis (Fig. 3). Sufficient evidence was re-

vealed to identify three sides of a rectilinear paddock (Paddock 3, Area D), with further boundaries to the south and west. The paddock measured 98m long and at least 50m wide, and was defined by ditch 205 to the south and by ditch 291 to the east and north. Both ditches were relatively substantial U-shaped cuttings (1.4–3m wide, and 0.68–1.1m deep) and contained weathered sands and gravels capped by thick bands of silt, with one slump of gravel in ditch 205 hinting at the existence of an internal bank. The south-west corner of the paddock was exposed and terminals of several ditches were revealed, together with a large waterhole that cut the end of ditch 205 (described below). Once again, it is unclear whether the gaps between ditch terminals indicate the location of former hedges and/or banks, or whether some marked entranceways/passageways between different paddocks. By merit of size, the c. 6m wide gap between the terminals of ditches 205 and 202 is the most plausible candidate as an entrance. It is conceivable that ditches 218 and 220 were later additions, closing this passageway. Similarly, it seems likely that the c. 3m wide gap between ditches 202 and 218 was occupied by a hedge or bank.

In the general absence of stratigraphic relationships, it is difficult to determine the sequence of boundary construction and modification. No additional clues are provided by the artefacts recovered, since these were as scarce as those from the boundaries at the northern site. In total, the southern field system ditches yielded just six worked flints and 215g of cattle bone, together with three sherds (6g) of Middle Bronze Age Deverel-Rimbury pottery, and four residual fragments of Late Neolithic Grooved Ware (5g). The former include sherds belonging to large diameter vessels.

The Late Bronze Age and Early Iron Age

Limited evidence for prehistoric activities post-dating the silting of the earlier field boundaries was found, consisting of a few features securely dated to the Late Bronze Age and Early Iron Age.

At Perkins North, three dispersed pits found in Areas B (340 and 370) and C (64) can be attributed to the earlier first millennium BC, on the basis of pottery and radiocarbon dating (Fig. 2). They were oval in plan, measuring 0.72–1.92m in diameter and 0.10–0.5m in depth, and contained single deposits of sandy silt with flecks of charcoal and fragments of pottery. The assemblage from pit 340 included 67 sherds (214g) of Early Iron Age pottery, and is associated with a radiocarbon date of 770–430 cal BC (95.4% confidence; SUERC-82210; 2467±26 BP, Table 2). Samples from the pit fills produced two charred cereal grains and a moderate amount of wood charcoal, some of which was identified as *Prunus* sp.

Pits 64 and 370 produced a further 64 sherds (210g) of pottery between them, although these assemblages lacked diagnostic fragments and can only be assigned a broad Late Bronze Age to Early Iron Age date.

The only other securely dated feature was a cremation burial (16), found in the northern half of Paddock 2 (Area C). The pit was 0.88m in diameter and 0.30m deep, and had a charcoal-rich fill containing 200g of burnt human bone. This appeared to have been tipped into the feature from the eastern side, and was found with three small, abraded body sherds (3g) of pottery from the same vessel, including refitting fragments. These may be contemporary with the material from pit 64 but, since no diagnostic sherds were recovered, only a broad Late Bronze Age to Early Iron Age date can be suggested. The cremated remains belong to a single adult/older sub-adult of indeterminate sex, with a sample of the bone delivering a radiocarbon determination of 1030–900 cal BC (95.4% confidence; SUERC-82212; 2813±24 BP, Table 1), placing it firmly in the Late Bronze Age. Aside from wood charcoal, the only charred plant remains recovered from the cremation consist of a single charred dock (*Rumex* sp.) seed.

The largest feature found at Perkins South was a waterhole (280 in Area D; Fig. 3). This was located in the south-west corner of Paddock 3, and cut into the junction of two earlier ditches. Broadly oval in plan, the waterhole measured 4.5m by 5.1m and was 1.66m deep with steeply sloping sides and a dished base. The primary fills consisted of slumps of weathered sands and gravels, punctuated by lenses of silt. These were overlain by thicker bands of sandy silts, capped by an upper fill of grey-brown silty clay. Finds recovered from the primary and secondary fills included two crumbs of Middle Bronze Age pottery (1g), four worked flints and animal bone (677g of cattle bone and 260g of dog bone). Some of these finds are likely to be residual, deriving from the truncated Middle Bronze Age field system ditches. Samples failed to produce any identifiable plant remains.

To the west lay a shallow feature (229) adjacent to an earlier field system ditch. It was circular in plan with steeply sloping sides and a flat base. Measuring 0.8m in diameter and 0.1m deep, it was filled with a dark grey-brown sandy clay which contained a single sherd of Early Iron Age pottery (30g), consisting of the shoulder of a coarseware vessel decorated with fingertip impressions.

Discussion

The ?jadeitite axehead

The ?jadeitite axehead fragment from Perkins South (Fig. 4, No. 1) is a significant find, with only 118 other examples known from the British Isles as of 2010 (Sheridan *et al.* 2011, 412). This type of stone axe would have originated in the Alps, where the jadeitite rock was sourced, in the Late Mesolithic or Early Neolithic. Some of these axes may have been treasured possessions, often being at least two centuries old when they entered the UK during the earliest years of the Neolithic (*ibid.*, 415; Whittle *et al.* 2011, 876). Its recov-

ery in a much later, Middle Bronze Age, feature hampers its interpretation – it could simply represent a residual find, or may be an item ‘re-discovered’ and deposited during the Middle Bronze Age. Although there was little evidence for Early Neolithic activity at either of the Perkins Engine sites, beyond a few residual blade-based flints, Early Neolithic activity is attested elsewhere at Fengate, and includes the unusual multiple inhumation burial at Cat’s Water (Pryor 1984), and the Padholme Road Early Neolithic house/‘mortuary structure’ (Pryor 1974), as well as occasional pits and tree throws associated with Early Neolithic pottery and flintwork (*e.g.* Evans *et al.* 2009, 73–5; see also Webley 2007).

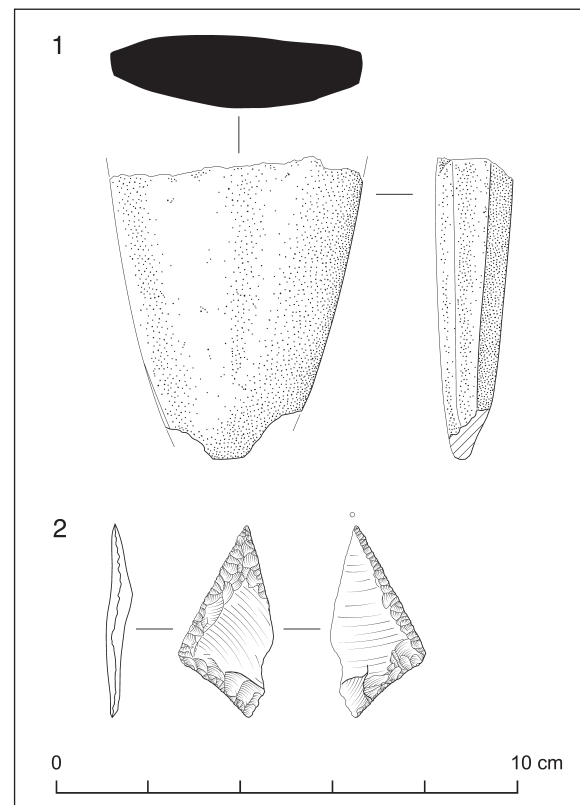


Figure 4. Worked stone and flint artefacts.
1. Jadeitite axehead fragment, Paddock 3, ditch 291;
2. Oblique arrowhead, pit 235.

Pre-field system activity

As with the prehistory of Fengate more generally, some aspects of the area’s Neolithic and Early Bronze Age archaeology have achieved renown at a national level, with Wyman Abbot’s early collections having a special significance for Neolithic pottery studies (Abbot and Smith 1910; Leeds 1922; Hawkes and Fell 1945). Some of the discoveries made by Pryor in the course of the major fieldwork campaigns of the 1970s and 1980s feature widely in the literature – perhaps most notably the rectangular trench-built Early Neolithic structure from Padholme Road (Pryor 1974).

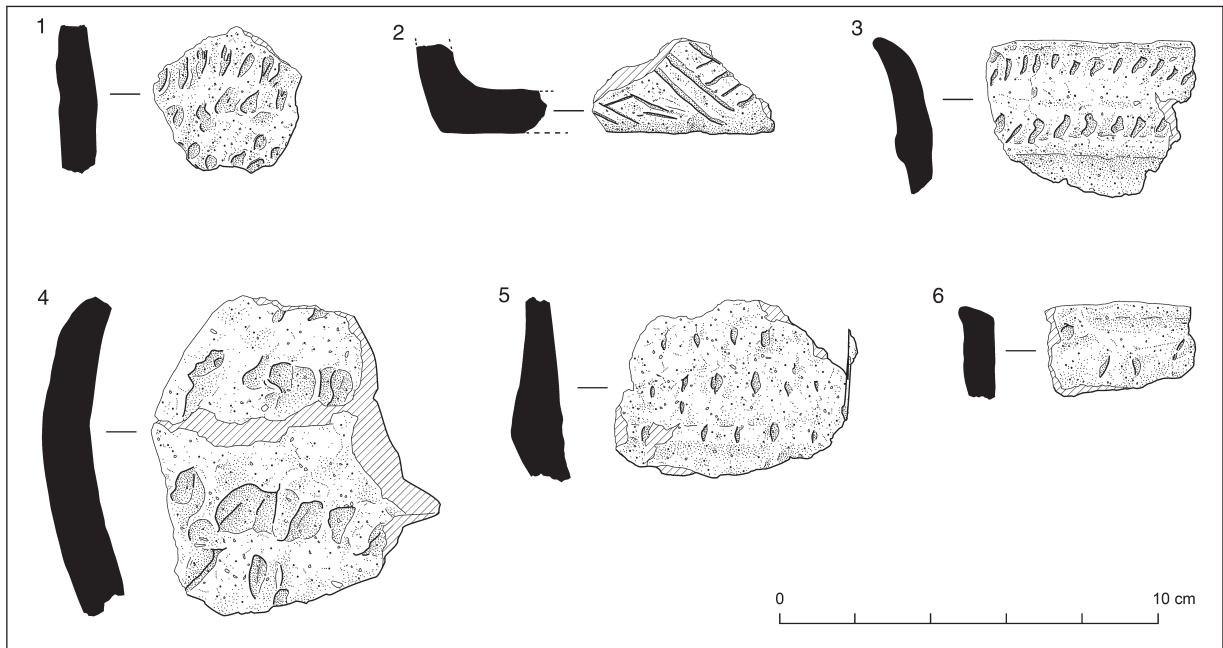


Figure 5. Late Neolithic and Early Bronze Age pottery.

1. Stab marked Grooved Ware body sherd, pit 235;

2. Incised Grooved Ware base sherd, pit 239;

3-6. Selection of impressed, fingertip and fingernail decorated Beaker sherds, pit 247.

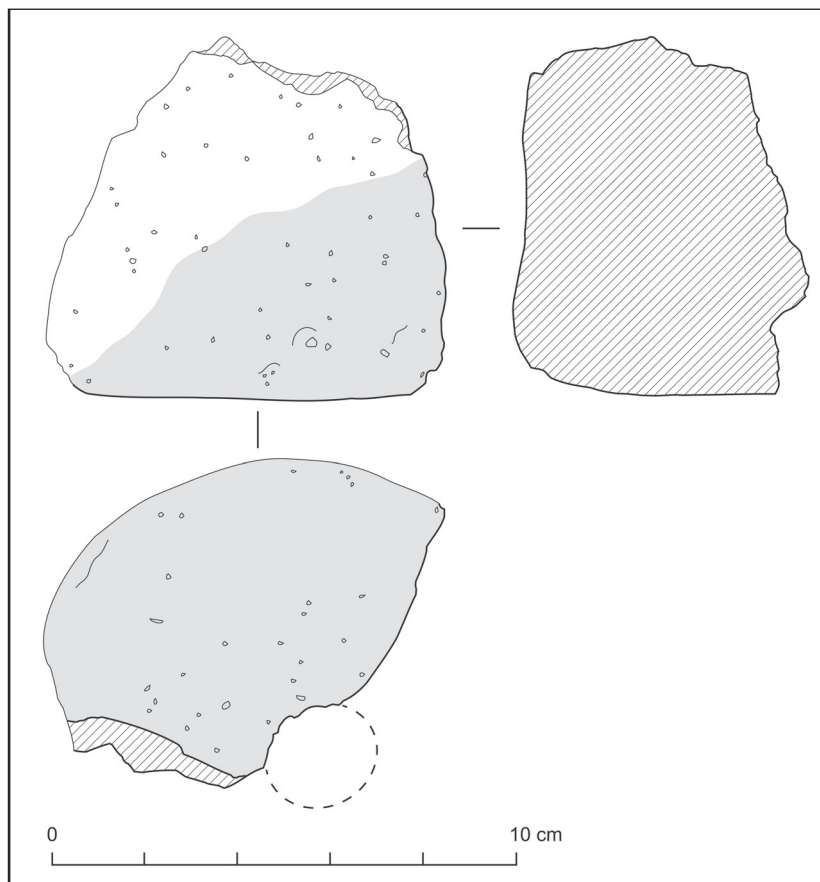


Figure 6. Cylindrical loom weight fragment, Paddock 2, ditch 49.

The significance of Fengate's earlier prehistory was also foregrounded in much of Pryor's earlier work, when the origins of the field systems were seen to lie in the later Neolithic, based largely on their 'association' with Grooved Ware pits and post settings at Storeys Bar Road (Pryor 1978; 1984, 206–210; see also Pryor 1988 for the Early Neolithic landscape). Subsequent work has, however, firmly decoupled the field systems from the Late Neolithic occupation (Evans and Pollard 2001), and Fengate's record of Neolithic and Early Bronze Age activity can now be seen as broadly typical of the wider region – with pits and buried soil artefact scatters, alongside evidence for funerary/ceremonial activity in the form of burials and monuments.

In reviewing the earlier prehistory of Fengate, it is also important to note that, over large parts of the area, evidence for Neolithic/Early Bronze Age activity is actually very sparse (Evans *et al.* 2009, 240–43). Worked flint densities within buried soil deposits sampled across Fengate are relatively low when compared to those from elsewhere in the region (*ibid.*, 241, table 6.2) and many of the larger set-piece excavations, including Newark Road (Pryor 1974), and the Broadlands site (Nicholson 2012) have yielded very few features of earlier prehistoric date. In this context, the dearth of evidence for Neolithic and Early Bronze Age activity at Perkins North should occasion little surprise, and the small number of Grooved Ware and Beaker associated features at Perkins South can be readily paralleled by more extensive remains at other sites. A more unusual, and significant, result of the Perkins South investigations is the recovery of the remarkable deposit of charred grain, radiocarbon dated to the earlier second millennium BC, from an apparently isolated pit – a discovery with implications for our understanding of the economy of the period preceding the establishment of the Middle Bronze Age field systems.

The evidence for Late Neolithic activity at Perkins South, in the form of a small cluster of Grooved Ware associated features, can be readily set in the wider context of contemporary activity in the area. With Abbot's work on the quarries in the western part of Fengate recovering little Grooved Ware (see Evans *et al.* 2009, 33, table 2.1), two major areas of Late Neolithic activity have since been recognised on the lower contours of the area: in the south at Storeys Bar Road (Pryor 1978; with contemporary features found during adjacent excavations at the Elliot and TK packaging sites, Evans *et al.* 2009, ch. 3; Pryor and Trimble 2000), and to the north at Edgerley Drain Road, with remains at both sites characterised by pits associated with Grooved Ware in the Durrington Walls sub-style, comparable to that from the Perkins South features. The Perkins South pit cluster should clearly be seen as an outlier to the more extensive pits and pit clusters exposed at Edgerley Drain Road, part of a potentially extensive but dispersed swathe of settlement which does not, however, appear to extend north to the Broadlands, and Perkins North beyond. The finds assemblages from the pits can only be de-

scribed as modest, certainly not bearing comparison with the richest pits at Edgerley Drain Road (where individual features contained up to 1763g of pottery), although comparably low finds densities were a feature of many of the Grooved-Ware attributed pits excavated there (Evans *et al.* 2009, 128, table 4.1). As with the other Fengate/Flag Fen Basin sites, the temporal and contextual distinction between Grooved Ware and Beaker pottery persists (Garrow 2006).

A more substantial finds assemblage was recovered from the single Beaker associated feature found adjacent to this earlier pit cluster. With ninety sherds weighing 554g, the pottery from this feature is distinctive not only in terms of its size but also the relatively large number of vessels represented. The occurrence of pottery assemblages made up of sherds representing small parts of multiple vessels is a recurring feature of Beaker associated pit deposits in the region (see Knight 2016, 164–166), and suggests that the scale and duration of occupation represented by such assemblages is poorly reflected in terms of numbers/presence of cut features – as demonstrated elsewhere by evidence for Beaker/Early Bronze Age associated settlement represented exclusively by artefact scatters preserved in buried soil horizons (*e.g.* Bamford 1982; Healy 1996; Tabor 2015). As with the Grooved Ware pits, the Beaker activity at Perkins South can be paralleled with a larger number of Beaker-associated pits at Edgerley Drain Road, whilst Wyman Abbot's collections included a large component of domestic Beaker pottery (Gibson 1980).

As noted above, the remarkable deposit of burnt grain from pit 97 at Perkins South is surely the most significant element of the pre-field system activity revealed by the excavations. Although only partly exposed and excavated, limited sampling produced an enormous quantity of charred grain, and based on a crude estimate of the volume of its basal fill, this deposit may have contained anywhere up to 16 litres of cleaned, fully processed, grain. Such assemblages are rare for any period of prehistory, and when found there is often a degree of ambiguity as to whether they should be interpreted in terms of accidental burning or as the result of ritual/votive practice (*cf.* Jones and Legge 2008, 474–76); in this case, however, the evidence for insect infestation from the grains suggest the assemblage represents the deliberate disposal of a ruined store of grain. The date of the deposit, based on a single radiocarbon date of 1890–1730 (87.2% confidence) places it firmly in the Early Bronze Age, and covers a similar range to dates from two of the 'domestic' Collared Urn associated pits excavated nearby at Edgerley Drain Road (dates of 1900–1690 cal BC and 1930–1740 cal BC; Evans *et al.* 2009, 176). This date is of considerable importance in light of Stevens and Fuller's influential argument that a dearth of charred cereal remains from later Neolithic and Early Bronze Age contexts across Southern Britain indicates a largely pastoral economy for these periods, with renewed arable production associated with a Middle Bronze Age 'agricultural revolution' (Stevens and Fuller 2012). In the regional context this

argument has always seemed overstated, given the recovery of small quantities of charred grain from Beaker/Early Bronze Age contexts (*cf* Evans *et al.* 2016, 578), but here we have firm, directly dated evidence for what appears to represent large-scale cereal cultivation in the earlier second millennium BC, raising important questions about the organisation and scale of agrarian production at Fengate, and elsewhere in the region, in the Early Bronze Age.

The Bronze Age field system

Introduction

The Bronze Age field system at Fengate has been gradually exposed and recorded in the course of piecemeal development-led excavation over the last five decades. As a result, an understanding of the structure and alignment of this renowned field system has steadily evolved, with each new campaign of fieldwork revealing further components that need to be interpreted in relation to the legacy of earlier work. What is surprising is that excavation in this landscape still seems to afford new insights and unexpected results: rarely has any sizeable project at Fengate simply uncovered 'more of the same', or failed to further the understanding of the wider field system. The Perkins Engines excavations are no exception. They extend the known geographical limits of the ditch system by a further 250m, and more importantly, shed new light on the date, form, alignment and potential function of boundaries at the northern end of the Fengate system.

Date and origins

Whilst the degree to which the origins of the Fengate field system were rooted in patterns of Early Bronze Age landscape organisation and agriculture remains a moot point, any argument for an earlier ancestry now seems untenable (see Evans *et al.* 2009 for full discussion). Field systems are notoriously difficult to date, but across the Flag Fen Basin and the wider fenland region, the most reliable evidence from radiocarbon dating and artefact associations places the construction and maintenance of extensive ditch-defined field systems in the Middle Bronze Age, from c. 1600/1500 cal BC.

The results from the Perkins Engines excavations broadly support this interpretation, or at the very least, do nothing to contradict it. Importantly, two strands of evidence have a bearing on this claim, and contribute to securing the date of Fengate's field system. Firstly, on stratigraphic grounds, a post-Late Neolithic/Early Bronze Age date is indicated by the western ditch of Paddock 3 (ditch 291) at Perkins South which cut Beaker pit 247. This relationship was unambiguous. Secondly, the upper ditch silts of the western boundary in Paddock 2 (ditch 155), Perkins North, yielded charcoal radiocarbon dated to the Middle Bronze Age, 1400–1220 cal BC (95% confidence; SUERC-84809; 3046±26 BP). Combined, these provide a broad temporal bracket for ditch con-

struction and silting, matching findings elsewhere, and adding further weight to the argument that the boundary system was of Middle Bronze Age origin.

The content and character of the later pottery groups is again typical of the wider Fengate region. Unfortunately, the material recovered from the ditches contributes little further to the dating debate, with only 25 small abraded sherds (43g) being recovered. Whilst this includes a few Middle Bronze Age Deverel-Rimbury wares, the majority is of 'generic' later Bronze Age date, with some residual pieces of Late Neolithic Grooved Ware. More informative is the recovery of a cylindrical loom weight from Perkins North. This is diagnostic of the Middle Bronze Age and complements the radiocarbon and stratigraphic evidence.

Field forms and alignment

The overall character of the field system ditches at the Perkins Engines sites is fairly typical of those from the wider Fengate region. On an individual basis, the ditches varied in size with some being little more than shallow gullies, presumably flanked by hedge lines, whilst others were more robust and would have provided a physical barrier, with or without an accompanying hedge or bank. Direct evidence for these above-ground features is admittedly slim, although an asymmetric tip of gravels in Paddock 3, Perkins South, suggests the presence of banks, whilst the recovery of seeds of hawthorn from Paddock 2, Perkins North, implies the presence of hedgerows. The close spacing of certain boundaries and ditch terminals on both sites is further testimony to these former features, with some arrangements recalling those in the double-ditched enclosure at Broadlands (Nicholson 2012) and Newark Road to the south (Pryor 1980; see Evans *et al.* 2009, 245 and 248 for discussion). Hedges and banks may also have bridged discontinuous lengths of ditch, particularly at Perkins North, with some 'entrances' perhaps being more apparent than real.

The fills of the ditches were generally uniform and typically comprised sterile silty sands with a varying gravel content. Finds were scarce; aside from the pottery and axe head noted above, one piece of loom weight, 14 worked flints and 904g of animal bone were recovered. Much of this material is likely to have been residual (notably the worked flint, axe head fragment and sherds of Grooved Ware), and was largely recovered from the tertiary silts. Some was undoubtedly displaced from earlier features, or weathered into ditches from the Bronze Age land surface. Further re-working may have resulted from the re-cutting of boundaries. This re-definition appears to have been conducted on a piecemeal basis, suggesting maintenance as opposed to wholesale renewal. Again, this is in keeping with the rest of the Fengate field system, which is relatively 'pristine' in its form, and lacks any evidence of major modification once laid out.

In terms of ditch alignment, there is a marked difference between the two Perkins Engines sites which requires explanation. At Perkins South, the dominant

axis of the boundaries is north to south. This arrangement mirrors that at Edgerley Drain Road to the east, and also the axis of boundaries external to the double ditched enclosure at Broadlands, to the north. The size, character and alignment of Paddock 3 fits comfortably within the system recorded between land south of Vicarage Farm Road, Edgerley Drain Road

and Broadlands, and forms part of a coherent field system 'block' in this zone. This was first identified by Evans *et al.* (2009), who drew attention to the contrasts in alignment with boundaries in the southern part of Fengate that share a dominant north-west to south-east axis (see Fig. 7). Significantly, the orientation of boundaries at Perkins North differs from both



Figure 7. Middle Bronze Age Fengate (after Evans *et al.* 2009, fig. 6.1, with additions), overlain on LiDAR derived digital elevation model. Numbered enclosures relate to the detailed plans shown on Figure 8.

these major field system ‘blocks’ at Fengate, as the dominant axis is north-east to south-west. Given the close spacing of the Broadland and Perkins North excavation, the twist in orientation must be reasonably abrupt, although the beginnings of such a ‘swing’ may be recognised in the alignment of the Broadland enclosure itself.

How, then, is this change in alignment to be accounted for? As with other major field system blocks at Fengate, local topography appears to be key, and in particular, the location of the later Bronze Age fen-edge and surrounding damp ground contours. Whilst no hard-line can be drawn to accurately represent the later Bronze Age fen-edge, recent modelling of the Flag Fen Basin suggests that the contours between 0.5–1m OD marked the wet-dry divide during the mid-second millennium BC, and defined the ‘shoreline’ of Fengate (Knight and Brudenell forthcoming). This edge corresponds with the lower extent of field system ditches at both the Elliot (Evans *et al.* 2009) and Power Station sites (Pryor 2001), and was ultimately the destination of a series of ditch-defined droveways, each aligned perpendicular to the fen-edge, in this zone. Mapping these low-lying contours further north around Fengate is problematic due to urban growth, and has not yet been attempted in any detail. However, LiDAR data in combination with geological mapping suggests that the shoreline turned westward, potentially along an inlet or embayment c. 150m to the north of the Perkins North site, labelled the ‘Oxney Road embayment’ by Evans *et al.* (2009, 242).

As tentatively indicated in Fig. 7, the extent of this alluvium-filled embayment has probably been underestimated, and is likely to have formed a significant topographic feature, probably marking the northern end point of Fengate’s field system. The paddocks and field components ‘upslope’ from the embayment at Perkins North appear to have been aligned upon/set by this inlet with the wider system pivoting to follow the curvature of the local topography down to the wetland fringe and its rich damp-ground pastures. This would certainly explain why the principal orientation of the Perkins North ditches are different to those at Perkins South and surrounding sites, and suggests the presence of a third major axial ‘block’ of wet-edge aligned boundaries within the wider Fengate field system.

Paddock function

Although there is now some consensus that the Fengate field system was geared towards the management and movement of livestock, details on how individual paddocks functioned, or why enclosures differed in term of size and form, remain obscure. Some patterns, however, are beginning to emerge, and Paddock 2 at Perkins North appears to belong to a group of small rectilinear enclosures characteristic of ‘upslope’ locations between the 3–5m OD contours at Fengate (Fig. 8). These include the double-ditched compounds at Broadlands (Nicholson 2012) and Newark Road (Pryor 1980), and a newly identified

cropmark south of Vicarage Farm Road (Willis and Scott 2019). These are of regular form and measure between 48–62m in length, 38–50m in width, enclosing areas between 0.16–0.31ha.

Elsewhere such paddocks have been labelled ‘stockyards’ in the context of a model of specialised sheep rearing (Pryor 1996; Nicholson 2012, 76). This interpretation has been comprehensively critiqued (see Evans *et al.* 2009, 243–50), with cattle now established as the mainstay of the local Middle Bronze Age economy – the small faunal assemblage from the Perkins Engines sites mirroring this trend. However, the underlying hypothesis that these enclosures held a specific role in the pastoral economy remains attractive owing to their regularity in form, size and topographic setting. Assuming they were for cattle, their scale precludes the possibility that they could have held many head of livestock for any length of time. Without rotation, as few as ten cows would easily exhaust the pasture within paddocks of this size in under a week. The enclosures also lack waterholes, suggesting that animals were not intended to be penned for long. It therefore seems more likely that these enclosures were employed as corrals for short term use, perhaps for sorting or separating animals at specific points in the agrarian calendar. Controlled spaces would certainly be needed for such activities, perhaps for penning bulls for castration, separating livestock for slaughter, or isolating sick or diseased animals.

Post-field system prehistoric activity

Prehistoric activity post-dating the field system ditches at the Perkins sites is extremely slight, with only a handful of features confidently dated to the Late Bronze Age and Early Iron Age on the basis of associated finds, radiocarbon dating and/or stratigraphic associations. These features were widely dispersed and, whilst it is possible that other undated pits belong to this phase, the scarcity of material points towards intermittent activity at these locations during the first half of the first millennium BC.

The absence of Post-Deverel Rimbury wares from the field system ditches is particularly noteworthy, and suggests that the earthworks had substantially infilled and were no longer maintained by the Late Bronze Age. They were certainly truncated by the cutting of the waterhole in the south-west corner of Paddock 3, Perkins South, although the location of this feature may have been influenced by the presence of hedgerows. Indeed, these may have continued to delineate remnants of the field system long after the ditches ceased to be maintained. Furthermore, the presence of the waterhole could imply that this area was still used for cattle grazing and, with no evidence for settlement *per se*, it seems likely that some aspects of land use persisted into the early first millennium BC.

On this point it is worth highlighting that any evidence for sustained Late Bronze Age and Early

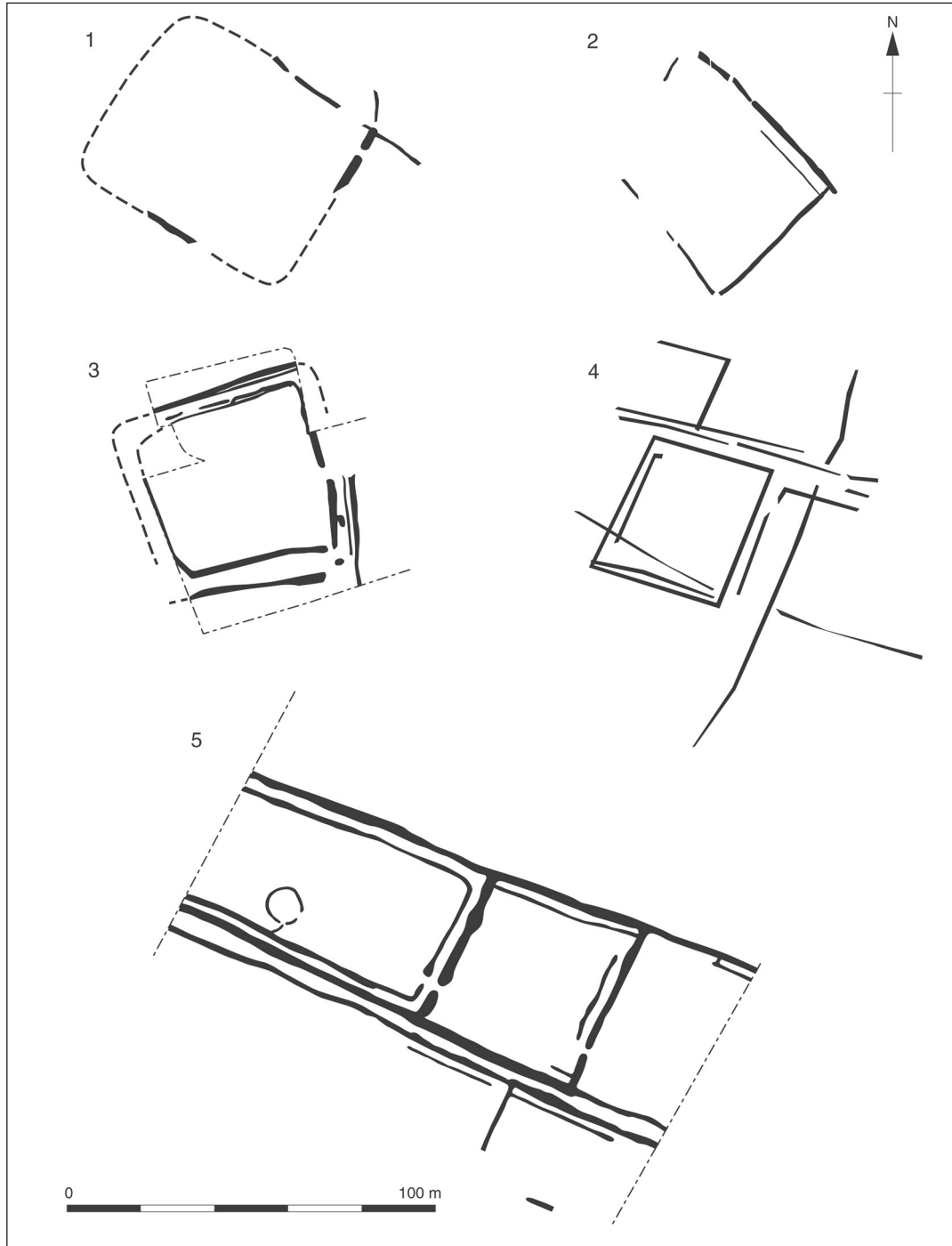


Figure 8. Detailed plans of selected Middle Bronze Age paddocks from Fengate (see Fig. 7 for locations).
 1. Perkins North, Paddock 1; 2. Perkins North, Paddock 2; 3. Broadlands (after Nicholson 2012); 4. South of Vicarage Road (Willis and Scott 2019, APS12); 5. Newark Road (after Pryor 1980)

Iron Age settlement on the slopes of the 3–5m OD contours at Fengate is currently lacking. Excavations at Broadlands, Edgerley Drain Road, The Elliot Site and Cat's Water, yielded scatters of features and finds akin to those from the Perkins Engines site, but have not produced traces of permanent settlement with structures and substantial artefact assemblages of the type familiar to other parts of Cambridgeshire

(e.g. Stonea (Jackson and Potter 1996) and Striplands Farm (Evans and Patten 2011)). Certainly on current evidence, Early Iron Age settlement appears to have been centred upon areas above the 5m OD contour at Fengate, namely at Vicarage Farm, c. 800m to the south-west (Pryor 1974), and the Tower Works/Pre-War Gravel Pits area of Fengate, c. 1.7km to the south-west (Hawkes and Fell 1945; Evans *et al.* 2009). Late

Bronze Age settlement is more elusive in this landscape zone, although it remains possible – as indicated by the excavations at Must Farm (Knight *et al.* 2019) and the Flag Fen Platform (Pryor 2001) – that wetland dwelling in fen and riverine contexts was the norm in the Flag Fen Basin during this period (Knight and Brudenell forthcoming).

The character of post-field activity at the Perkins sites was therefore one of low intensity occupation, not directly associated with settlement. The land between the 3–5m OD contours was probably retained as pasture for cattle, and with the water level rising in this period (French 2001; 2003 ch. 7), the wet fringe of the fen-edge would have been closer to the site than in the Middle Bronze Age. The recovery of a single cremation at Perkins North also indicates that the dead were being sporadically buried in this landscape zone. Securely dated to the Late Bronze Age, this burial adds to a steadily growing list of cremations from this period in Cambridgeshire, often found in isolation (see Phillips and Blackbourn 2019, 21).

Conclusions

The investigations at the Perkins Engines sites have revealed further evidence of extensive prehistoric activity along Fengate's northern margins. The character of Neolithic and earlier Bronze Age activity appears typical of the local landscape, although the recovery of a substantial deposit of charred grain from one pit is extremely rare and highly significant. This is indicative of large-scale cereal cultivation on a hitherto unanticipated scale, and presents a major challenge to models of a predominantly pastoral economy in the Early Bronze Age.

The excavations have also increased the known extent of Fengate's ditched Bronze Age field system, and provided further evidence for its Middle Bronze Age origin and currency. The new work has revealed that the dominant axis of the system pivots from a north to south alignment, to a north-east to south-west one in the area to the north of The Broadlands. This shift in orientation appears to define a third major axial 'block' of field boundaries at Fengate, and is probably aligned upon the inlet known as the Oxney Road embayment (Evans *et al.* 2009, 242) c. 150m north of Perkins North.

Finally, the excavations have continued to demonstrate the low level earlier first millennium BC activity across the 3–5m OD contours at Fengate, suggesting that this zone was not a focus of settlement during the Late Bronze Age and Early Iron Age.

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