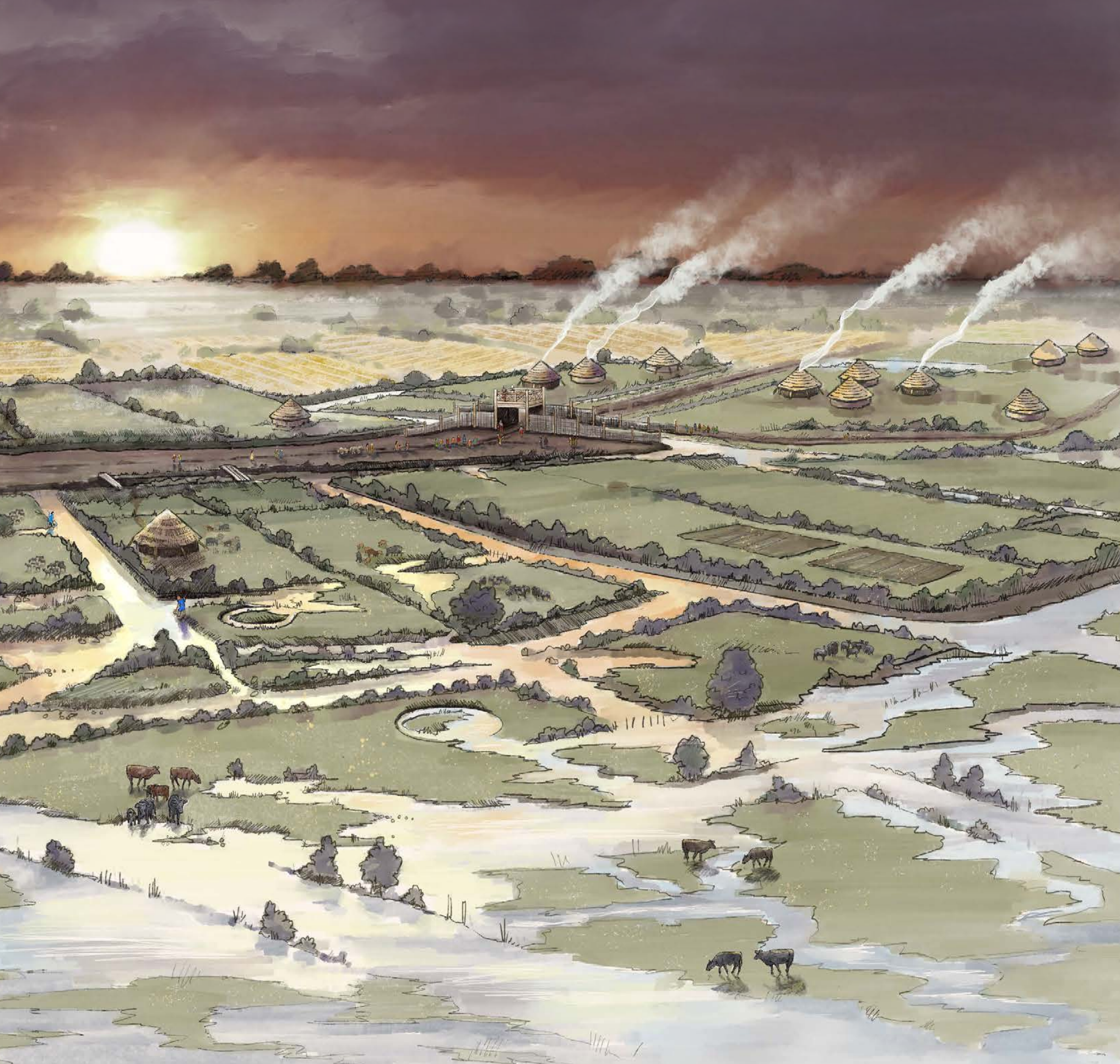
The Archaeology of the Hornsea Project One Offshore Windfarm Cable Route

Agriculture, Settlement, Moats and Saltworking in the Lincolnshire Marshes

Ashley Tuck



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Reconstruction drawing of Humberston Road Romano-British settlement by Jennie Anderson

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Wessex Archaeology staff pose for drone photography at Brooklands

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Abstract

The Hornsea Project One Onshore Cable Route provides infrastructure in support of the Hornsea Project One Offshore Windfarm and passes through northern Lincolnshire. Installation of the cable has provided Wessex Archaeology with the opportunity to investigate an archaeological transect across the Lincolnshire marshes, passing through both better-studied areas such as the environs of Immingham and also areas that have received less archaeological attention, such as the parishes inland of Grimsby. A wide range of investigatory techniques were used, culminating in open area excavations.

Six sites of Iron Age and/or Romano-British date include an Iron Age enclosed farmstead (Chase Hill Road, North Killingholme) closely resembling other examples in the region, a ladder settlement on the littoral fringe (Humberston Road, Tetney), and four more irregular settlements (East Field Road, North Killingholme; Westfield Farm on the parish boundary between North and South Killingholme; Keelby Road, Stallingborough; and Station Road, mainly in Holton le Clay parish but extending into Tetney parish). The settlements occupied contrasting landscape settings within the marsh. Analysis of the results has revealed that the settlements had varying dates of occupation within the Iron Age and Romano-British periods. The settlements were all low status with limited access to trade and relied on closed subsistence economies exploiting mixed agriculture including wetland pasturing.

Near Laceby, a site at Laceby Beck contained the remains of a small Anglo-Saxon settlement, evidenced by shallow pits, enclosure ditches and a richer range of artefacts than were recovered from the earlier sites.

The Iron Age/Romano-British site at Westfield Farm developed into the adjacent medieval moated site of Blow Field (South Killingholme). A second moated site was excavated at Habrough. Both of these moats are elements in a line of eight or more moated sites lying along a low ridge. Both moated sites were imposed on systems of earlier drainage (dated to the Saxo-Norman period and slightly later). The sites are conventional in form and chronology, although, on the basis of the Hornsea Project One results, it cannot be said for certain that they enclosed manor houses or any other type of buildings. The moated sites did not produce high status finds, and it is likely that the very large Blow Field site, of which only a small part was examined, represents something approaching a moated village. Blow Field has previously been speculatively identified with the lost village of Holtham.

The Outmarsh around Tetney has provided evidence for saltmaking. The chronology of the most westerly remains at Tetney Lock Road (Tetney parish) was not established but may represent early saltmaking in the medieval sandwashing tradition, although the presence of a kiln incorporating a Romano-British tile complicates the picture. Moving seawards to the Brooklands site (Tetney and North Cotes parishes), extensive evidence for medieval sandwashing conforms to previously excavated forms and substantially expands the corpus of excavated remains of this regionally significant industry.

Other results include a minor Neolithic/Bronze Age pottery assemblage mainly recovered from two locations in Laceby parish, medieval agricultural boundaries and ridge and furrow, and the incorporation of sites into inclosure field systems.

Some of the archaeological investigations begun by Hornsea Project One have been expanded during Hornsea Project Two and future publication of these results is anticipated (Network Archaeology and Allen Archaeology forthcoming).

Résumé

Le projet terrestre de mise en place de câble de Hornsea One, passant au travers de la province du Lincolnshire, apporte un support infrastructurel au projet du parc maritime éolien de Hornsea One. L'installation du câble a donné à Wessex Archaeology l'opportunité d'étudier un transect archéologique traversant les marais du Lincolnshire, passant par des zones assez bien documentées telles que celles localisées aux alentours d'Immingham, mais aussi des zones ayant fait l'objet de peu d'attention telles que certaines paroisses de Grimsby situées à l'intérieur des terres. Lors de ce projet, plusieurs techniques d'investigation ont été déployées, allant du diagnostic jusqu'à la fouille des zones concernées.

Six sites archéologiques de la région, datant de l'époque de l'Age du Fer et/ou Romaine, incluent entre autres une ferme de l'Age du Fer (Chase Hill Road, North Killingholme), mais aussi un village qui s'est formé autour d'un système parcellaire et viaire sur la frange du littoral (Humberston Road, Tetney), ainsi que quatre autres sites de forme irrégulière (East Field Road, North Killingholme ; Westfield Farm situé entre North et South Killinghome; Stallingborough; et Station Road, principalement dans la paroisse d'Holton le Clay et de Tetney). Ces différents sites occupaient chacun un paysage contrastant les uns avec les autres tout en se trouvant dans les marais. Les analyses suivant les fouilles ont démontré que chacun de ces sites a été occupé à de multiples reprises et lors de différentes phases durant l'Age du Fer et la période Romaine. Ils étaient vraisemblablement d'un statut inférieur avec un accès limité dans les échanges commerciaux et dépendaient probablement d'une économie de subsistance locale basée sur l'exploitation agricole et pastorale dans des zones humides telles que les marais. Non loin de Laceby, sur le site de Laceby Beck, des archéologues ont mis au jour les vestiges d'un village Anglo-Saxon où des fosses circulaires peu profondes et des enclos contenant un mobilier archéologique d'une grande richesse ont été découverts.

Le site de West Field Farm, daté de l'Age du Fer et/ou de l'époque Romaine, s'est plus tard développé en un village médiéval entouré d'un fossé, connu sous le nom de Blow Field (South Killingholme). Ce dernier a, par le passé, été identifié de façon hypothétique comme pouvant être le village perdu d'Holtham. Un second site entouré d'un fossé fut découvert non loin de là, à Habrough. Ces deux sites sont alignés avec pas moins de huit villages similaires le long d'un même plateau et se sont développés sur un système de drainage plus ancien, remontant à la période Saxo-Normande voir légèrement plus tard. Bien que ces sites soient assez conventionnels en termes de forme et de chronologie et si l'on se base sur les résultats du projet Hornsea One, il est impossible d'affirmer avec certitude que ces sites renfermaient des manoirs ou d'autres types de bâtiments en leur centre. Le site de Blow Field, dont seule une petite superficie a été étudiée jusqu'à présent et tout comme la plupart des sites similaires établis aux alentours, n'a pas délivré de mobilier archéologique de prestige.

La plaine côtière située aux alentours de Tetney a fourni des informations sur la fabrication de sel dans la région. Alors que la chronologie des vestiges archéologiques mis au jour a Tetney Lock Road (Paroisse de Tetney) n'ait pas été établie avec certitude, il semblerait que ce site s'inscrive dans une phase plus ancienne de la fabrication du sel, le « sandwashing ». Cette dernière consistait à extraire le sel du sable et, ensuite, à faire chauffer la saumure qui en résultait pour récupérer les cristaux de sel. Toutefois, la présence d'une tuile datant de la période Romaine dans un four vient compliquer le processus de datation de ce site. Plus à l'est, les fouilles du site de Brooklands (Tetney et North Cotes) ont révélé d'importants vestiges relatifs à la fabrication de sel issus de la tradition du « sandwashing », similaires à ceux mis au jour dans la région. Les résultats des fouilles effectuées lors du projet de Hornsea One ont considérablement augmenté

le corpus des données relatives à l'industrie du « sandwashing » qui était d'une extrême importance régionalement parlant.

Les recherches archéologiques dans cette région ont aussi démontré la présence de vestiges datant du Néolithique et de l'Age du Bronze dans la paroisse de Laceby avec, notamment, l'apparition de sites qui petit à petit sont incorporés dans des enclos délimités par des fossés, mais aussi par la mise au jour d'assemblages de céramique provenant de deux chantiers.

Certaines des recherches archéologiques entamées lors du projet Hornsea One ont été étendues lors de la seconde phase du projet, Hornsea Two. Les résultats de ces recherches sont attendus dans de futures publications (Allen Archaeology, bientôt disponible).

Zusammenfassung

Die Onshore-Kabeltrasse des Hornsea Project One stellt die Infrastruktur zur Unterstützung des Offshore-Windparks Hornsea Project One bereit und verläuft durch den Norden von Lincolnshire. Der Bau der Kabeltrasse bot Wessex Archaeology die Gelegenheit, einen archäologischen Schnitt durch die Marschen von Lincolnshire zu untersuchen, der sowohl durch besser erforschte Gebiete wie die Umgebung von Immingham als auch durch Gebiete führt, die bisher weniger archäologische Aufmerksamkeit fanden, wie z. B. die landeinwärts von Grimsby gelegenen Gemeinden. Es kam eine breite Palette von Untersuchungsmethoden zur Anwendung, die in großflächigen Ausgrabungen gipfelten.

Zu den sechs eisenzeitlichen und/oder romano-britischen Fundplätzen gehört ein eisenzeitliches Gehöft (Chase Hill Road, North Killingholme) mit sehr guten regionalen Vergleichsbeispielen, sowie eine Leitersiedlung am Küstenrand (Humberston Road, Tetney) und vier unregelmäßigere Siedlungen (East Field Road, North Killingholme; Westfield Farm an der Gemeindegrenze zwischen North und South Killingholme; Keelby Road, Stallingborough; und Station Road, hauptsächlich in der Gemarkung von Holton le Clay gelegen, erstreckt sich aber bis in die Gemarkung von Tetney). Die Siedlungen lagen in unterschiedlichen Landschaftsbereichen innerhalb der Marsch. Die Grabungsauswertung ergab, dass die Siedlungen innerhalb der Eisenzeit und der Römischen Kaiserzeit unterschiedliche Besiedlungsdauern hatten. Die Siedlungen hatten alle einen niedrigen Status mit begrenzten Handelsverbindungen und basierten auf einer geschlossenen Subsistenzwirtschaft, die eine gemischte Landwirtschaft mit Weidehaltung in Feuchtgebieten umfasste.

In der Nähe von Laceby wurden bei Laceby Beck die Überreste einer kleinen angelsächsischen Siedlung gefunden, die sich durch flache Gruben, Umfassungsgräben und ein reicheres Fundaufkommen als die älteren Fundstellen auszeichnet.

Der eisenzeitlich/romano-britische Fundplatz bei Westfield Farm entwickelte sich zu der benachbarten mittelalterlichen Wassergrabenanlage Blow Field (South Killingholme). Eine zweite Wassergrabenanlage wurde in Habrough ausgegraben. Beide Fundplätze sind Teil einer Reihe von acht oder mehr Wassergrabenanlagen, die sich entlang eines niedrigen Bergrückens erstreckten. Beide Wassergrabenanlagen wurden über älteren

Entwässerungssystemen errichtet (aus angelsächsisch-normannische Zeit und etwas jünger). Es handelt sich um Anlagen konventioneller Form und Zeitstellung, auch wenn auf Grundlage der Ergebnisse des Hornsea Project One nicht mit Sicherheit gesagt werden kann, dass sie Herrenhäuser oder andere Gebäude umfassten. Unter den in den Wassergrabenanlagen geborgenen Funden fanden sich keine, die einen höherrangigen Status nahelegen, und es ist wahrscheinlich, dass der sehr ausgedehnte Fundort Blow Field, von dem nur ein kleiner Teil untersucht wurde, so etwas wie ein von einem Wassergraben umgebenes Dorf darstellt. Frühere Mutmaßungen gehen davon aus, dass Blow Field mit dem verschollenen Dorf Holtham in Verbindung zu bringen sei.

In der Außenmarsch um Tetney fanden sich Hinweise auf Salzgewinnung. Die Zeitstellung der am weitesten westlich gelegenen Befunde an der Tetney Lock Road (Gemeinde Tetney) konnte nicht ermittelt werden, doch könnte es sich um frühe Salzgewinnung in der Tradition des mittelalterlichen Sandwaschens handeln; allerdings verkompliziert das Vorhandensein eines Brennofens mit einem romano-britischen Ziegel den Befund. Weiter seewärts im Bereich des Fundplatzes Brooklands (Gemeinden Tetney und North Cotes) fanden sich umfangreiche Hinweise für mittelalterliches Sandwaschen, die mit bereits früher ausgegrabenen Befunden übereinstimmen und den Korpus der ausgegrabenen Hinterlassenschaften dieses regional bedeutenden Industriezweigs erheblich erweitern.

Zu den weiteren Ergebnissen gehören kleinere Mengen neolithischer und bronzezeitlicher Keramik, die hauptsächlich an zwei Stellen in der Gemeinde Laceby gefunden wurden, mittelalterliche Ackerraine und Wölbäcker sowie die Einbindung von Fundplätzen in eingefriedete Flursysteme.

Einige der während des Hornsea Project One begonnen archäologischen Untersuchungen wurden im Rahmen des Hornsea Project Two ausgeweitet, und die Veröffentlichung der Ergebnisse ist für die Zukunft vorgesehen (Allen Archaeology in Vorber.).

Chapter 1
Introduction

Circumstances of the Project

Introduction

Between 2013 and 2019, teams of archaeologists experienced the wetland clay of the Lincolnshire marshes during the investigation of the archaeology of the Hornsea Project One Offshore Wind Farm onshore cable route (Hornsea Project One). The cable route is nationally significant infrastructure connecting the national grid to an offshore windfarm located 120 km off the Yorkshire coast in the southern North Sea. A variety of archaeological investigations were required along the approximately 40 km onshore cable route that is the subject of this publication.

Ørsted took over full ownership of Hornsea Project One on 4 February 2015, having previously worked alongside SMart Wind. Following a Final Investment Decision that was announced in February 2016, Ørsted is now developing Hornsea Project One through construction and into operation. Offshore construction began in January 2018, and the last turbine was installed in October 2019.

The Secretary of State awarded the original Development Consent Order in December 2014. Since then, the project design optimisation process has progressed and the anticipated offshore design of Hornsea Project One consists of the following main components:

- a total of 174 turbines to provide an installed capacity of 1218 MW;
- wind turbine generators installed using monopile foundations;
- a network of inter-array cables to connect strings of turbines together and to connect the turbines to offshore substations;
- a reactive compensation station constructed on a jacket foundation;
- interlink cables to connect the offshore substations;
- three subsea export cables to transmit electricity from the offshore substations to the reactive compensation station and from the reactive compensation station to the landfall at Horse Shoe Point, connecting to the onshore buried export cables for transmission to the onshore substation and the National Grid network at Killingholme.

This publication is required to successfully discharge Requirement 5 of the Development Consent Order. The requirement states that:

- *no part of the authorised development above MLWS [mean low water springs] is to commence within the area of a local planning authority until a written scheme for the investigation of areas of archaeological interest above MLWS has been submitted to and approved by the local planning authority;*
- *the scheme must identify areas where field work and/or a watching brief are required, and the measures to be taken to protect, record or preserve any significant archaeological remains that may be found;*
- *any archaeological works or watching brief carried out under the approved scheme must be by a suitably qualified person or body approved by the local planning authority;*
- *any archaeological works or watching brief must be carried out in accordance with the approved scheme.*

The updated project design (Wessex Archaeology 2020) identified research questions with reference to the published East Midlands Research Framework that is now online (Research Frameworks 2023). This publication aims to address these questions in order to successfully discharge Requirement 5 of the Development Consent Order.

Overview of Cable Route

The cable route (**Fig. 1.1**) begins at a converter station at North Killingholme in the unitary authority of North Lincolnshire (NGR 538000 402100). The route runs broadly south-east through the unitary authorities of North Lincolnshire and North East Lincolnshire and briefly enters the West Lindsey district of Lincolnshire. The route returns to North East Lincolnshire before continuing through the East Lindsey district of Lincolnshire to Horse Shoe Point where the marine cable makes landfall (NGR 515200 418900). The route begins in the environs of the increasingly industrialised town of Immingham, passing through the agricultural hinterlands of villages inland of Grimsby, before entering the Outmarsh and eventually reaching the sea.

Phases of Work

A variety of methodological approaches were used across the 40 km and four years of fieldwork for Hornsea Project One.

The earliest phases of the project were undertaken by PCAS, RPS and Air Photo Services Ltd, each leading to reports issued by RPS. These comprised a desk-based assessment (RPS 2013a), aerial photographic survey (RPS 2013b), geophysical survey

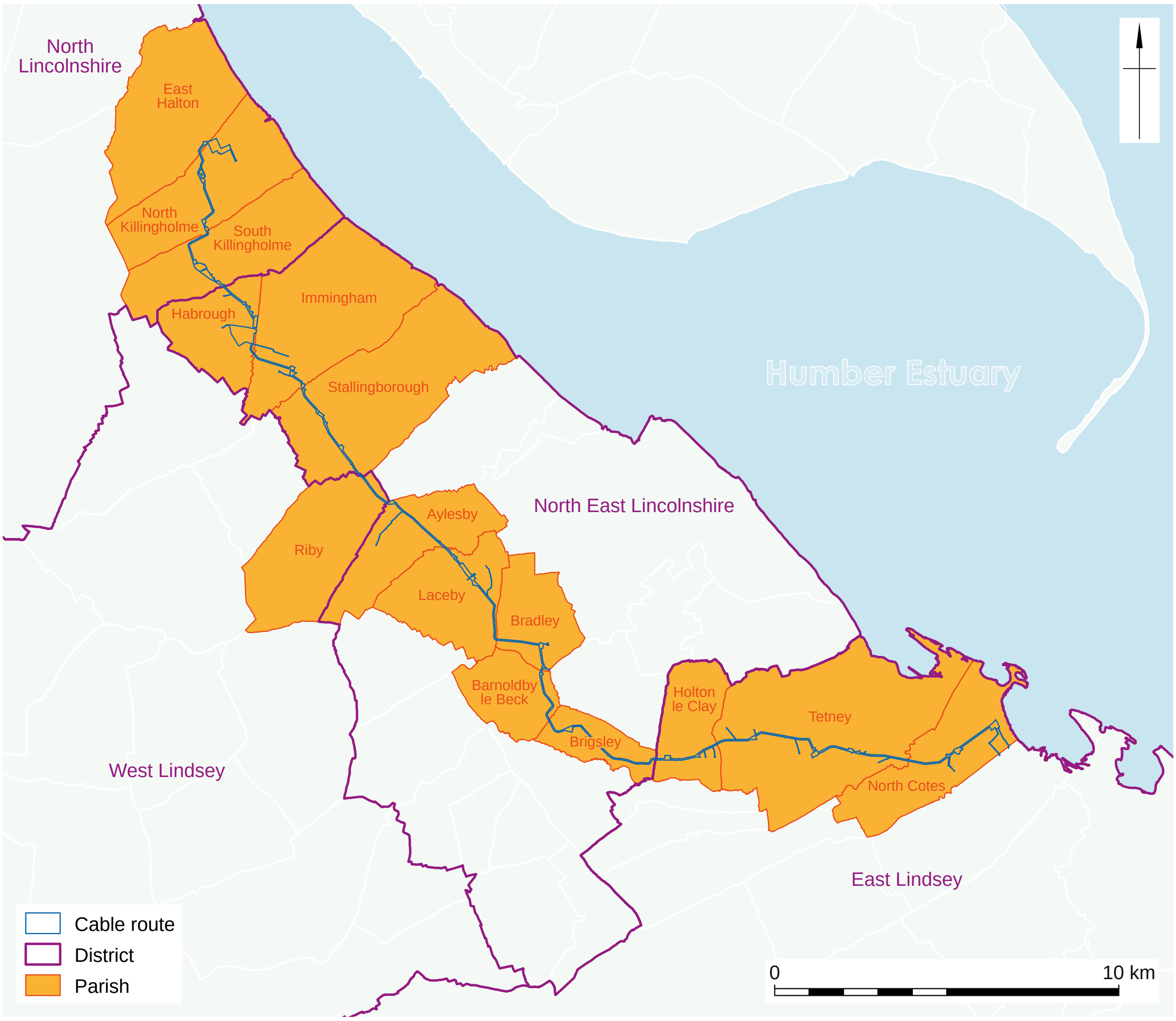


Figure 1.1 Districts and parishes

(RPS 2013c), walkover survey (RPS 2013d), evaluation trial trenching (RPS 2013e), an intertidal walkover survey (RPS 2013f), a site gazetteer (RPS 2013g) and a designated assets baseline (RPS 2013h). A small watching brief was also conducted by Royal HaskoningDHV on ground investigation (GI) pits and was first reported on in the main post-excavation assessment (Wessex Archaeology 2020). A second phase of evaluation trial trenching was undertaken (Wessex Archaeology 2015a) targeting mainly areas that were inaccessible during the previous works, followed by a walkover survey of the county and parish boundaries (Wessex Archaeology 2016a), and an earthwork survey (Wessex Archaeology 2016b). Outside the scope of this publication, which covers terrestrial below-ground archaeology only, historic building recording was also carried out at a Second World War dispersed airfield site at North Killingholme (Wessex Archaeology 2017a), and a watching brief was maintained during attempts to investigate a geophysical anomaly identified within the intertidal zone at Horse Shoe Point (Wessex Archaeology 2018a).

Mitigation comprised seven set piece excavations (SPE1–7), seven areas of strip, map and record (SMR1–6 and the 'SMR south of SPE4/4a'), 20 targeted watching briefs (TWB1–20) and an extensive general watching brief (GWB areas A–AS). The general watching brief covered the whole scheme twice, monitoring the soil strip and then returning to monitor the excavation of three parallel cable trenches. Separate watching briefs were also maintained at the converter station and during excavation of ground investigation pits. A series of interim reports were issued (Wessex Archaeology 2016c–i; 2017b–g; 2018b), followed by a post-excavation assessment and updated project design (Wessex Archaeology 2020).

The results of each phase of investigation comprising the Hornsea Project One fieldwork have been combined and are presented here. A series of sites have been identified from within the results, often spanning multiple campaigns of excavation. These sites have been given unified names for this publication (**Fig. 1.2**). From among the results, 12 sites and 3 findspots have been identified (**Table 1.1**). Further scattered modern and undated features were recorded outside of these areas and are listed at the end of Chapter 3.

Subsequent to the completion of the Hornsea Project One fieldwork, a second parallel project (Hornsea Project Two) has been undertaken by Network Archaeology and Allen Archaeology. The results of Hornsea Project Two and any subsequent works are outside the scope of this monograph, but draft and interim results from Hornsea Project Two (Network Archaeology 2022; Allen Archaeology 2018a–c, 2019 and 2022) have been used to inform the content of this text and it is hoped that this monograph will in turn inform future publication of the results of these parallel excavations.

Landscape, Archaeological and Historical Setting

Introduction

The 40 km route lay entirely within the Lincolnshire marshes, within the areas of the Middle Marsh and Outmarsh (eg, Ellis 2001, 7; Stamp 1942). The majority of the route lay within the relatively higher Middle Marsh, with a smaller portion to the east of the village of Tetney in the lower-lying, coastal Outmarsh.

Solid Geology

The underlying solid bedrock geology for the entire route comprises chalk of the White Chalk group, differentiated into Burnham Chalk and Flamborough Chalk. All of the

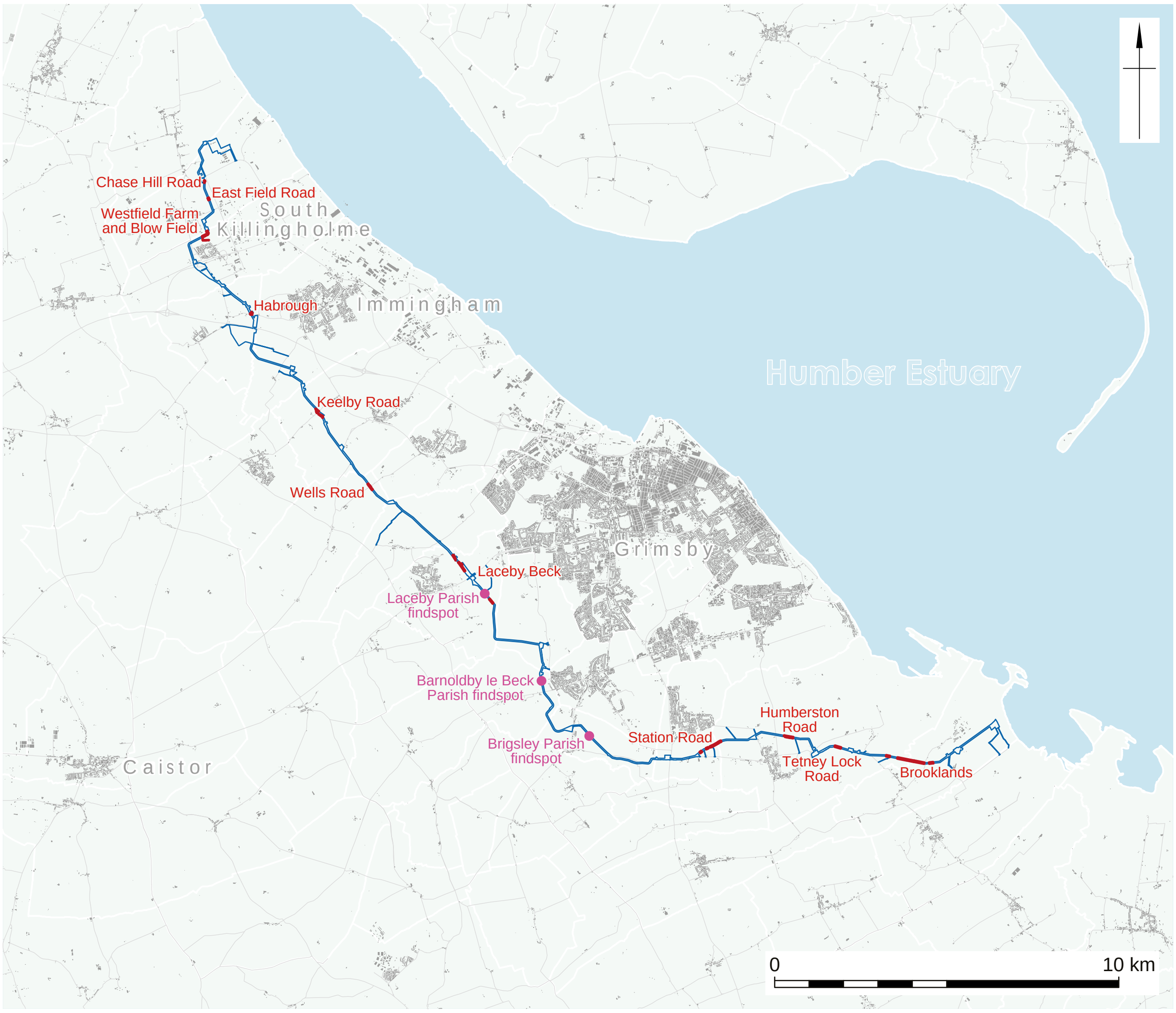


Figure 1.2 Sites and findspots

identified archaeological remains overlaid Burnham Chalk, with Flamborough Chalk present at the coast (British Geological Survey 2020). The superficial geology of the route is outlined in more detail below and includes alluvial and tidal flats deposits.

Middle Marsh

Compared to the Outmarsh, the Middle Marsh represents a slightly higher area of former wetland with a greater time-depth of settlement and arable agriculture. The Middle Marsh is a gently undulating landscape divided into ditched and hedged fields, lying at elevations largely less than 25 m above Ordnance Datum (OD; sites investigated by Hornsea Project One lay at 3.2–17.5 m OD). The ground rises gradually west towards the Lincolnshire Wolds. In the Middle Marsh, the superficial drift geology is principally Devensian glacial till incorporating scattered islands of glacial and fluvioglacial sand and gravel. Areas of alluvial and lacustrine deposits are also present around watercourses (British Geological Survey 2020).

Late Pleistocene and Early Holocene landscape changes have had a great impact on the preservation of early remains, and isolated findspots of Palaeolithic and Mesolithic material are probably reworked and *ex situ*. *In situ* flint scatters of Neolithic and Bronze Age date are known (eg, Fenwick *et al*. 2001a, 109, 116–20, 121–8). Bronze Age remains are generally rare, but a pit containing possible Bronze Age burnt mound material was found beside the South Killingholme Drain in 2003 (Precious and Vince 2005).

Table 1.1 Site names and summary details

Site	*Parish and district*	*Excavation area(s)*	*Period*	*Themes*	*NGR*
Laceby parish findspot	Laceby, North East Lincolnshire	GWB areas P and Q	Bronze Age/undated	Findspot, enclosure	TA 22925 06338 (522925 406338)
Chase Hill Road	North Killingholme, North Lincolnshire	SPE6; SMR5; TWB9; trenches 104, 104a, 104b and 104c	Middle to Late Iron Age	Farmstead settlement	TA 14770 18250 (514770 418250)
East Field Road	North Killingholme, North Lincolnshire	SPE5; TWB8; trench 102	Iron Age and Romano-British	Settlement	TA 14890 17750 (514890 417750)
Westfield Farm	North Killingholme, North Lincolnshire	SPE4 (part of); TWB7; GWB area AL; trenches 93–99, 99a and 99b	Iron Age and Romano-British (for later phases see Blow Field)	Settlement	TA 14800 16700 (514800 416700)
Keelby Road	Stallingborough, North East Lincolnshire	SPE2; TWB18; GWB area AB; trenches 65–70	Romano-British	Settlement	TA 18175 11450 (518175 411450)
Wells Road	Riby, West Lindsey, Lincolnshire	TWB5; TWB6; trenches 59 and 60	Romano-British	Uncertain	TA 19556 09410 (519556 409410)
Station Road	Holton le Clay and Tetney, East Lindsey, Lincolnshire	SPE1; SMR3; SMR4; TWB2; TWB10; TWB11; trenches 36–40	Iron Age, Romano-British and Saxon	Settlement	TA 29600 01900 (529600 401900), TA 29400 01800 (529400 401800), and TA 29700 01950 (529700 401950)
Humberston Road	Tetney, East Lindsey, Lincolnshire	SPE7; TWB12; TWB13; trenches 31–33	Iron Age, Romano-British and Saxon	Settlement	TA 31700 02150 (531700 402150)
Laceby Beck	Laceby, North East Lincolnshire	TWB4; trenches 55 and 56	Neolithic, Bronze Age, Iron Age, Romano-British, Anglo-Saxon	Settlement	TA 22050 07300 (522050 407300)
Brigsley parish findspot	Brigsley, North East Lincolnshire	GWB area D	Bronze Age, Iron Age and Saxon	Findspot	TA 25956 02138 (525956 402138)
Barnoldby le Beck findspot	Barnoldby le Beck, North East Lincolnshire	GWB area I	Romano-British? medieval?	Findspot	TA 24579 03739 (524579 403739)
Blow Field	South Killingholme, North Lincolnshire	SPE4 (part of); SMR south of SPE4/4a; trenches 93–98	Saxon, medieval, post-medieval (for earlier phases see Westfield Farm)	Moated site	TA 14800 16600 (514800 416600)
Habrough	Habrough, North East Lincolnshire	SPE3; SMR6; GWB areas AF, AG, AH and AI; trenches 79, 80 and 80a	Iron Age, Saxon, medieval, post-medieval	Moated site	TA 15650 14400, (515650 414400)
Tetney Lock Road	Tetney, East Lindsey, Lincolnshire	SMR2; trench 22	Uncertain (potentially Saxo-Norman) and medieval	Saltmaking, agriculture	TA 33170 01815 (533170 401815)
Brooklands	North Cotes, East Lindsey, Lincolnshire	SMR1; TWB14; TWB15; TWB16; trenches 7–17, 13a, 13b and 16a	Medieval, post-medieval	Saltmaking, agriculture	TA 35500 01400 (535500 401400)

Sites are listed in order of presentation in Chapters 2 and 3

Iron Age and Romano-British settlement sites have been increasingly frequently excavated in recent years, with a focus of developer-funded archaeology around the Port of Immingham (eg, Fenwick *et al*. 2001a; Field and McDaid 2011; Cavanagh in prep.). Cropmarks and surface finds provide further evidence of Iron Age and Romano-British activity. These comparable sites are discussed further in Chapter 8.

By the later 6th century AD there are increasing numbers of small early Anglo-Saxon cemeteries in the region, characterised by inhumations with burial goods (Fenwick *et al*. 2001b, 66). In the middle of the 7th century, northern Lincolnshire was governed as the Kingdom of Lindsey, and by the end of the century it had been subsumed into the Kingdom of Mercia (Vince 2001). Lincolnshire twice passed into the control of the Danes (in 874 and briefly in 1013).

Today, the Middle Marsh is still characterised as a landscape of roughly evenly dispersed villages, following a settlement pattern established before Domesday. Each parish along the cable route in the Middle Marsh (Tetney, Holton le Clay, Brigsley, Barnoldby le Beck, Bradley, Laceby, Aylesby, Riby, Stallingborough, Immingham, Habrough, South Killingholme and North Killingholme) was extant as a settlement at the time of Domesday in 1086 and, therefore, already in existence during the Saxon period.

Placenames of these parishes also indicate their pre-conquest origins, including those with the '-by' suffix (eg, Grimsby, Barnoldby, Laceby, Riby and Keelby). The name Holton le Clay (though appearing Norman French) had origins in the 7th century (Fenwick *et al*. 2001b, 66). Some places, such as Habrough, have names of Norse origin (Evans 1991). The mixed character of the area in the early medieval period is reflected in placenames such as Killingholme, which combines an English proper name (Cynwulfyngas) with the Danish word 'holm', meaning 'elevated ground in a swamp' (RPS 2013a).

In the parish of Immingham the route runs close to Roxton deserted medieval village, which was not listed in Domesday Book but is mentioned in documents of the 13th and 14th centuries. Pottery previously collected from Roxton dates from the Late Saxon period through to the 18th century (RPS 2013a).

In the Middle Marsh, inclosure of open fields took place in the 16th and 17th centuries (Russell 1972; Russell and Russell 1982, 1987).

Skitter Beck Ridge

Within the Middle Marsh, in North Lincolnshire and in the Habrough parish of North East Lincolnshire, the cable route passes through an area where settlement is focused on a north–south-aligned ridge between the Skitter Beck in the west (also known as the East Halton Beck) and the coast of the Humber estuary to the east. Settlement of this ridge has a highly regular layout: from north to south, the villages of East Halton, North Killingholme, South Killingholme and Habrough are evenly spaced along the spine of the ridge (**Fig. 1.3**).

The alignment of drains, extant boundaries and archaeological features along the ridge has previously been remarked upon during a separate project (Wessex Archaeology 2015b). It suggests that longevity of boundary orientation can be taken as an indication that drainage has been of enduring importance in permitting successful use of this flat and low-lying landscape.

The ridge was exploited during the Iron Age and Romano-British periods, with sites including Cote Hill (AC Archaeology 2007, 13–14) and Chase Hill Farm – now the Killingholme A Power Station (Fenwick *et al*. 2001b, 81–93; Northamptonshire Archaeology 2008, 23). Settlement peters out in the east towards the Outmarsh (Lindsey Archaeological Services 1995), but traces of Romano-British settlement

Figure 1.3 Location of 'Skitter Beck Ridge' between the Skitter Beck and Humber Estuary showing parishes and moated sites

were observed in the 1960s during the initial construction of the extensive Lindsey oil refinery. Recent work on the A160/A180 Port of Immingham has added further sites to this landscape, including that at Brocklesby Junction (Cavanagh in prep.).

In the medieval period, a series of at least eight roughly evenly spaced moated sites were established along the ridge, as discussed further in Chapter 8 (see Coveney 2014). A series of religious houses controlled much of the land and economy of the region (Fenwick *et al.* 2001b, 67–72; Bennett and Bennett 2001, 48–9), and at least one of the Skitter Beck Ridge moated sites (East Halton Grange) probably belonged to a religious order. The dissolution of the monasteries released large tracts of land in the Lincolnshire marshes into the hands of private owners, while the buildings themselves were often demolished or turned into mansions for the wealthy.

Outmarsh

The Outmarsh is a coastal area of 'reclaimed' wetland with complex superficial geology (Boutwood 1998a, 26). The area of the Outmarsh is roughly equivalent to the extent of superficial geological 'tidal flats deposits' as recorded by the British Geological Survey (**Fig. 1.4**). Salt production in the Outmarsh was already underway in the Bronze Age (Palmer-Brown 1994). Although the precise method used is uncertain, salt production in prehistory and the Romano-British period was different in character to that of the medieval period. Most of the Outmarsh was probably a marine environment until at least the end of the Romano-British period. Following the Romano-British period, a combination of higher tides and marine deposition led to the formation of saltmarsh in the Outmarsh area (Swinnerton 1931, 371–2). At that time, the region was probably unsuitable for permanent settlement and was used for seasonal grazing (Ellis 2001, 7) and for salt production (eg, Owen 1984; Thomas and Fletcher 2001). The post-Roman saltmarsh included a series of offshore islands protecting the Lincolnshire coast, which were part of a barrier that was eventually overtopped by rising sea levels around the 13th century (Grady 1998, 86; Robinson 1956, 11–12). This led to the deposition of displaced material forming a series of storm beaches such as those at Somercotes (*ibid.*). From the 14th to 16th centuries, material accreted in the Outmarsh (*ibid.*) until prehistoric and Romano-British surfaces were buried below 'some seven feet' of deposits (Robinson 1981, 13), although this depth is unlikely to be universal across the region.

The environment was ideal for the sandwashing method of salt production, as deposits removed from the foreshore were quickly replaced (Grady 1998, 86). The process of sandwashing led to an extensive build-up of large mounds of waste material. A by-product of the creation of these mounds was to raise the ground level, effectively reclaiming the region from the sea, a process that was enhanced by the construction of sea banks and by the ploughing out of saltern mounds (eg, Owen 1984, 46). The sandwashing process is discussed in detail in Chapter 8.

Today the Outmarsh is flat and low-lying country at a typical elevation of around 3 m OD. The landscape is open and crossed by numerous substantial drains, some of which are tidal.

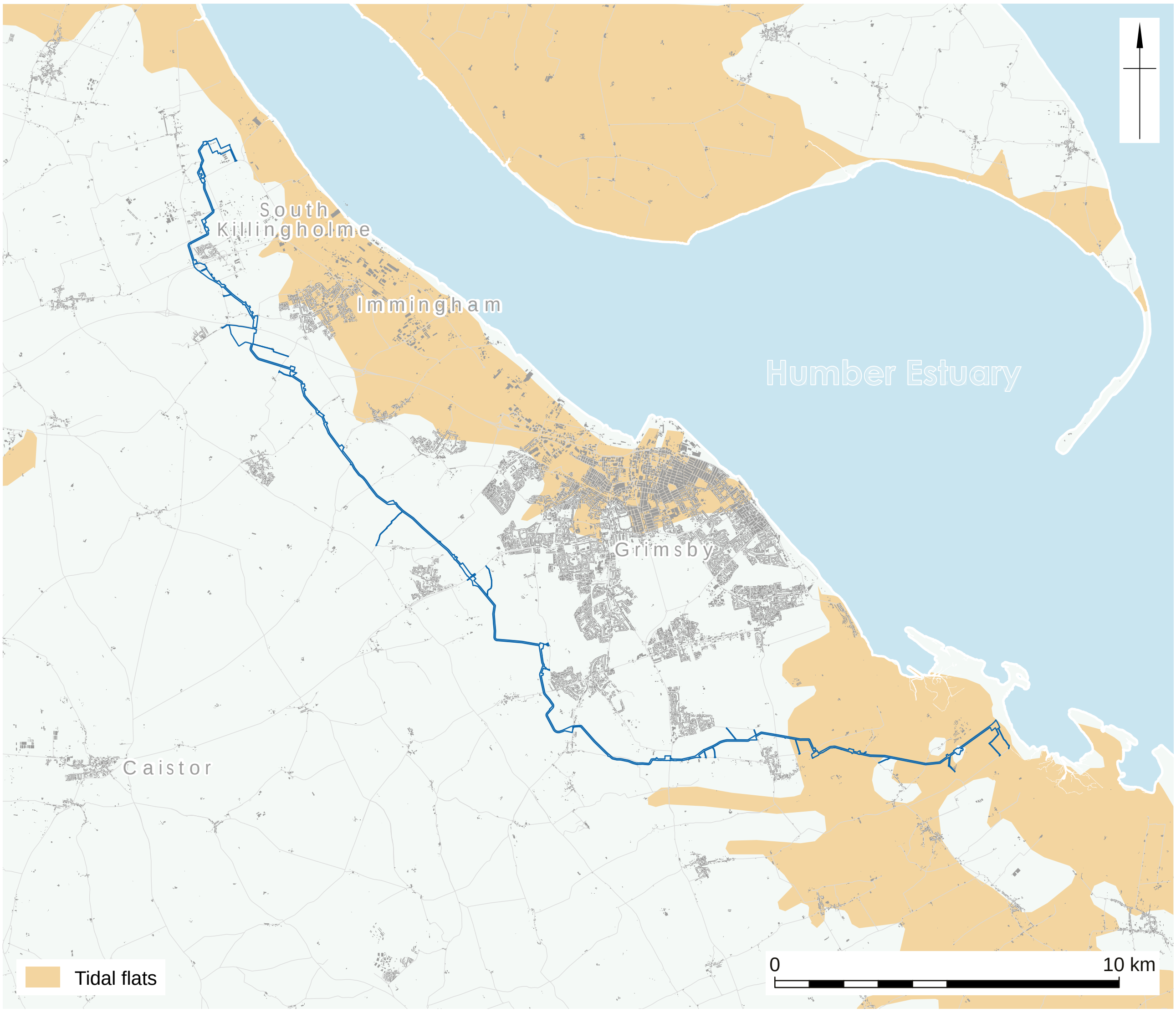


Figure 1.4 Extent of tidal flats superficial geology (British Geological Survey 2020) used as a proxy for the extent of the Outmarsh region

The part of the Outmarsh crossed by the cable route lies entirely within two parishes (North Cotes and Tetney) in the East Lindsey district of Lincolnshire. The village of Tetney is on the boundary of the Outmarsh, with parts of the parish and the village nucleus in the Middle Marsh. The parish of North Cotes lies entirely within the Outmarsh and is the only parish along the cable route not mentioned in Domesday. It is located on land that was consolidated in the late medieval and post-medieval periods.

North Cotes Haven lay at the mouth of the Old Fleet Drain and was a significant port in the medieval period, documented as supplying the fleets of Edward III during the 14th-century Hundred Years War (Pawley 2001). Tetney Haven was situated at the mouth of the Waithe Beck until the Louth Navigation was constructed in the 18th century. During the post-medieval period, drains were canalised and former havens were abandoned. Today, the Old Fleet Drain, Waithe Beck and Louth Navigation all reach the sea at the same point in a much-transformed landscape. The medieval ports would presumably have been inland of the current coastline and may have moved eastward in tandem with reclamation. Up to this point the marshes remained a landscape of meandering streams, saltern mounds and saltmarsh, in regular seasonal use as rich summer pasture or carr. After this time, they acquired something similar to their modern appearance, with large fields separated by straight, grid-pattern dykes. The Outmarsh had become available for year-round arable agriculture. Inclosure in the Outmarsh came later than in the Middle Marsh and was enabled by Acts of Parliament in the later 18th century (Russell 1972; Russell and Russell 1982 and 1987).

Recent History

Across the area of the cable route, inclosure and the decline of salt production and fishing led to considerable depopulation, contributing to the ongoing shrinkage and abandonment of historic villages. This trend was only reversed in the late 19th century, with the development of the railways and of Immingham docks. In the late 20th century, North Lincolnshire took on a more industrial character with the construction of oil refineries and gas-fired power stations.

There has been military activity in the region during the Napoleonic, First World War and Second World War periods. Military structures and establishments include a Royal Navy fuel depot at Killingholme Haven, defensive batteries, North Cotes Airfield, anti-glider ditches and a heavy bomber base at Waltham.

Methods

Specifications and Methodologies

A series of written schemes of investigation (WSIs) approved by the Heritage Steering Group specified the methodologies and standards to be used during each phase of work:

- *Hornsea Project One: Archaeological Written Scheme of Investigation (WSI) for further Archaeological Trial Trenching* (Royal HaskoningDHV 2015a);
- *Hornsea Offshore Wind Farm Project One: Written Scheme of Investigation for Archaeological Monitoring of Ground Investigation Works* (Royal HaskoningDHV 2015b);
- *Hornsea Project One: Written Scheme of Investigation (WSI) for Archaeological Set Piece Excavation* (Royal HaskoningDHV 2015c);
- *Hornsea Project One Offshore Wind Farm: Written Scheme of Investigation (WSI) for Archaeological Monitoring Works During Construction at the Onshore Substation* (Royal HaskoningDHV 2015d);
- *Hornsea Project One: Written Scheme of Investigation (WSI) for Archaeological Strip, Map and Record and Watching Brief at/during Construction along the Onshore Electrical Cable Route* (Royal HaskoningDHV 2016a);
- *Hornsea Project One: Written Scheme of Investigation (WSI) for Earthwork Survey and Subsequent Restoration of Extant Earthworks* (Royal HaskoningDHV 2016b);
- *Hornsea Project One Offshore Wind Farm: Written Scheme of Investigation for Strip, Map and Record south of SPE 4/4a in South Killingholme* (Royal HaskoningDHV 2019).

The various WSIs laid out aims and objectives for the work in line with guidance from the Chartered Institute for Archaeologists (CIfA 2014a; 2014b).

Standard archaeological methodologies were used and are fully detailed in the WSIs. For the 34 main excavation areas (including targeted watching briefs), mechanical excavators were employed to remove the soil overburden with a toothless ditching bucket. During the general watching brief, bulldozers were instead used to strip soil overburden. Any identified areas of archaeological interest were then cleaned by a mechanical excavator equipped with a toothless bucket under the supervision of an archaeologist.

Historic Environment Records

The Historic Environment Records (HER) for North Lincolnshire, North East Lincolnshire and Lincolnshire were consulted in early 2020 and this information has been used to inform the archaeological and historic background of the results throughout the text. Information from the local HER(s) was used for each excavation area.

Presentation

Style

Reference numbers given within the text are context numbers unless otherwise stated, for example 'ditch 1000' or 'the ditch (1000)'.

The illustrations use different font sizes to indicate groups, cuts and deposits. The largest font is for groups, a medium font for cuts and the smallest for deposits.

Acronyms

A list of acronyms used in the text is given in **Table 1.2**.

Table 1.2 Glossary of abbreviations

Acronym	*Expansion*	*Explanation*
CBM	Ceramic building material	Bricks, tile and other similar items
DMV	Deserted medieval village	A type of site comprising an abandoned settlement of medieval date
EVE	Estimated vessel equivalent	One method of counting pottery vessels
GWB	General watching brief	A type of excavation area
OD	Ordnance datum	Height above sea level
ON	Object number	A number assigned to track certain artefacts
ORA	Organic residue analysis	A type of specialist analysis studying fats, including those preserved in the fabric of pottery
RE	Rim equivalent	One method of counting pottery vessels
SMR	Strip, map and record	A type of excavation area
SPE	Set piece excavation	A type of excavation area
TWB	Targeted watching brief	A type of excavation area

Specialist Reports

Question marks ('?') have been used by materials specialists to indicate uncertainty about identifications (eg, CRUC? indicates a sherd of pottery that might be of fabric CRUC, in this case a crucible).

Archive

Full details of the project are available in the site archive. The physical archive resulting from work undertaken by Wessex Archaeology has been deposited with North Lincolnshire Museum under the accession code NKBH. The digital archive has been deposited with the Archaeology Data Service. Information has been supplied to the North Lincolnshire, North East Lincolnshire and Lincolnshire Historic Environment Records. The archive for part of the trial trench evaluation is presently held at the offices of PCAS Archaeology in Saxilby, Lincolnshire under project code HWFE12.

Chapter 2
Prehistoric and Romano-British Sites and Findspots

Results

Chapters 2 and 3 contain the summarised stratigraphic results of all archaeological works forming part of Hornsea Project One. This description supersedes a previous assessment (Wessex Archaeology 2020), and incorporates the results of all phases of excavation, notably the trial trench evaluations (RPS 2013e; Wessex Archaeology 2015a).

The stratigraphic results are arranged by site, with the sites arranged broadly in chronological order and then from north-west to south-east. Within each site, the results are also generally arranged chronologically, and then from north-west to south-east.

Laceby Parish Bronze Age Findspot and Undated Enclosure

Introduction

At around 1.25 km south-east of the Laceby Beck site (Chapter 3), at roughly NGR 522917 406281 (**Fig. 2.1**), 15 sherds from a Bronze Age vessel were recovered from the subsoil (272). The findspot was located within the parish of Laceby, North East Lincolnshire, in arable farmland on locally low ground between 10 m and 15 m above Ordnance Datum (OD). As a result of this find, an area of 30 m by 22 m (general watching brief, GWB area P) was subjected to detailed archaeological examination, alongside a second small area of 50 m to the north-west in the same field (GWB area Q; NGR 522881 406316).

Soil Sequence and Natural Deposits

The subsoil was underlain by natural orangey brown clay (273), the latter intermittently capped with mid-brown gravelly sand (320, 324). These deposits may have been laid down in a glaciofluvial landscape, perhaps associated with an extant minor stream immediately north of the findspot. Although the variable geology gave the appearance of potential archaeological complexity, excavation revealed that there were few genuine archaeological remains (**Fig. 2.2**). Some 18 potential features were determined to be instances of variation in the superficial geological deposits. Archaeological features were all undated and no stratified finds were recovered. The soil itself was deep (the topsoil and relict-ploughsoil subsoil combined were 0.8 m deep).

Undated Features

An undated ditch (274/276, 1.8 m wide and 0.51 m deep; **Fig. 2.3**) was aligned roughly north to south across the excavated area. It had a dark brownish grey silty sand fill, free from inclusions. This ditch correlates with part of a cropmark identified from aerial photography that had been assumed to be Iron Age or Romano-British (RPS 2013b, site 13). No relationship between the recovered Bronze Age pottery and the feature was established.

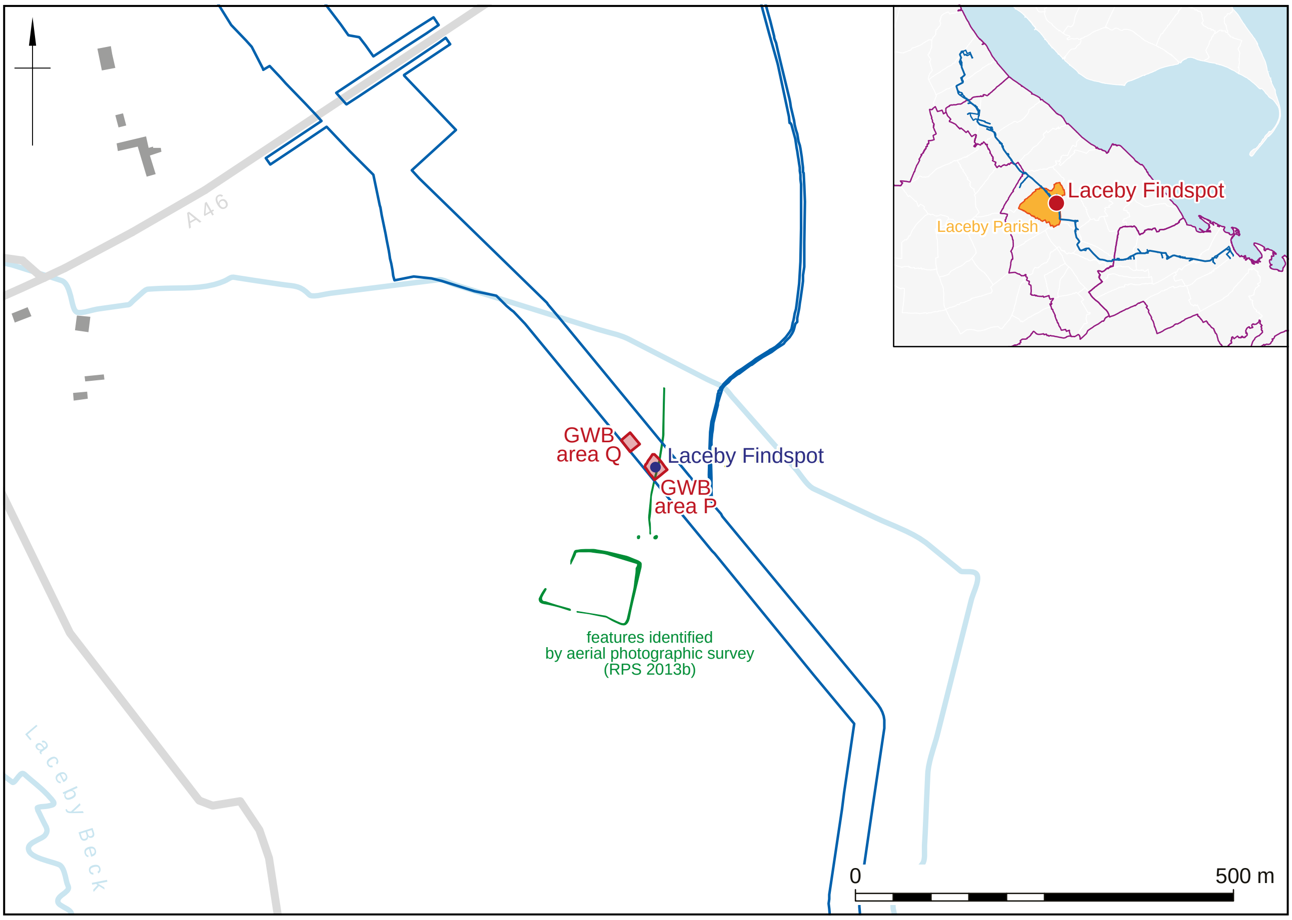


Figure 2.1 Laceby parish findspot location

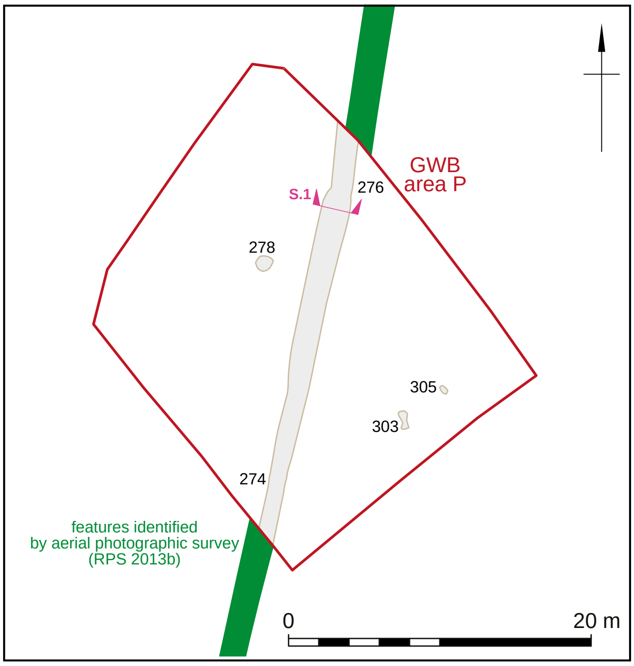


Figure 2.2 Laceby parish findspot area P plan

A possible pit (278, 1.1 m in diameter and 0.11 m deep) situated just west of ditch 274/276 had a brownish grey coarse silty sand fill and was relatively rich in animal bone.

Four irregular features (303, 305, 307 and 318; only 303 and 305 illustrated) contained burnt fills and have been interpreted as burnt-out roots. The morphology of feature 307 (not illustrated) conformed to the classic appearance of a tree-throw hole. These features may be linked to scrub clearance of unknown date or could potentially be the result of natural processes.

Nearby in GWB area Q, three undated, short and irregular curvilinear gullies (342, 344 and 346) were up to 0.4 m wide and a maximum of only 0.09 m deep (**Fig. 2.4**).

Hornsea Project Two

Another nearby Hornsea Project One excavation area (targeted watching brief area 3; TWB3) did not reveal significant archaeological remains (see end of Chapter 3 for tabulated undated features). The adjacent Hornsea Project Two excavation (TWB3a; Network Archaeology 2022, 75–97) revealed a major Iron Age/Romano-British settlement including possible roundhouses, windbreaks, metalled tracks and hypocaust tile. This site was located a mere 150 m south-east of the Laceby parish findspot. It is likely that the Laceby parish findspot remains represent an outlier of the more significant site revealed by Hornsea Project Two.

Figure 2.3 Laceby parish findspot section

Chase Hill Road Iron Age Enclosed Settlement

Introduction

The Chase Hill Road site was located south of the junction of Chase Hill Road and Eastfield Road at NGR 514770 418250 in the parish of North Killingholme in North Lincolnshire (**Fig. 2.5**). The site was situated in arable farmland immediately west of the north-west corner of the extensive Killingholme Oil Refineries. The medieval moated site of North Garth is a mere 300 m west of the Chase Hill Road site. The site lies at around 12.5 m to 13 m OD.

An Iron Age sub-square settlement enclosure was first identified by geophysical survey (RPS 2013c). Evaluation trial trench 104 (RPS 2013e) was excavated across the enclosure. Four further evaluation trenches (103, 104a, 104b and 104c; RPS 2013e and Wessex Archaeology 2015a) were situated to the south and to the north-west of the enclosure and did not contain archaeological remains, suggesting that these trenches lay beyond the area of the settlement. On the basis of these results, the part of the enclosure lying within the cable route corridor was dug as set piece excavation area 6 (SPE6). The area of excavation was later expanded west of the enclosure as strip, map and record area 5 (SMR5). TWB9 also increased the excavation area to the north but recorded only three ephemeral furrows.

Machine excavation of SPE6 was carried out during very dry weather conditions in May 2016. Towards the completion of the machine excavation it was identified that the north-western section of the enclosure ditch and the central area of the enclosure had been over-machined by up to 0.72 m (the excavation halted at 12.03 m OD compared to around 12.75 m in the evaluation). The level of excavation was subsequently stepped up along the north-eastern edge of the excavation.

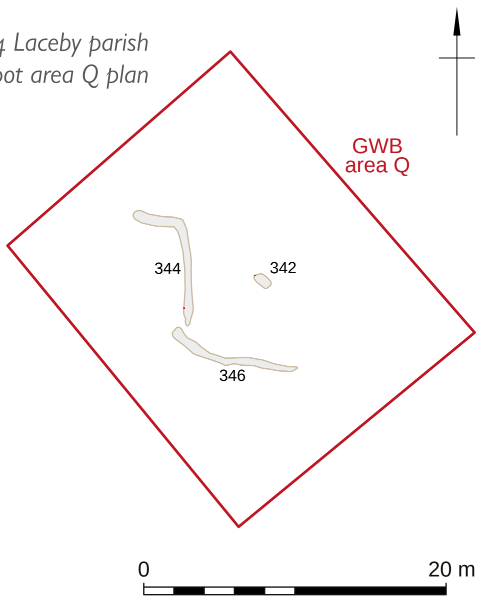


Figure 2.4 Laceby parish findspot area Q plan

Soil Sequence and Natural Deposits

The undisturbed natural geological substrate was recorded as chalk-flecked orange-brown sandy clay or silty clay glacial till with natural flint inclusions (6003, 11002). Relict-ploughsoil subsoil comprised mid-orange-brown silty loam with chalk flecks (6002, 11001, 20161). The topsoil typically consisted of 0.35 m of dark brown silty loam (6001, 11000, 20160).

Iron Age

The Hornsea Project One cable route included the west side of the sub-square settlement enclosure (**Fig. 2.6**). This enclosure was defined by a ditch (6000) and internal gully (6100).

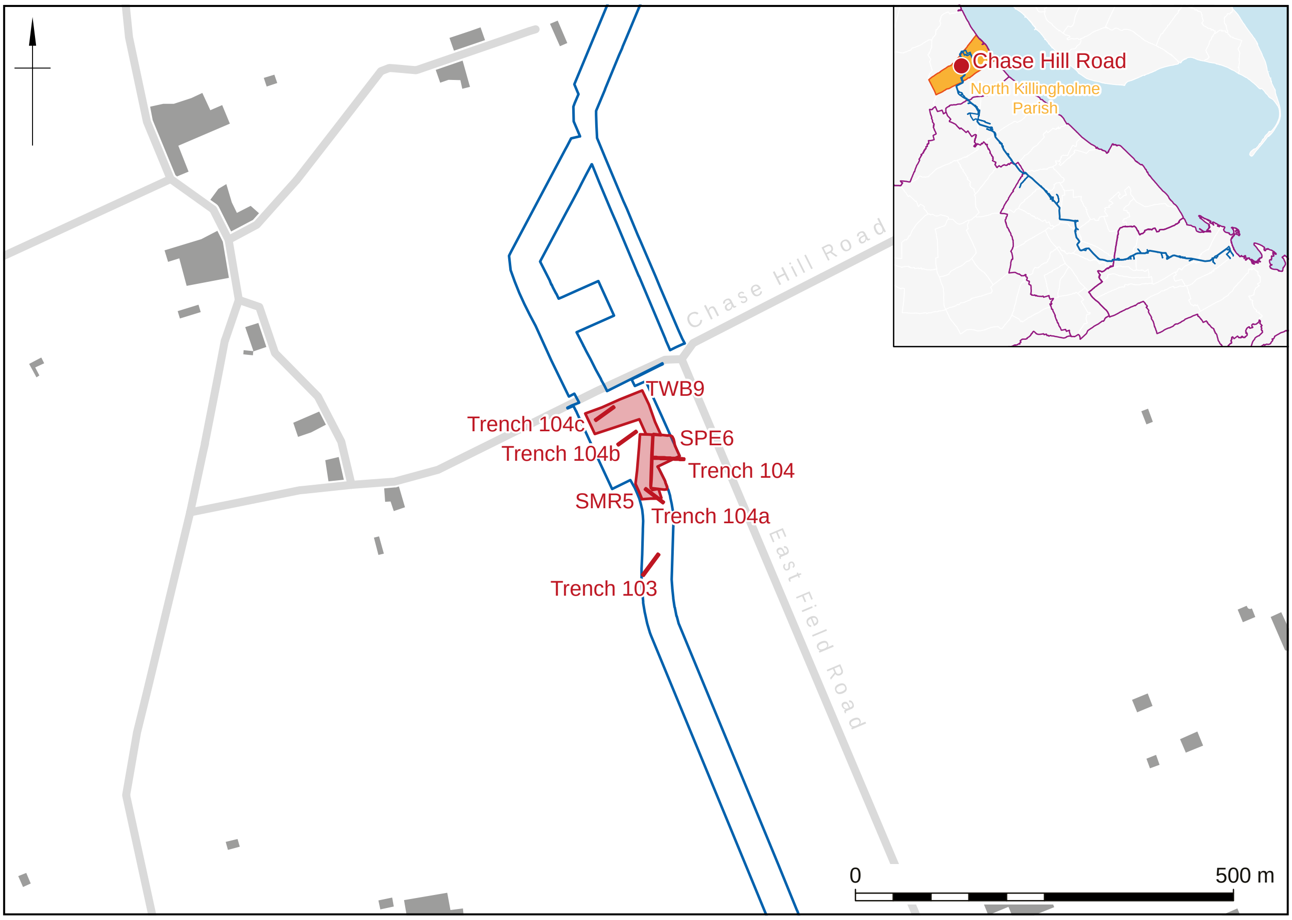


Figure 2.5 Chase Hill Road location

Ditch 6000 was investigated with ten interventions and was a maximum of 4.64 m wide and 1.2 m deep. Intervention 6084 (**Fig. 2.7** and **Pl. 2.1**; see **Pl. 2.2** for a comparative intervention) had a basal primary fill derived from the natural but containing some charcoal flecks (6086). The upper interface of this fill (6086) exhibited a squared-off profile, which may have been the result of a recut or scouring. Fill 6088 (also derived from the natural) overlay 6086 and sealed gully 6100 (here 6085), suggesting that maintenance of the original enclosure boundary had been abandoned by this time. Two further deposits (6089 and 6090) comprised a mixture of redeposited natural and soil, and the final deposit (6091) had probably formed as a soil within the remnant of the ditch. Here the ditch had a broad shoulder 1.2 m wide on the north side (filled with 6090) that may exclude the possibility of any exterior bank.

Pottery recovered from the fills of ditch 6000 suggested a short period of occupation and a Late Iron Age date for the infilling of the feature. Carbonised organic residue adhering to a sherd of pottery previously reported as of Middle Iron Age date (RPS 2013e) was radiocarbon dated to the transitional Late Iron Age/early Romano-British period, at 40 BC–AD 70 (UB44163), consistent with the results of the mitigation excavation. The pottery was accompanied by a fragment of whetstone, metalworking slag, horse, cattle, sheep/goat and dog bones, and fragments of fired clay bearing lath and finger impressions.

Gully 6100 ran along the inside of ditch 6000 and was intermittently preserved. The gully was a maximum of 0.65 m wide and 0.15 m deep, although the base was at a deeper level (around 1 m below ground level) as it had been cut into the sloping side of ditch 6000. The fills of gully 6100 contained Late Iron Age pottery, confirming that gully 6100 and ditch 6000 were roughly contemporary. Some 752 g of fired clay was recovered from the gully; it was undiagnostic but might represent daub from roundhouses or other structures. In one location in the south-west, gully 6100 had been recut (6059 and 6061) indicating maintenance.

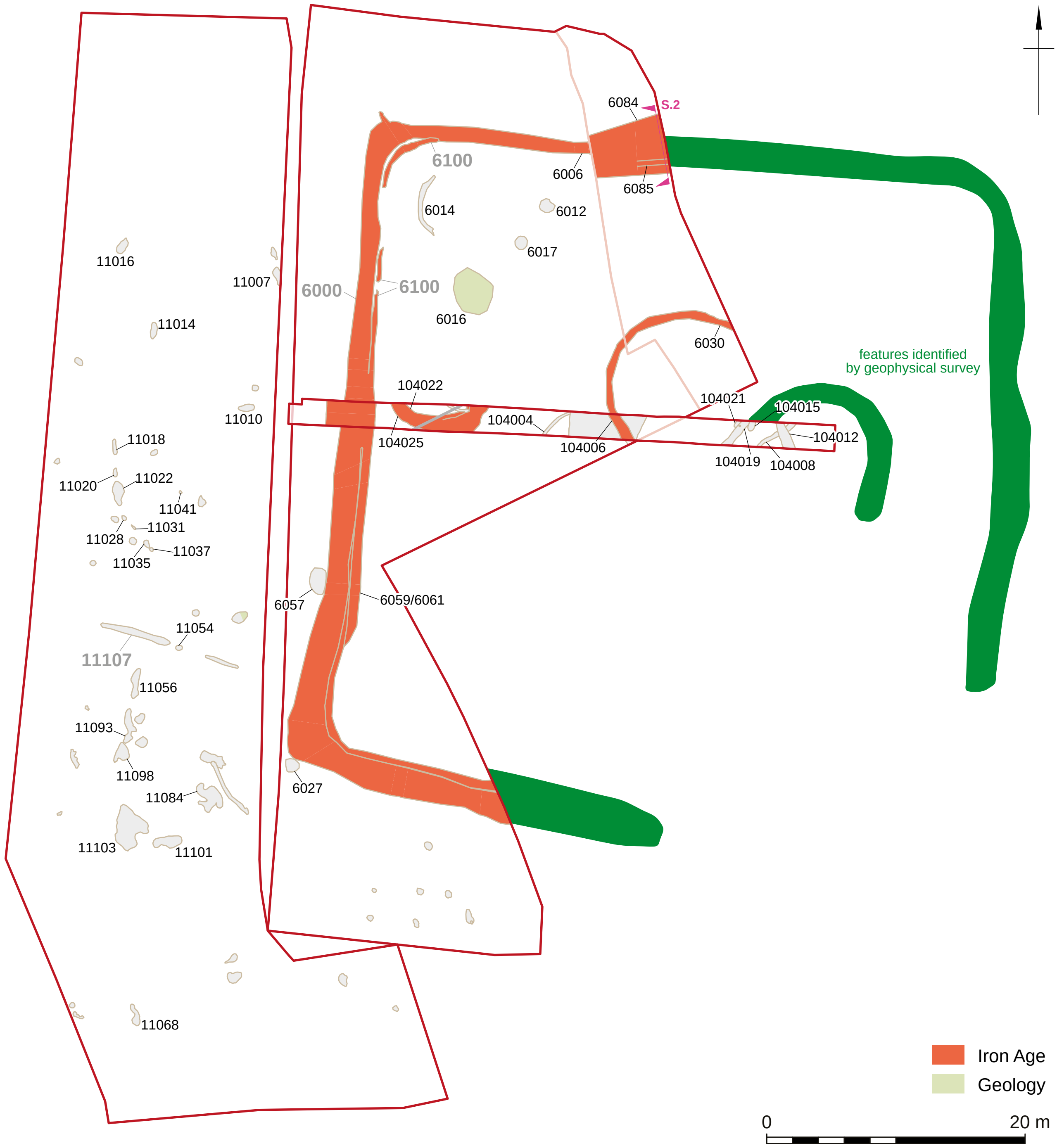


Figure 2.6 Chase Hill Road plan

Within the enclosure, three partial curvilinear gullies (6014, 6030 and also 104022/104025, recorded during the evaluation; RPS 2013e) are likely to represent either the eaves drip gullies or foundation trenches of roundhouses.

Gully 6030 (**Pl. 2.3**) enclosed an area around 12 m in diameter, indicating a large roundhouse, perhaps a dwelling of some importance. Gully 6030 was 0.55 m wide, 0.31 m deep and filled with sandy clay with charcoal and chalk inclusions. Evaluation trench 104 (RPS 2013e) had recorded the same gully as 104006, with similar dimensions (0.77 m wide and 0.33 m deep). Iron Age pottery and sheep/goat bones were recovered from the fill. Beyond the mitigation excavation area to the east, trench 104 may have recorded the south-east side of the same roundhouse gully, although the geophysical survey suggests that this might instead be part of a further dwelling lying to the east (see **Fig. 2.6**). Here, three recuts were recorded (104015, 104019 and 104021).

Plate 2.1 Ditch 6000 (left, intervention 6084) and gully 6100 (right, intervention 6085) from west

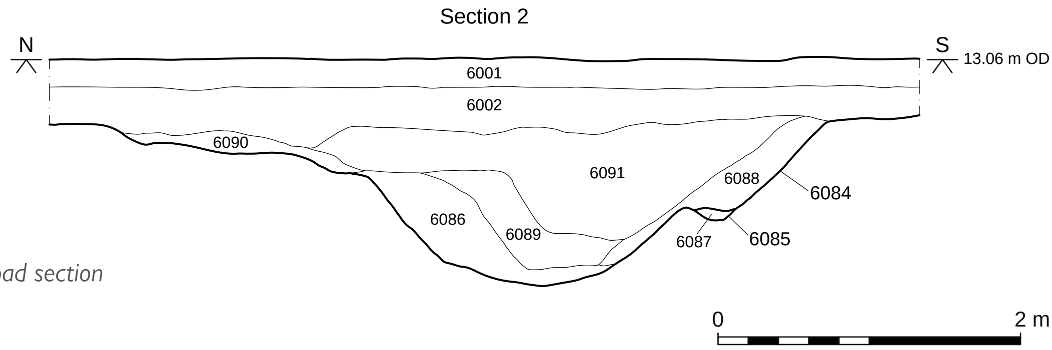


Figure 2.7 Chase Hill Road section

Plate 2.2 Ditch 6000 (intervention 6006) with gullies 6059 and 6061 (right) and pit 6057 (left) from south-west

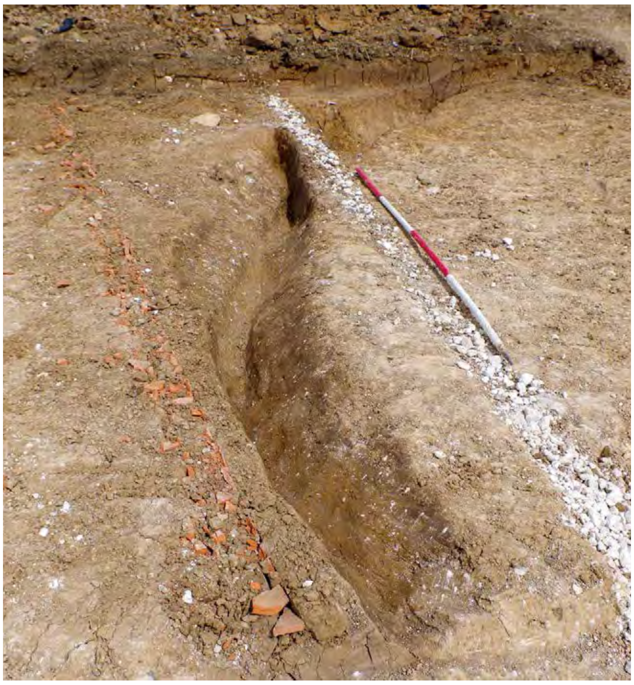


Plate 2.3 *Probable roundhouse eaves drip gully or foundation trench 6030 from west*

Cuts 104015 and 104021 were terminals, suggesting an entrance to the south-east, if part of roundhouse 6030. Ceramic building material (CBM) was recovered from these features during both the mitigation and evaluation. The CBM was not strongly diagnostic but possibly Romano-British, potentially extending the chronology of occupation of the site beyond the Iron Age.

A 5 m length of curvilinear gully (6014; **Pl. 2.4**) was 0.15 m wide and 0.12 m deep; it contained a fill of sandy silt with small pieces of chalk, occasional charcoal, and small flint inclusions. It is not possible to determine the original diameter enclosed by the truncated feature, but it is thought that this feature represents the drip gully or foundation trench of a further roundhouse.

The evaluation (RPS 2013e) recorded the drip gully or foundation trench of another probable roundhouse. Curvilinear feature 104025 (0.57 m wide and 0.3 m deep) probably comprised part of a circular gully and had been recut (104022). Iron Age pottery and a very small intrusive sherd of possibly 9th- to 11th-century Saxon pottery (Irving 2013) were recovered alongside burnt and unburnt animal bones and charred heather twigs. Two small gullies (104036 and 104038, not labelled) had later cut these features, but it is unclear if these relate to Iron Age habitation.

A small gully (104004) was also recorded by the evaluation inside the settlement enclosure, with two further intercutting gullies (104008 and 104012) to the east of the mitigation excavation (RPS 2013e). Pottery identified as mid-9th to 11th-century Saxon was retrieved from the fill of 104012 (Irving 2013), and was presumably intrusive.

Two undated sub-circular pits (6012 and 6017) were present within the settlement enclosure, although a third possible feature (6016) proved to be a variation in the glacial till.

A total of 47 possible pits (**Pl. 2.5**) and two or three possible short gullies, all undated, were identified to the west and south of the settlement enclosure. The pits were most often irregular in plan, but were sometimes circular, sub-circular or sub-oval. The size

Plate 2.4 Pre-excavation photograph of probable roundhouse eaves drip gully or foundation trench 6014 from south-east

of some of the pits was consistent with identification as postholes (particularly to the south of the settlement enclosure), but none conformed to the layout of a building or contained a postpipe or other confirmation of this interpretation. These discrete features ranged in diameter from 0.29 m to 2.8 m, although the larger examples were highly irregular and only three were larger than 1.6 m (the mean was 0.86 m). Depths ranged from 0.04 m to 0.9 m (mean 0.2 m). Three pits (11010, 11014, 11016) contained charcoal in their fills, suggesting they were anthropogenic, although some of the pits (eg, 11041, 11068, 11084, 11101, 11103) may instead have been geological in origin. A pessimistic interpretation might instead consider the majority of these features to be geological. Feature 11007 comprised a spread of dark red heat-affected material that may be the redeposited remains of a hearth. No artefacts were recovered from any of these features.

Two of these pits were close to enclosure ditch 6000, one outside the south-west corner of the enclosure (6027) and one a short distance to the north (6057). It is possible that there had been a third pit outside the north-west corner of the settlement ditch given the shape of the ditch in plan. This arrangement is possibly suggestive of large posts set at intervals around the exterior of the enclosure.

Plate 2.5 Posthole 6044 from south

Gully 11107 to the west of the enclosure was 6 m long, 0.4 m wide and a maximum of 0.18 m deep. A second unexcavated gully to the east probably represents a continuation of the feature, as does pit 11054 situated between the two gullies. These features form an approximately west-to-east alignment on the same orientation as the south side of the enclosure. In addition to these gullies, some discrete features may represent alignments or series. Pits 11018, 11020, 11022, 11028, 11031, 11035 and 11037 formed a curve turning from roughly north to south-east. Large irregular pits 11056, 11093 and 11098 likewise may have formed a roughly north–south linear alignment. These potential alignments are all irregular and should be treated with caution; they may be geological or the result of ploughing.

Hornsea Project Two

Excavation by Network Archaeology (2022) expanded the results from Hornsea Project One to the south-east, revealing more of the settlement enclosure ditch and further roundhouses.

East Field Road Iron Age and Early Romano-British Settlement

Introduction

The East Field Road site was located off East Field Road in the parish of North Killingholme, North Lincolnshire at NGR 514890 417750 (**Fig. 2.8**). The site lay within arable land 170 m to the west of the extensive oil refineries at Killingholme and was bounded to the south by a modern field boundary and drainage ditch. The former RAF Killingholme was located around 1 km to the west of the site. Topographically, the site lay between 11.8 m and 12.8 m OD and sloped gently down towards a formerly wet area in the south-east.

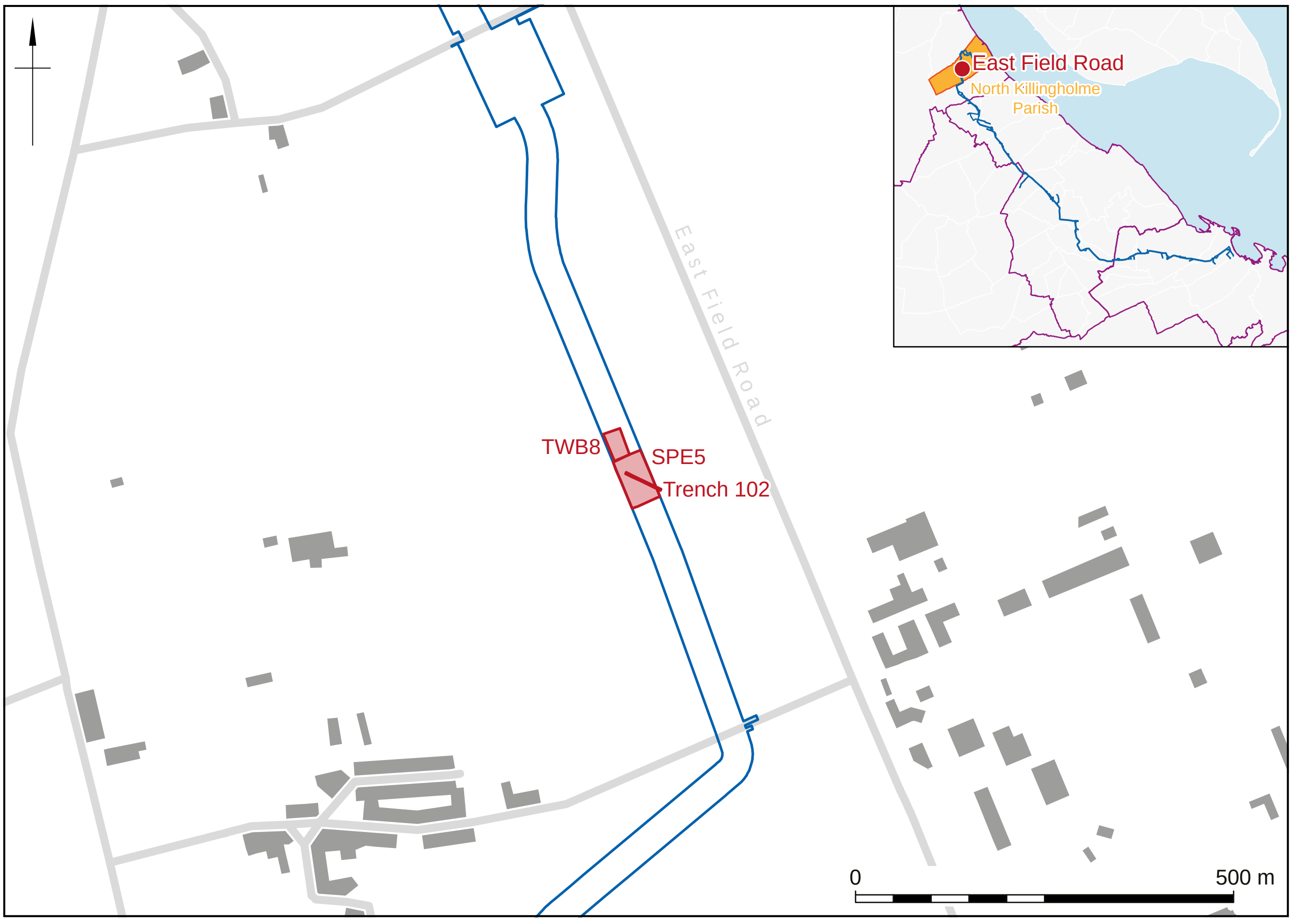


Figure 2.8 East Field Road location

Geophysical survey (RPS 2013c) recorded two adjoining rectilinear enclosures, although fieldwalking (RPS 2013d) recovered only finds associated with medieval and post-medieval manuring. Trial trench 102 revealed a series of ditches, as well as a palaeochannel, and recovered Mid- to Late Iron Age pottery (RPS 2013e). As a result, the East Field Road site was excavated as SPE5. Excavation took place in challenging conditions during the wet winter of 2015/2016. Despite the use of water pumps, floodwater rose and fell across the site during excavation. The investigation area was later extended to the north as TWB8, which recorded only the continuation of furrows from the main excavation area (**Fig. 2.9**).

Soil Sequence and Natural Deposits

The undisturbed natural geological substrate of glacial till comprised yellow clay with chalk flecks (eg, 5003).

The south-east of the site contained a sequence of alluvial or lacustrine layers representing a former wetland area. A sondage excavated to a depth of 1.65 m below ground level recorded six such layers comprising different coloured water-borne silts and clays with some waterlogged incipient peats or peaty land surfaces. The upper layers of alluvium were cut by Iron Age features, revealing that deposition of these water-borne deposits ceased before or during the Iron Age. Additional machine excavation was undertaken to remove these alluvial layers and prospect for additional, earlier archaeological features. A maximum of 0.75 m of material was removed in hand-cleaned spits, but there was no evidence for human activity pre-dating the formation of the alluvium.

The trial trench evaluation (RPS 2013e) identified three layers (102037, 102040 and 102041) to the south-east of the mitigation area that were interpreted as a

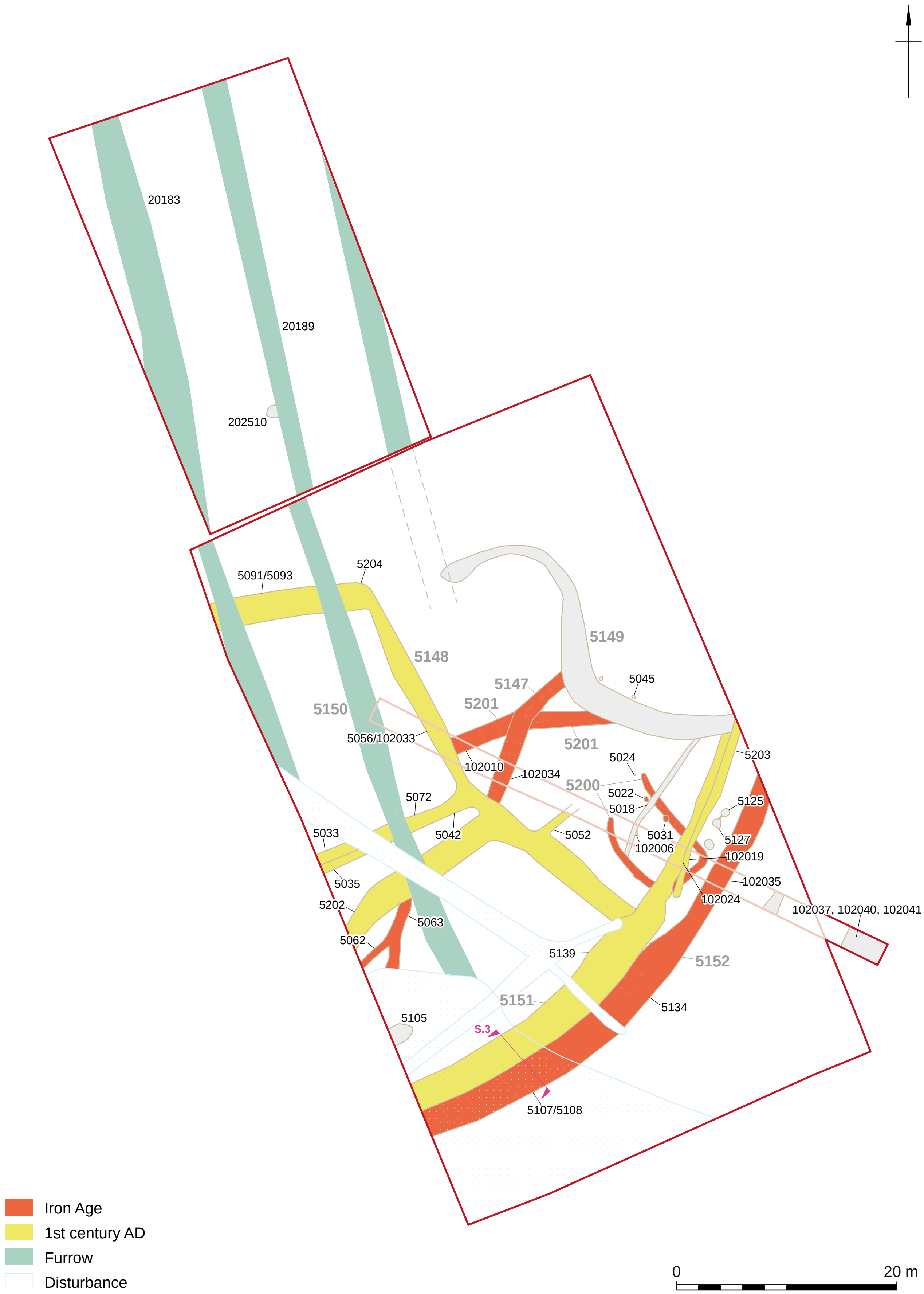


Figure 2.9 East Field Road plan

palaeochannel. These form part of the general pattern of alluvial deposits in the south-east of the site. The evaluation also recorded peat below these deposits to a depth of 9.48 m OD in this locality, outside of the mitigation area.

A layer of relict-ploughsoil subsoil (5002) comprised mid-orange or yellowish brown clay or loam. The topsoil comprised dark brown loam. In the northern half of the site the topsoil was generally free of inclusions (5001); however, in the south the topsoil contained common brick and tarmac fragments (5000). The extent of contaminated topsoil 5000 correlated with an area of increased response identified by geophysical survey that masked detection of archaeological features. In addition, the south-west corner of the site contained a layer of disturbance that truncated archaeological features and contained bricks, concrete, dumped metal cables and pieces of agricultural machinery. A pit (5105) was contemporary with this disturbance.

Iron Age

Curvilinear ditch 5152 (also recorded in the evaluation as 102035; RPS 2013e) curved from the west to north-east, and probably represents a formalisation of the boundary between the wet area to the south-east and drier ground to the north-west (**Fig. 2.9**). The ditch formed the south-eastern limit of the site, with no archaeological features recorded beyond it. It was a substantial size (2.65 m wide and 1.3 m deep) and contained Iron Age pottery in its upper fill (5123). In one location (5107/5108), ditch 5152 was seen to have been recut. Ditch 5152 was partly truncated by its Romano-British replacement 5151 located immediately to the north-west (**Fig. 2.10**).

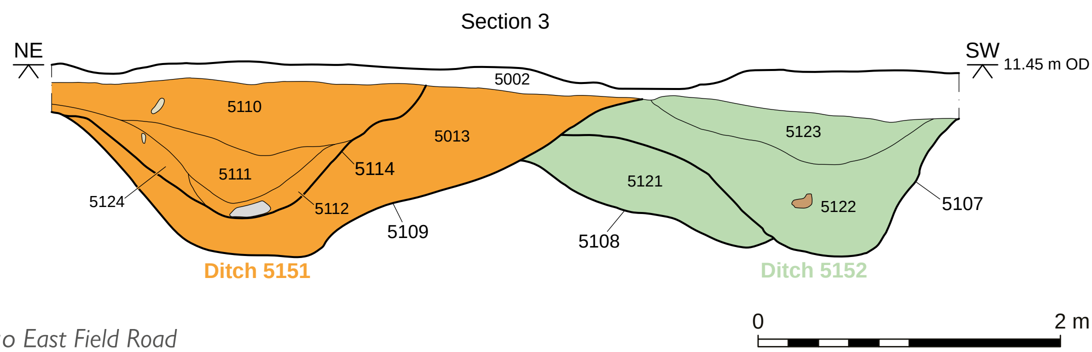


Figure 2.10 East Field Road section

A sub-square arrangement of gullies and postholes may represent a building or structure. Gully 5200 (**Pl. 2.6**; also recorded during the evaluation as 102004 and 102015/102017) enclosed a small area roughly 10 m long and 6 m wide with an opening to the north-west. The gullies were a maximum of 0.81 m wide and 0.22 m deep. Iron Age pottery, charcoal, burnt stone and a relatively large quantity of animal bone were recovered from the fills. A series of three small postholes (5022, 5024 and 5031) were located along the inside of gully 5200. They were sub-circular, a maximum of 0.5 m in diameter and 0.13 m deep with chalky fills, probably packing at the base of truncated features. A further truncated posthole (102006) was recorded near the centre of the putative structure in evaluation trench 102 (RPS 2013e), 0.1 m deep and with a black silty clay fill.

To the north, a stratigraphically early, roughly west–east-aligned ditch (5201; **Pl. 2.7**; also recorded in evaluation trench 102 as 102010, RPS 2013e) ran across the centre of the site and contained Iron Age pottery. Ditch 5201 was 1.7 m wide, 0.75 m deep and was truncated by ditches 5147, 5148 and 5149.

Ditch 5147 (recorded in the evaluation as 102034; RPS 2013e) may have been a replacement for ditch 5201, although it was on a slightly different alignment, cutting north-east to south-west across the earlier west–east-aligned ditch. The evaluation recovered two sherds of Iron Age pottery from this feature. To the south-west was a truncated branching gully (5062 and 5063).

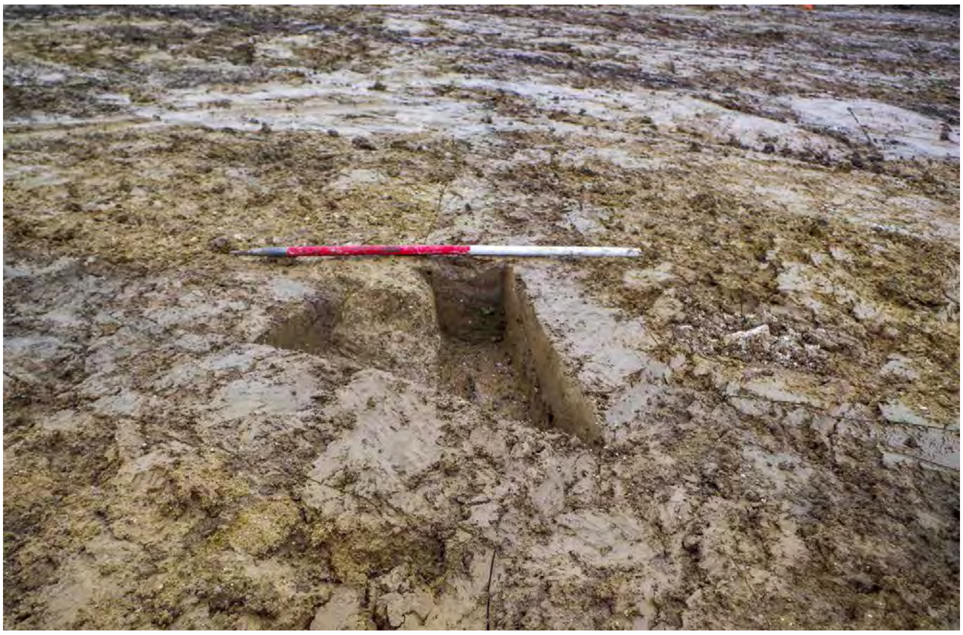


Plate 2.6 Intersection of gullies 5200 (left to right) and 5018 (extending away from camera) from north-east

Uncertain Date (Iron Age/Romano-British)

Another gully (5018; recorded in the evaluation as 102008; RPS 2013e) truncated Iron Age enclosure gully 5200 and ran to the north-east where it was truncated in turn by curvilinear ditch 5149. The continuation of gully 5018 to the south-west could not be traced. Gully 5018 had a red clay fill and did not contain dateable finds.

Curvilinear ditch 5149 had an unusual, 'S'-shape in plan (**Fig. 2.9**) and was relatively large: a maximum of 1.94 m wide and 0.6 m deep. The terminal of 5149 was truncated by a furrow, although the base of the bowl-shaped terminal was preserved below the level of the furrow. The upper fill (5088) of three fills in the terminal contained Iron Age pottery that may have been residual. Ditch 5149 truncated Iron Age features and had uncertain relationships with Romano-British ditches 5151 and 5203.

Two post pads or shallow postholes (5045 and an un-investigated second pad) lay immediately east of curvilinear ditch 5149. Post pad 5045 was 0.35 m in diameter and 0.08 m deep with a chalky greyish brown clayey silt fill. The second post pad was similar. It is possible that the post pads represent part of a fence line erected along the north-east side of ditch 5149.

Three further pits were located to the east of gully 5200 (5125, 5127 and an unrecorded third pit). Pits 5125 and 5127 were larger than postholes 5022, 5024 and 5031, at 0.53–0.8 m in diameter and 0.17–0.2 m deep, but did not contain dating evidence.

Romano-British 1st Century AD

A system of Romano-British enclosures was imposed on the Iron Age features, comprising a series of contemporary ditches (5033, 5035, 5052, 5072, 5148, 5151, 5202 and 5204; **Fig. 2.9**) with continuous fills. These ditches ranged in width from 0.75 m to 2.55 m, in depth from 0.5 m to 1.05 m, and contained a mixture of residual Late Iron Age and early Romano-British pottery from the 1st century AD. The ditches generally had concave profiles, although ditch 5148 (also recorded in the evaluation as 102033; RPS 2013e) varied, with both concave and 'V'-shaped profiles, including an 'ankle-breaker' base in some locations (**Pl. 2.8**).

The two sub-rectangular enclosures in the west that had been detected by geophysical survey (RPS 2013c) were divided by a double-ditched boundary (ditches

Plate 2.7 Ditch 5201 (intervention 5078) from west

5033, 5035, 5042, 5072 and 5202). If this double boundary represented a trackway, then a bridge would have been required as the route was blocked in the north-east by contemporary ditch 5148. A further large, irregular enclosure may have been formed between ditches 5149 (uncertainly phased, see above) and ditch 5148, with a gap, perhaps an entrance.

Ditch 5204 forming the northern limit of the enclosures was recut (5091/5093). In the west, ditch 5072 branched into two adjacent features (5033 and 5035) that were parallel but did not intercut. Ditch 5202 had an irregular profile, perhaps disturbed by burrowing, and contained two burnt fills rich in animal bone; the basal fill (5038) contained Iron Age pottery and the upper fill (5039) Romano-British pottery. It is possible that the enclosure system may have been of Iron Age origin and subsequently became infilled in the Romano-British period.

Also sharing contemporary fills with the enclosure ditches, gully 5052 (0.4 m wide but 0.6 m deep), extending to the north-east of ditch 5148, could not be traced beyond the cut of evaluation trench 102 (it was not recorded in this trench).

The south-east limit of the site was redefined by ditch 5151 (**Figs 2.9** and **2.10**; also recorded by the evaluation as 102024; RPS 2013e), which succeeded Iron Age ditch 5152. Ditch 5151 was large, a maximum of 6.65 m wide and 1.5 m deep, and contained both residual Late Iron Age pottery and early Romano-British pottery. At the north-east end, it divided into two smaller ditches (5151 and 5203). Ditch 5203 (evaluation context 102019; RPS 2013e) was a maximum of 1.12 m wide and 0.38 m deep. The relationship of

Plate 2.8 Ditch 5148 (intervention 5056) with 'ankle-breaker' profile from south (cut by land drain on left side)

5151 and 5203 with ditch 5149 was not tested by excavation and the relationships shown between these features in plan are speculative.

Hornsea Project Two

Excavation for Hornsea Project Two has added only a few further features of Iron Age and undated chronology to the site. It may be that the settlement did not continue significantly to the east of the Hornsea Project One excavation area.

Westfield Farm Iron Age and Romano-British Settlement

Introduction

Situated on the parish boundary between North Killingholme and South Killingholme (both in North Lincolnshire), the Iron Age/Romano-British site at Westfield Farm and the adjacent medieval moated site of Blow Field were the most complex sites encountered by Hornsea Project One. The Westfield Farm site was located immediately east of Westfield Farm in arable farmland at NGR 514800 416700 (**Fig. 2.11**). The site lies around 500 m west of the Killingholme oil refineries, immediately south of the Immingham Railway, and at 16.33 m to 17.5 m OD, with a slight fall to the south.

Geophysical survey recorded an extensive complex of ditches and pits, forming a dense network of enclosures (RPS 2013c). Fieldwalking at Westfield Farm yielded only a single piece of post-medieval roof tile, although Romano-British pottery, a prehistoric

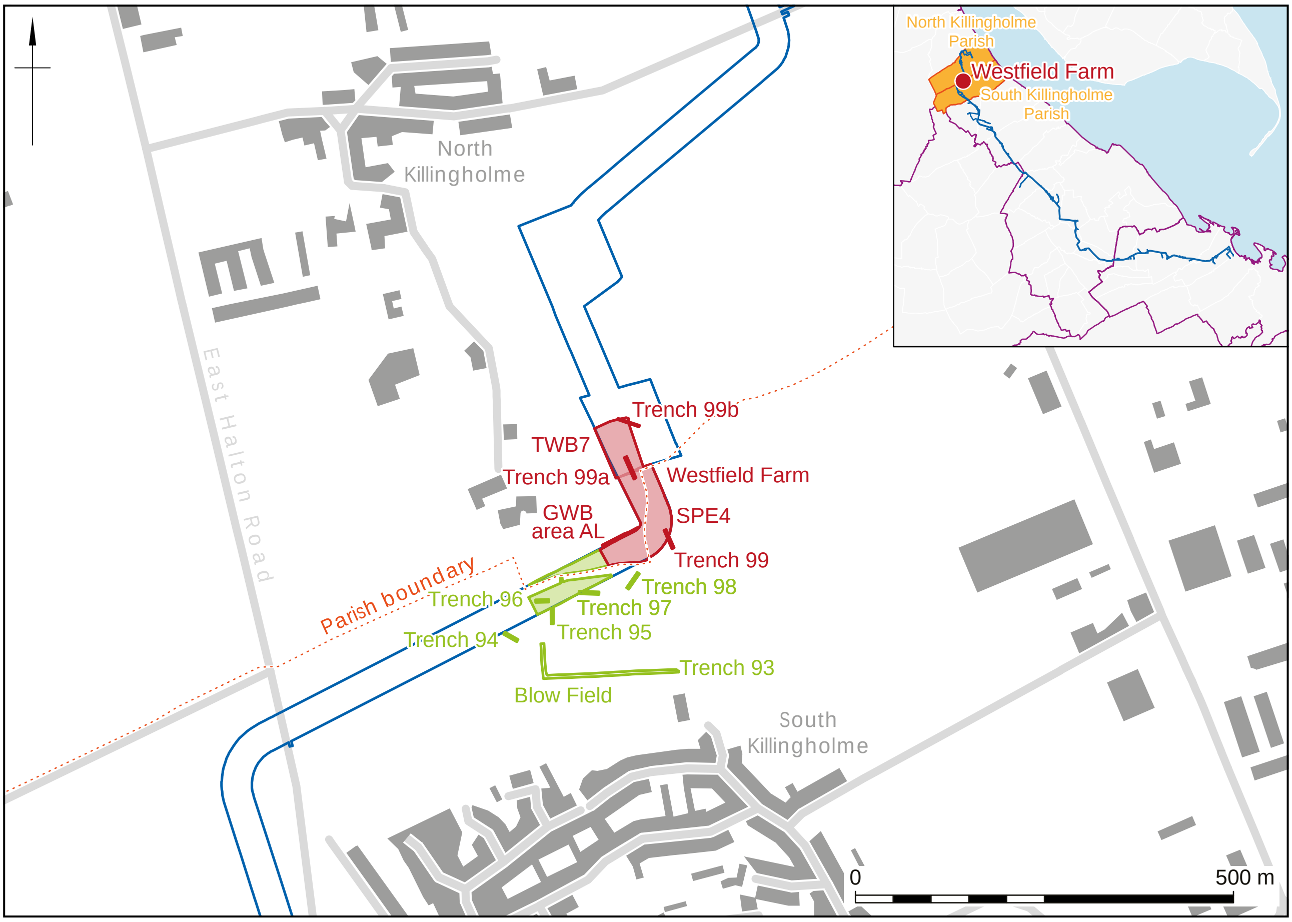


Figure 2.11 Westfield Farm location

Plate 2.9 Unmanned aerial vehicle photograph of SPE4 forming part of the Westfield Farm site with Westfield Farm itself in the background

hammerstone and a struck flint were recovered from the adjacent Blow Field site amongst an assemblage of Saxon, medieval, post-medieval and modern finds (RPS 2013d).

Evaluation trenches 93 and 94 (RPS 2013e) were situated to the south-west of the mitigation area and did not contain any archaeological remains. Trenches 95–98 (RPS 2013e) were excavated in Blow Field, where trench 97 revealed a truncated Iron Age/Romano-British pit (97052, not illustrated) as well as medieval features. Trench 98 (RPS 2013e) was situated to the south of the route and exposed a possible ladder enclosure system of Iron Age to 2nd century AD date, overlain by medieval remains. It is likely that the Romano-British settlement at Westfield Farm and the medieval moated site of Blow Field overlap in the area of trench 98; however, this fell outside the area of mitigation excavation. Trench 99 (RPS 2013e) was located in the south-east corner of the Westfield Farm mitigation area and recorded a series of features representing the continuation of Romano-British activity recorded by the adjacent mitigation excavation (see below). Trenches 99a and 99b (Wessex Archaeology 2015a) were positioned in the northern part of the Westfield Farm site; trench 99b was blank, lying beyond the limits of the settlement, while trench 99a recorded only a modern field boundary, though a sherd of Romano-British pottery was recovered from the topsoil.

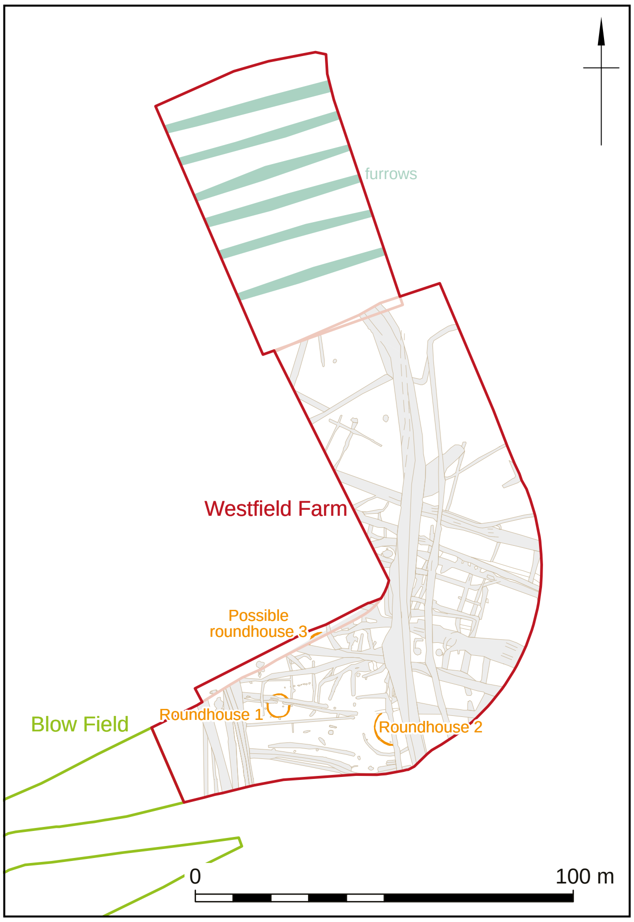


Figure 2.12 Westfield Farm plan

An earthwork survey was also undertaken (Wessex Archaeology 2016b) that recorded remains of ridge and furrow agriculture and ditches corresponding to the parish boundary. There was an extant ditch at the western boundary of the site corresponding with a complex sequence of archaeological features revealed by excavation (see below). A semi-circular bank recorded to the west of the SPE4 excavation area by the earthwork survey was not detected by the subsequent watching brief and is a different feature to a possible windmill mound, which is situated immediately north of the cable route (North Lincolnshire HER MLS21316).

As a consequence of the above results, Westfield Farm and the adjacent Blow Field site were targeted by SPE4. The excavation area followed the cable route, incorporating an approximately 90° turn (**Pl. 2.9; Fig. 2.12**). The excavation was subsequently

Figure 2.13 Westfield Farm phase plan: Iron Age

widened slightly as GWB area AL. TWB7 expanded the excavation area to the north but extended beyond the limit of Iron Age and Romano-British activity and recorded only ridge and furrow.

Soil Sequence and Natural Deposits

The undisturbed natural geological substrate comprised orangey brown, orangey grey, or grey clay glacial till with abundant chalk inclusions (4003). The natural was overlain by relict-ploughsoil subsoil (4002) comprising mid-yellowish brown silty clay with stones. The topsoil was greyish brown silt clay with stones (4001).

Early Iron Age

Near the centre of the site, a pit or ditch terminal (8027; **Fig. 2.13**) was truncated in the south-west and contained Early or Early to Middle Iron Age pottery as well as a probably intentionally placed fragment of quernstone. This minor feature represents the earliest activity at Westfield Farm and some of the earliest from the cable route as a whole.

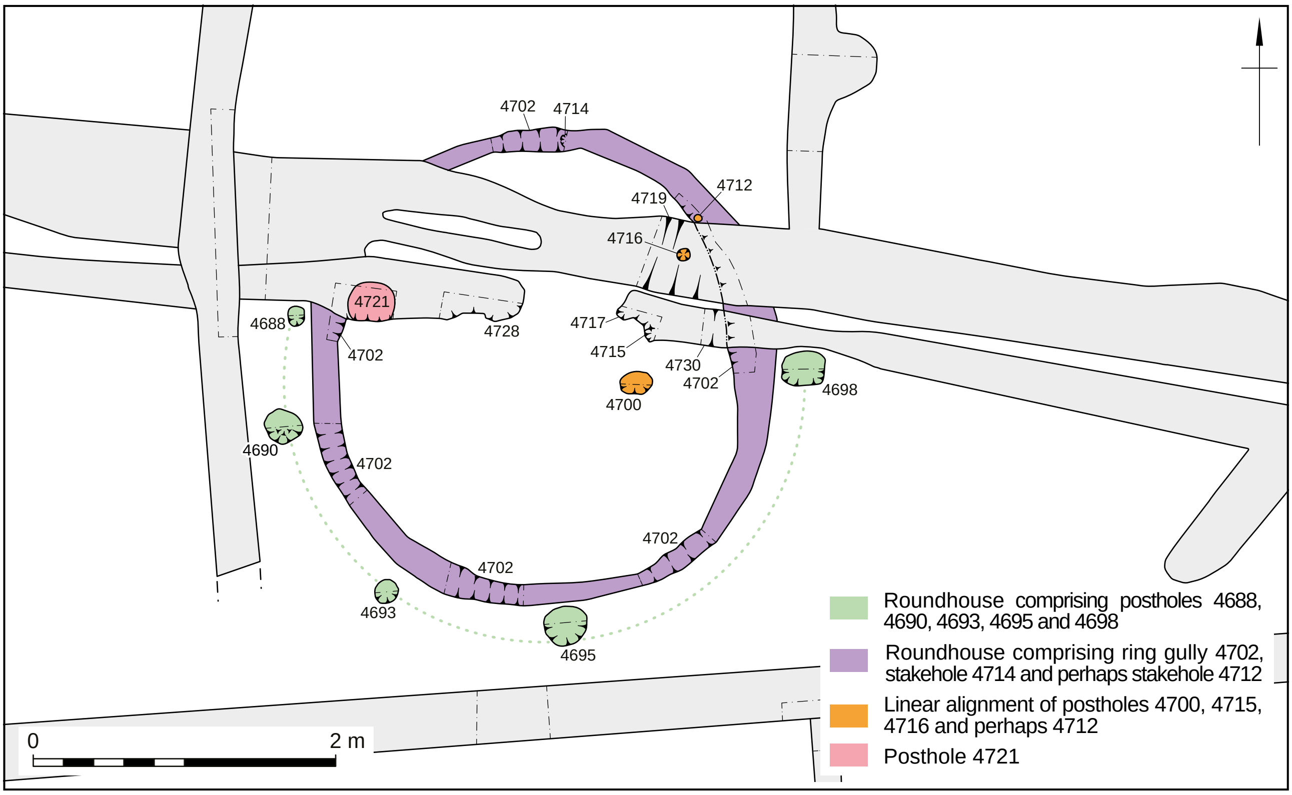


Figure 2.14 Westfield Farm plan of roundhouse 1

Late Iron Age

Two or three roundhouse sites were present at Westfield Farm, one of which (**Fig. 2.14; Pl. 2.10**) was probably Late Iron Age in date (the others most likely Romano-British). At the site of Iron Age roundhouse 1, although only one ring-gully was present (4702), postholes suggest that two or more iterations of building may have stood in the same location. The relative phasing of the different iterations of roundhouse 1 is unknown.

One series of postholes (4688, 4690, 4693, 4695 and 4698) describe an incomplete circle of around 7 m diameter and may have been structural elements of a small roundhouse. They ranged from 0.3 m to 0.65 m diameter and were a maximum of 0.3 m deep. Posthole 4698 had a darker fill than the others and contained pottery of either Iron Age or Romano-British date and a small fragment of undiagnostic CBM. One of the postholes (4690) contained a postpipe (4692).

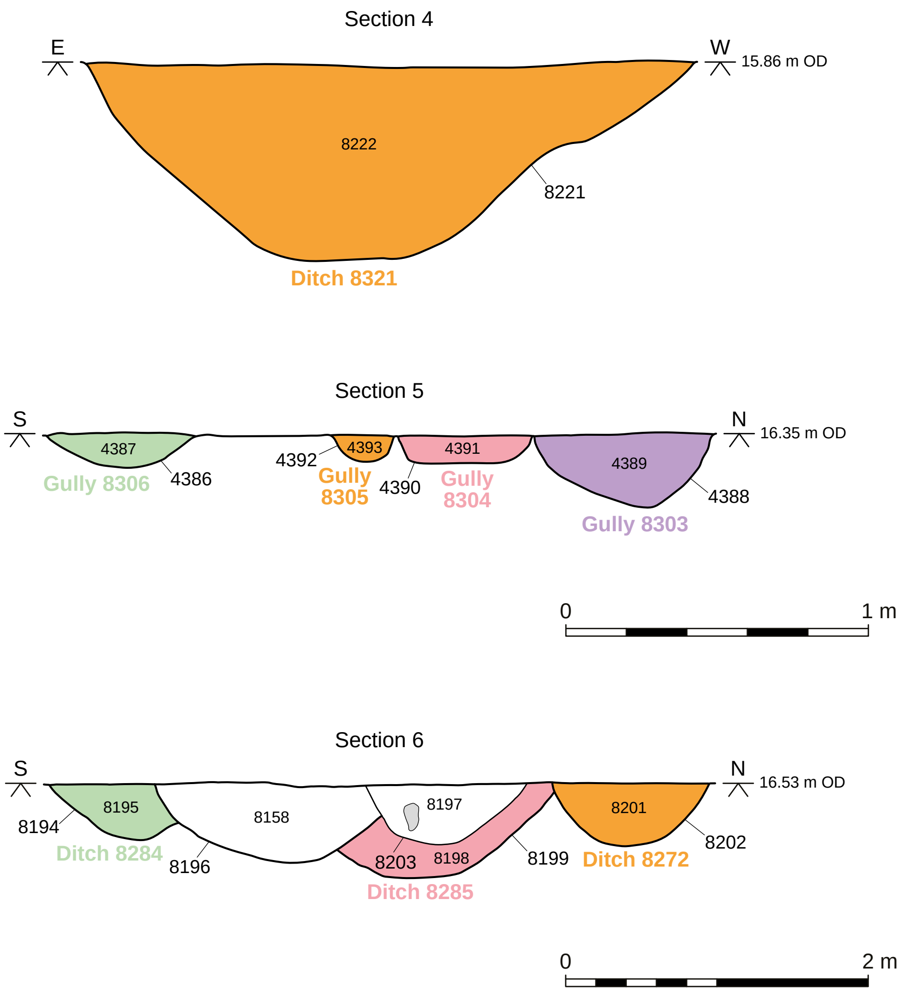
A second, earlier or later roundhouse in the same location was defined by ring-gully 4702, 5.25 m to 6 m in diameter, and forming a complete circle except where it had been truncated by Romano-British gullies 8303–8306. Ring-gully 4702 contained Late Iron Age pottery and a perforated dog tooth (object number (ON) 42). The presence

Plate 2.10 Roundhouse site 1 from south

of two large stakeholes (4712 and 4714, maximum 0.2 m diameter and 0.3 m deep) within the cut of the gully suggest that it may have been a foundation trench rather than an eaves drip gully. However, stakehole 4712 may instead be an element in a linear alignment (see below) and interpretation of this arrangement remains uncertain.

A possible linear alignment comprised up to four postholes and stakeholes (4700, 4712, 4715, 4716) ranging in diameter from 0.17 m to 0.3 m and up to 0.3 m deep. It probably represents a fence, possibly contemporary with one or more of the roundhouses. Elements 4715 and 4716 were truncated by early Romano-British gullies, consistent with an Iron Age chronology for the linear alignment. One further posthole (4721) enclosed by ring-gully 4702 was 0.4 m across and 0.29 m deep.

Figure 2.15 Westfield Farm sections



Extensive truncation by Romano-British and later features has rendered the Iron Age layout of the site hard to read. Beyond roundhouse 1, a few boundaries and pits were phased as Iron Age, although the frequency of residual Iron Age pottery demonstrates that activity during this period was more intensive than this disparate collection of features suggests (**Fig. 2.13**). Sub-circular pit 4666 was located near the centre of the site, and a surviving fragment of a ditch (8289) was cut by another sub-circular pit (4803, not illustrated). Each of these three features contained Iron Age pottery. In the north of the site, ditch 4512 was truncated by ditch 8271, which also contained Iron Age pottery.

The western boundary of the Westfield Farm site persisted from at least the Iron Age through to the 19th century. The earliest element delineating this boundary was ditch 8321 (**Figs 2.13** and **2.15**, section 4), which contained Late Iron Age pottery.

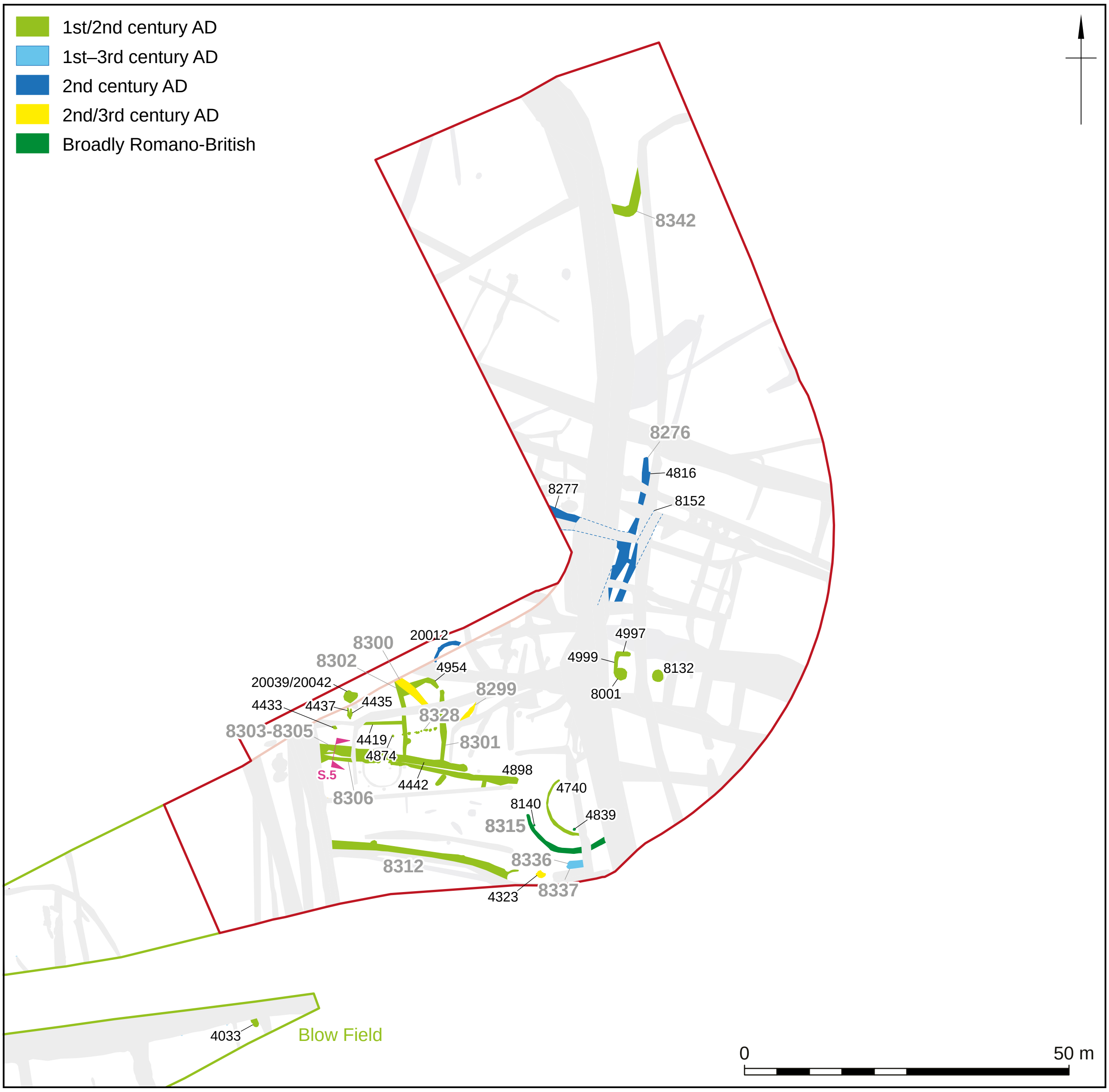


Figure 2.16 Westfield Farm phase plan: early Romano-British

1st/2nd-Century AD Early Romano-British and 2nd/3rd-Century AD Middle Romano-British

In the early Romano-British period the settlement continued to develop (**Fig. 2.16**) from its Iron Age beginnings.

Near the western boundary of the site were four small irregular pits (4433, 4435, 4437, and 20039/20042) that might have been rubbish pits. These pits varied in size, but all were under 3 m diameter and 0.4 m deep, containing dark silty fills. Pit 4433 yielded a 1st-century copper brooch; pottery of Iron Age or early Romano-British date was recovered from pit 4437, and early-Romano-British pottery from pit 20039.

Iron Age roundhouse 1 had gone out of use by this time and a series of four approximately west–east-aligned parallel gullies (8303–8306; **Fig. 2.15**, section 5; **Fig. 2.16**), each 0.25 m to 1.1 m wide and a maximum 0.25 m deep, had been dug across the former roundhouse site. These gullies did not intercut, suggesting that they may have been contemporary, together delineating a single boundary. They generally yielded Iron Age and early-Romano-British pottery although some intrusive sherds of 13th/14th century pottery were present in gully

Plate 2.11 Pit alignment 8328 from north-west

8303 (intervention 4442), and late Romano-British pottery was recovered from the east terminal (4898) of gully 8306. This was the longest of the gullies, terminating east of the others.

A sub-rectangular enclosure lay to the north of gullies 8303–8306, defined by these gullies to the south and by ditches 4954 (north), 8301 (east) and 8302 (west). Towards the north-east corner, the enclosure had a 0.7 m-wide entrance. Ditch 4954 contained Romano-British pottery that could not be more closely dated, as well as a small quantity of briquetage. Residual Iron Age pottery was present in ditch 8302. The enclosure was sub-divided by a pit or posthole alignment (8328; **Pl. 2.11**), one element of which shared contemporary fills with ditch 8302, though the alignment continued to the west of that feature. The westernmost pit (4874) contained broadly dated Romano-British pottery. The pits or postholes ranged in diameter up to 0.65 m, with a maximum depth of 0.3 m. A contemporary ditch (4419) extended west from ditch 8302, and contained pottery dated to the Late Iron Age to early Romano-British periods.

Ditch 8300 was imposed on the enclosure (across ditches 4954 and 8302) and contained 2nd- to early 3rd-century pottery. This north-west–south-east-aligned boundary was on a different alignment to earlier and later features in the area. It may have formed part of an enclosure with heavily truncated gully 8299 (north-east–south-west-aligned), the latter containing pottery of Iron Age or Romano-British date.

There may have been a further enclosure to the south of gullies 8303–8306, with ditch 8312 forming the south side. Pottery from ditch 8312 was mostly Iron Age, but with some 1st-century Romano-British pottery from two fills (4312 and 4619), one early and one later in the sequence of fills. There was also evidence of at least two recuts. Both gully 8306 and ditch 8312 terminated at about the same point in the east, perhaps respecting roundhouse 2 (described below). Ditch 8312 was the earliest surviving element of a boundary that appeared to have been maintained into the medieval period (as 8309 and 8311).

Roundhouse 2 was situated to the east of roundhouse 1 and comprised two sub-circular gullies and three postholes representing at least two phases of roundhouse built in the same location (**Figs 2.12** and **2.16**). Dating relies upon a few sherds of Romano-British pottery recovered from each of the gullies (4740 and 8315). Gully 4740 was probably infilled in the early Romano-British period, but the pottery from 8315 is not particularly chronologically distinctive. Gully 4740 formed an arc comprising the west and south-west sides of a circle, terminating in the north and truncated in the east, although it did not appear to have continued beyond this prior to truncation. It had a projected diameter of around 9 m, and was 0.4 m wide and 0.1 m deep. Gully 4740 may have been a foundation trench rather than an eaves drip gully, as a single posthole (4743, not illustrated), 0.2 m diameter and 0.07 m deep, lay within the cut of the gully. A further posthole (4839), 0.45 m in diameter and 0.18 m deep, was located just inside gully 4740 and may have been part of the same building or may have been unrelated. The second sub-circular gully (8315) was centred on the same point as gully 4740 but enclosed a larger area, around 12 m diameter. Gully 8315 formed the southern arc of a circle, terminating in the west and truncated in the east, and was 0.89 m wide and 0.16 m deep. Here too, a single posthole (8140), up to 0.3 m diameter and 0.1 m deep, was located just within the sub-circular gully.

Immediately south of roundhouse 2 were three further features (4323, 8336 and 8337) that may have been contemporary with the roundhouse. Two adjacent short parallel ditches (8336 and 8337) terminated in the west and were truncated 3 m to the east, although neither continued beyond this. Both ditches yielded 1st- to 3rd-century pottery and ditch 8336 contained a small fragment of human bone. Nearby, irregular pit 4323 contained pottery dating to the 2nd/3rd centuries AD.

As well as roundhouses 1 and 2, a third possible roundhouse (roundhouse 3) was dated by pottery to the 2nd century AD. It was represented by a 5 m long curvilinear gully (20012; **Figs 2.12** and **2.16**), the short length of the surviving feature making interpretation far from certain. The diameter of possible roundhouse 3 could not be reliably measured but may have been around 5 m to 6 m, which is small for such features.

Three heavily truncated ditches (8152, 8276 and 8277) near the centre of the site are evidence of further early Romano-British enclosures. Two parallel north-north-east to south-south-west ditches (8152 and 8276) were accompanied by a probably contemporary west-north-west to east-south-east ditch (8277). Pottery dating to the 2nd century was recovered from ditches 8276 and 8277, along with two intrusive medieval sherds. Ditch 8276 terminated in the north-north-east close to where a further ditch (4816) appeared to extend to the east but was truncated. Ditch 8277 was later recut as 8286 (described below).

Two pits (8001 and 8132) close to the centre of the site were both approximately 1.95 m diameter and 0.25 m deep. Pottery of 2nd-century date was recovered from 8001; pottery from 8132 was broadly Romano-British. Pit 8001 had an 'L'-shaped gully extending to the north and then turning east (4999, 4997). Pit 8132 truncated feature 8138, which may have been a pit or a fragment of a similar gully.

In the north of the site, the southern corner of a truncated enclosure (8342) contained late 1st-century to 2nd-century pottery.

3rd/4th-Century AD Late Romano-British

In the east of the site, north-north-east to south-south-west aligned ditch 8282 (**Fig. 2.17**) contained pottery of 3rd-century or later date and was truncated by a variety of features, including boundary ditch 8284, which contained pottery narrowly dated to the mid- to late 3rd century. This boundary was frequently recut (**Fig. 2.15**), most notably as ditch 8285, up to 1.7 m wide and 0.47 m deep, and contained Romano-British pottery dating to the mid- to late 3rd century or later. Ditch 8272, up to 1.8 m wide and 0.6 m deep, was in part a recut of ditches 8284 and 8285 but also deviated from the alignment of the earlier ditches. Four recuts (8196, 8199, 8202 and 8203; see section 6, **Fig. 2.15**) were recorded in one intervention, with cut 8199 containing pottery dating to the 3rd century or later.

To the north of ditch 8284 were a series of four gullies (4598, 4632, 8266 and 8267) on the same or perpendicular alignments. These gullies were much smaller (typically 0.5 m wide and 0.03 m to 0.42 m deep) than the boundaries to the south, crossing each other rather than enclosing areas, and as such may primarily have been for drainage. Gully 8267 was the earliest and was truncated by gully 8266, which was contemporary with perpendicular gully 4632. Gully 8266 may have continued as 4598, although the alignment of these two features was staggered and 4598 was wider (0.7 m). Pottery of 3rd/4th-century date was recovered from the fills of 4598 and 8267. Gully 4919 may have been a further element in this drainage system and was roughly perpendicular to 4598.

Third-century ditch 8282 was also truncated by ditch 8275 forming another major boundary, 1.9 m wide and 0.54 m deep, parallel to 8284. It contained pottery dated broadly to the Romano-British period. The west end of ditch 8275 cut four smaller ditches (4589, 4604, 8107 and 8274) that may have formed one or more small plots around 3 m across. Ditch 4589 contained 3rd- or 4th-century pottery and shared fills with 8107.

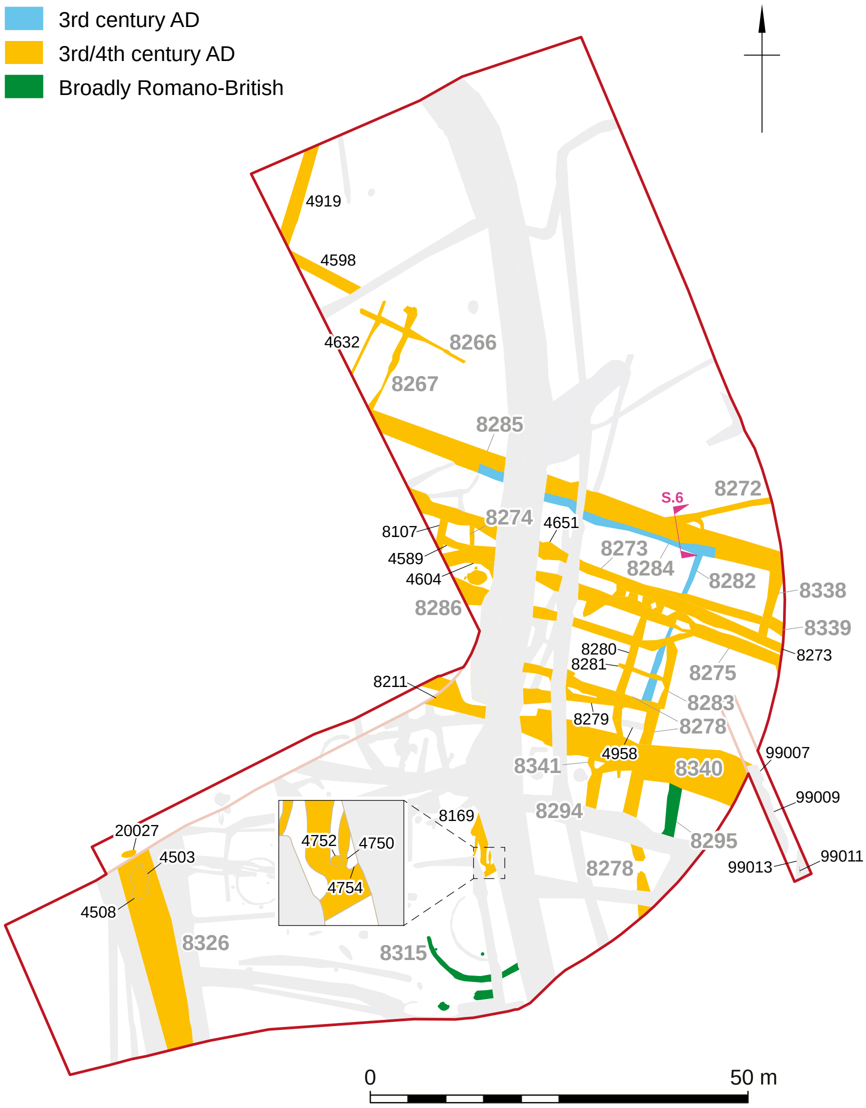


Figure 2.17 Westfield Farm phase plan: 3rd/4th-century late Romano-British

Approximately parallel to ditch 8275 was ditch 8339. Both this and 8275 were recut. The recut (8273) contained pottery dating to the 3rd century or later, as well as a small amount of briquetage. In one intervention, ditch 8273 had been recut by ditch 4651 containing 3rd/4th-century pottery.

A north-north-east to south-south-west-aligned ditch (8338) extending to the north was contemporary with ditch 8273 and was truncated by one of the recuts of ditch 8284. It contained pottery dating broadly to the Romano-British period.

Plate 2.12 Pre-excavation photograph of rubbish pits 4503 and 4508 from south

Third-century ditch 8282 was also truncated by west-north-west to east-south-east-aligned gully 8281, which in turn was truncated by ditch 8283. This contained Romano-British pottery and perhaps redefined the same boundary as 8282. Ditch 8280 contained Romano-British pottery and was parallel to 8283 and 8282, truncating perpendicular ditches 8275 and 8281. Ditch 8280 also cut undated ditch 4958 and shared contemporary fills with ditch 8286 that continued to the west and east. Ditch 8280 was in part a recut of early Romano-British ditch 8277 (described above), and could be considered an iteration of the same drifting boundary as 8275, 8339 and 8273. It had a distinctive flat-bottomed profile unlike the concave profiles of the surrounding features and contained residual 2nd-century pottery.

In the south-east of the site, the north and east sides of a sub-rectangular enclosure were defined by ditch 8279 (not illustrated), recut as 8278. The south and west sides of the enclosure were not identified; the enclosure may have covered much of the west of the site. Where ditch 8279 survived it was a maximum of 1.45 m wide and 0.55 m deep, the recut (8278) wider at 1.8 m but the same depth, and there was a 1.3 m-wide entrance in the east. The fills of ditch 8278 contained late Romano-British pottery.

Evaluation trench 99 in the south-east (RPS 2013e) recorded an undated ditch (99009) parallel to ditch 8278 and outside the mitigation area. Nearby, a partially exposed north–south-aligned ditch (99013, recut as 99011) contained 3rd/4th-century pottery and 20 hobnails (suggesting a discarded boot) in the recut.

A major west-north-west to east-south-east-aligned ditch (8340, also recorded in trench 99 as 99007; RPS 2013e) extended across the site, truncating ditches 8278 and 8280. Residual Iron Age and early Romano-British pottery was recovered alongside 3rd/4th-century material. The ditch was a maximum of 6 m wide and 0.6 m deep, although it was made up of a series of recuts so the width at any one time was less than this. In the west, ditch 8211 was probably a continuation of one of the cuts of 8340 and contained pottery dating to the 3rd century or later.

Minor ditch 8341 curved from the south-east to the north-east, truncating ditch 8340 and was in turn cut by ditch 8294. Its relationship with ditch 8340 was confused by recuts of 8340. Both ditches 8341 and 8294 contained late-Romano-British pottery (mid-3rd century or later).

A further ditch, 8295, up to 1.65 m wide and 0.39 m deep, was parallel to ditch 8294. Pottery from 8295 can only be said to be broadly Romano-British and ditch 8295 was truncated by one of the recuts of 8340.

A truncated series of gullies (4750, 4754 and 8169; **Fig. 2.17** inset) were present north of roundhouse 2. These gullies shared continuous fills and contained pottery dating to the late 3rd century or later. They were cut by pit 4752.

Near the western boundary of the site, irregular adjoining rubbish pits 4503 and 4508 were contemporary (**Pl. 2.12**). Each was a maximum of 3 m across and 0.7 m deep. They contained a series of peaty, ashy and stony fills from which early Romano-British and residual Late Iron Age pottery, small fragments of undiagnostic CBM, a fragment of quernstone and 1.314 kg of undiagnostic fired clay were recovered. However, an archaeobotanical assemblage (see Chapter 7) suggested a late Romano-British to medieval chronology for these pits. A layer (8326) containing late Romano-British pottery sealed these pits and part of the layer had been heat-affected (20027, from which 815 g of undiagnostic fired clay was recovered), perhaps indicating the location of a hearth.

In the south-west of the site were two slightly diverging ditches, 8297 and 8308 (**Fig. 2.18**), aligned roughly west to east. Ditch 8308 was very regular, contained late 3rd- to 4th-century pottery, and terminated in the east, in line with early Romano-British linear feature 8303 and ditch 8312, respecting roundhouse 2. A minor undated gully (8332) ran south from ditch 8308 but did not continue to the north, suggesting 8308 was a redefinition of an existing boundary contemporary with 8332.

Ditch 8297 was less regular, varying in width from 0.4 m to 1.6 m and in depth from 0.08 m to 0.48 m. It contained late 3rd- to 4th-century pottery alongside residual earlier material. Two contemporary spurs (8033 and 8298) extended to the south. Spur 8033 terminated before intersecting ditch 8308, perhaps forming an entrance, and the other spur was truncated.

A roughly north–south-aligned ditch (8291) intersected ditch 8297, with which it shared fills. A southern terminal not far south of the intersection was truncated by a pit (4769) containing residual Iron Age pottery. Ditch 8291 itself contained pottery dating to the Romano-British period.

Ditch 8291 was cut by west–east-aligned ditch 8288, which ran approximately parallel to ditch 8297 and comprised one of the latest boundaries on this axis. The fills contained Romano-British pottery. In the west, ditch 8288 terminated close to the limit of excavation.

To the south, ditch spur 8298 was cut by gully 8319, which may also have cut ditch 8291, although this was unclear. Gully 8319 was one element in a branching series of gullies (4593, 4907, 4909, 8319 and 8329) that followed the established late 3rd/4th-century

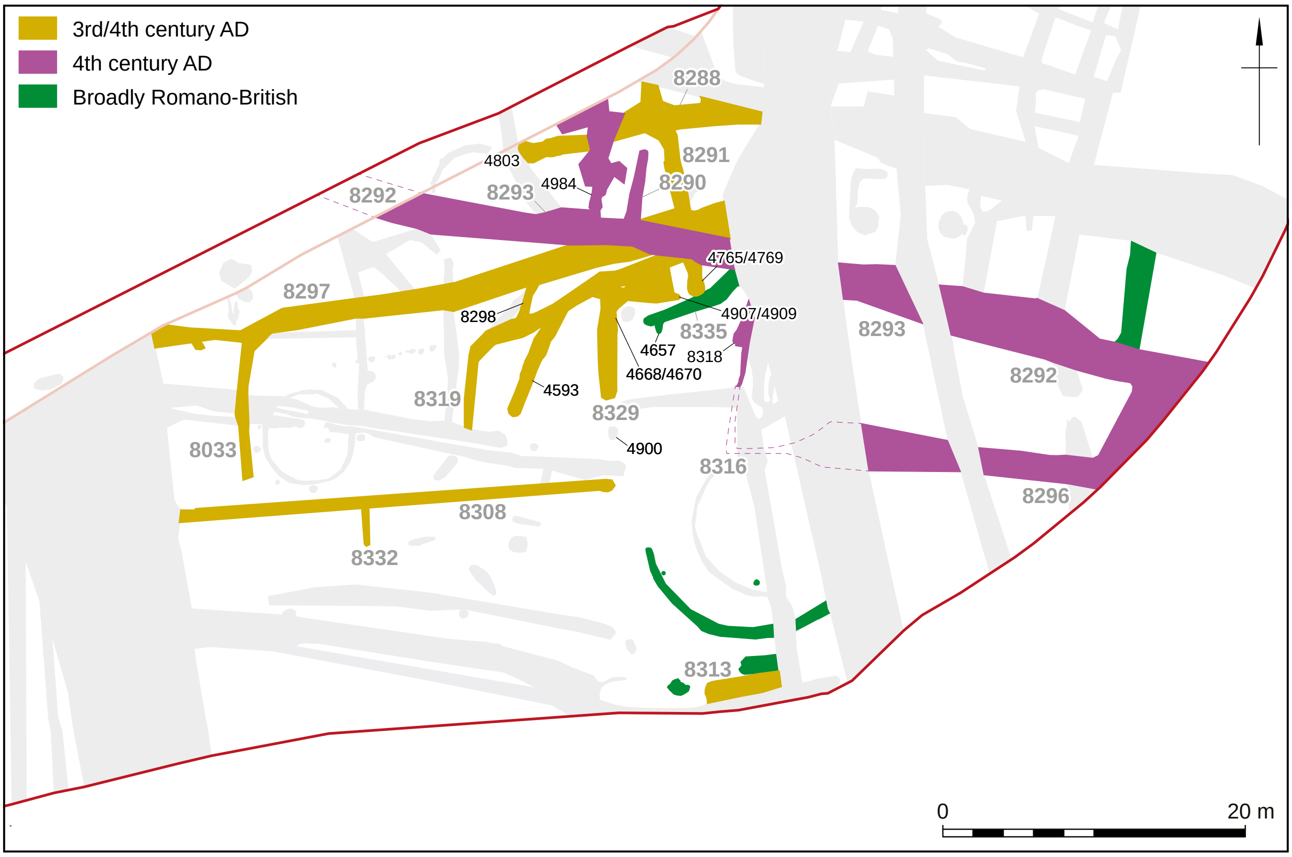


Figure 2.18 Westfield Farm phase plan: late-3rd/4th-century late Romano-British

Plate 2.13 Pre-excavation working photograph showing density of features. Ditch 8292 is in the foreground. View from south-east

axes of ditches 8297, 8033 and 8298. At least some of the gullies had been recut: 4670 as 4668 and 4907 as 4909. The pottery assemblage from these gullies was varied, but the overall picture is not chronologically distinctive.

The phasing of nearby ditch 8335 is uncertain. It shared the same orientation as ditch 8297, contained pottery that can only be broadly dated as Iron Age or Romano-British and cut undated pit 4657.

Further south, a 9 m-long length of ditch (8313) contained mid-3rd- to 4th-century pottery.

A single pit, 4033, was identified on the Blow Field medieval moated site immediately south of Westfield Farm (**Fig. 2.16**) and represents the southern limit of Romano-British activity in this area. Its chronology could not be refined beyond being broadly Romano-British.

A further phase of development occurred in the 4th century AD, expanding the earlier west-north-west to east-south-east-aligned pattern of ditches and enclosures slightly to the south. One or more new enclosures were defined by ditches 8293, 8296, 8316, and gully 8318 (**Fig. 2.18**). Ditch 8296 formed the south and east sides of a sub-rectangular enclosure, measuring approximately 20 m by 7.5 m, and contained a variety of Romano-British pottery, including sherds of 4th-century date, as well as briquetage. Ditch 8296 was truncated in the west but may have continued as small undated gully 8316 (maximum 0.5 m wide and 0.15 m deep), which petered out in the west due to plough truncation. The north side of the enclosure was defined first by ditch 8293, then recut as 8292 (**Pl. 2.13**), both of which continued to the west beyond the enclosure. Both iterations of the ditch contained 4th-century pottery and a variety of residual material. Ditch 8293 was around 3.3 m wide and 0.8 m deep; its recut (8292) was wider but shallower, a maximum of 5.4 m wide and 0.74 m deep. Recut 8292 truncated the intersection with ditch 8296, which was not recut at the same time. The enclosure formed by these ditches appeared to be sub-divided by gully 8318, which contained late 3rd- to 4th-century pottery.

Two features (4984 and 8290) continued north from ditch 8293 and shared continuous fills with the ditch, indicating that they were of 4th-century date. Gully 8290 was regular and terminated in the north, whereas feature 4984 was highly irregular in plan and profile and may have been an area of disturbed ground rather than a boundary.

Undated Features

Undated features were more frequent in the north of the site and mainly comprised gullies, some of which might have been for drainage. Two iterations of the western boundary of the site (4243 and 8043; **Fig. 2.13**) could not be dated.

In addition, a variety of undated pits, of varying size and form, were of uncertain function. Not all may have been Iron Age or Romano-British; some might have dated from after (or even before) the occupation of the Westfield Farm site, perhaps representing outliers of activity from the adjacent Blow Field site.

Hornsea Project Two

Hornsea Project Two has subsequently revealed the continuation of the Westfield Farm site to the south-east (Allen Archaeology 2018b; 2022, 56–58). The provisional results correlate closely with the results from Hornsea Project One and include additional roundhouses. Network Archaeology (2022, 129–133) excavated a series of locations on the periphery of the main focus of activity at Westfield Farm, helping to define the limits of the settlement.

Keelby Road Iron Age and Romano-British Settlement

Introduction

The site at Keelby Road was located at NGR 518175 411450 (**Fig. 2.19**) in the parish of Stallingborough, North East Lincolnshire, in open arable farmland to the south-east of Keelby Road. On the opposite (north-west) side of the road is Greenlands Farm. The site slopes down from 14.2 m to around 10 m OD in the south-east, where there is a small stream, the North Beck Drain.

Geophysical survey (RPS 2013c) recorded an intensive complex of ditched enclosures, although a water main created interference in the north-east, and ridge and furrow had impacted preservation. The geophysical survey shows that the site continues to the south-west and the north-east. The Hornsea Project One excavations are, therefore, a transect through part of the site.

Fieldwalking retrieved a substantial finds assemblage of mainly Romano-British date, as well as a smaller amount of pottery from later periods (RPS 2013d). Evaluation trenches 65–68 revealed a series of Late Iron Age to late Romano-British ditches, disturbed by medieval ridge and furrow (RPS 2013e). The site was targeted as SPE2, where the area of excavation was constrained by the presence of the water main. The excavation was subsequently extended to the north-west as GWB area AB (**Fig. 2.19**).

North-west of Keelby Road and to the east of Greenlands Farm, an evaluation trench (RPS 2013e, trench 69) revealed a series of linear and discrete features and contained a 1st-century 'T'-shaped Romano-British iron brooch, 3rd- to 4th-century pottery, a fragment of *tegula* (roof tile), metalworking slag, charred grains of spelt wheat, and residual worked flints. In the adjacent field to the north-east, trench 70 (RPS 2013e) recorded a single undated ditch. The area of trench 69 was targeted for excavation as an extension to the Keelby Road site, to be called TWB18. However, following the topsoil strip, but prior to the subsoil strip, the cable installation methodology was changed here to directional drilling. The area was not investigated further.

Soil Sequence and Natural Deposits

Two layers of pinkish brown clay glacial till were identified. The lower layer (2002/2139) contained chalk flecking. The upper layer (2026/2138) had been weathered, removing the chalk inclusions. Both layers were archaeologically sterile and pre-dated the earliest archaeological remains on the site. A relict-ploughsoil subsoil comprised brown clay with flints and stones (2001), and the topsoil was brown clayey silt with flints (2000).

Iron Age

No Iron Age features were identified. However, residual Iron Age pottery was present in later features, attesting to probable occupation of the site in late prehistory. Any Iron Age features may have been truncated by Romano-British activity and ridge and furrow (**Fig. 2.20**).

These results are in contrast to those from Network Archaeology's Hornsea Project Two investigations (2022, 109–119), which revealed multiple phases of Middle Iron Age and Late Iron Age activity adjacent to the Hornsea Project One site.

Mid-1st- to 2nd-Century AD Early Romano-British

The earliest surviving features from Hornsea Project One dated to the early Romano-British period (**Fig. 2.21**). A three-sided enclosure of around 400 m^2 was located at the south-east end of the site and was open to the south-east, facing the stream called

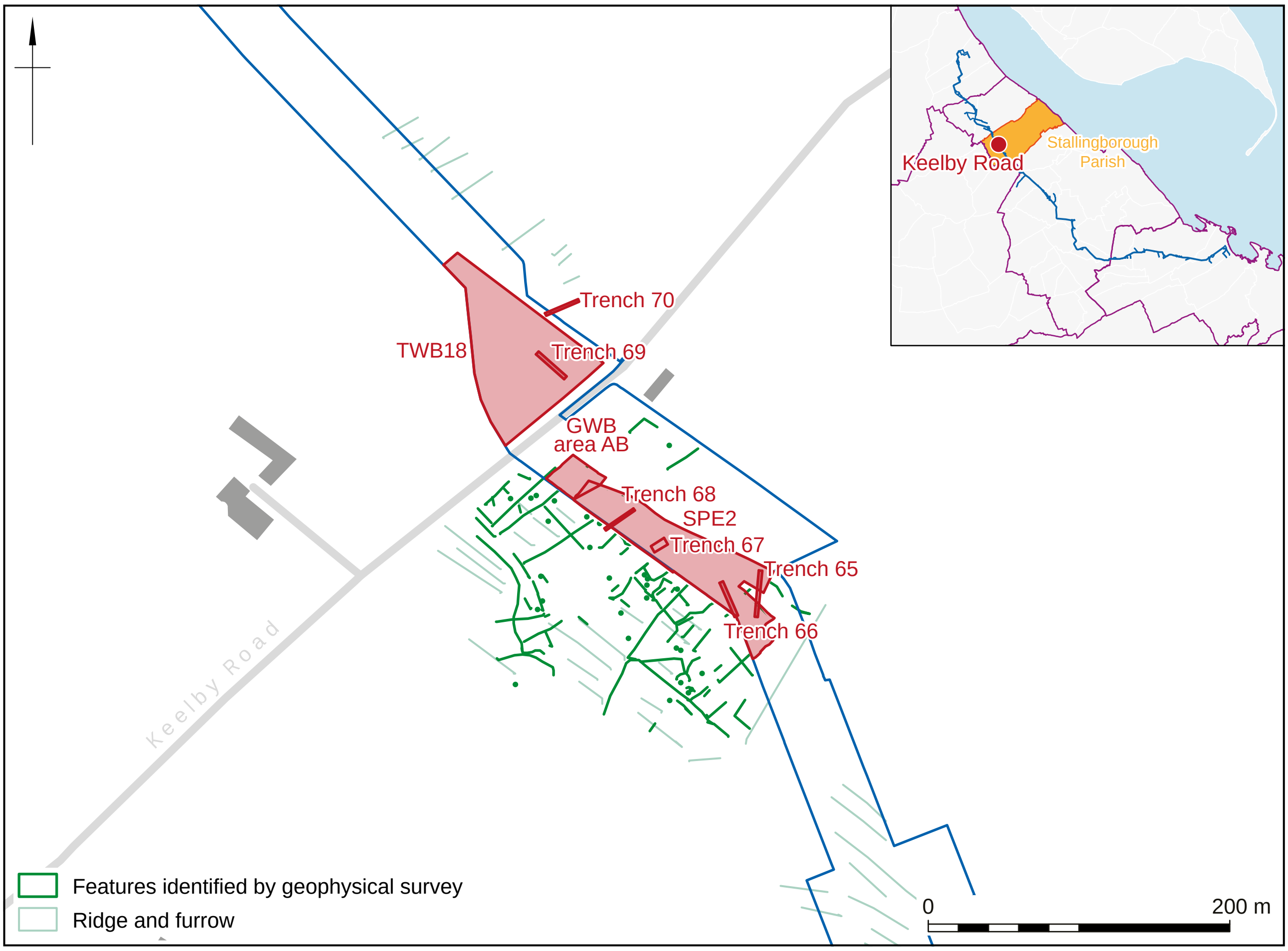


Figure 2.19 Keelby Road location

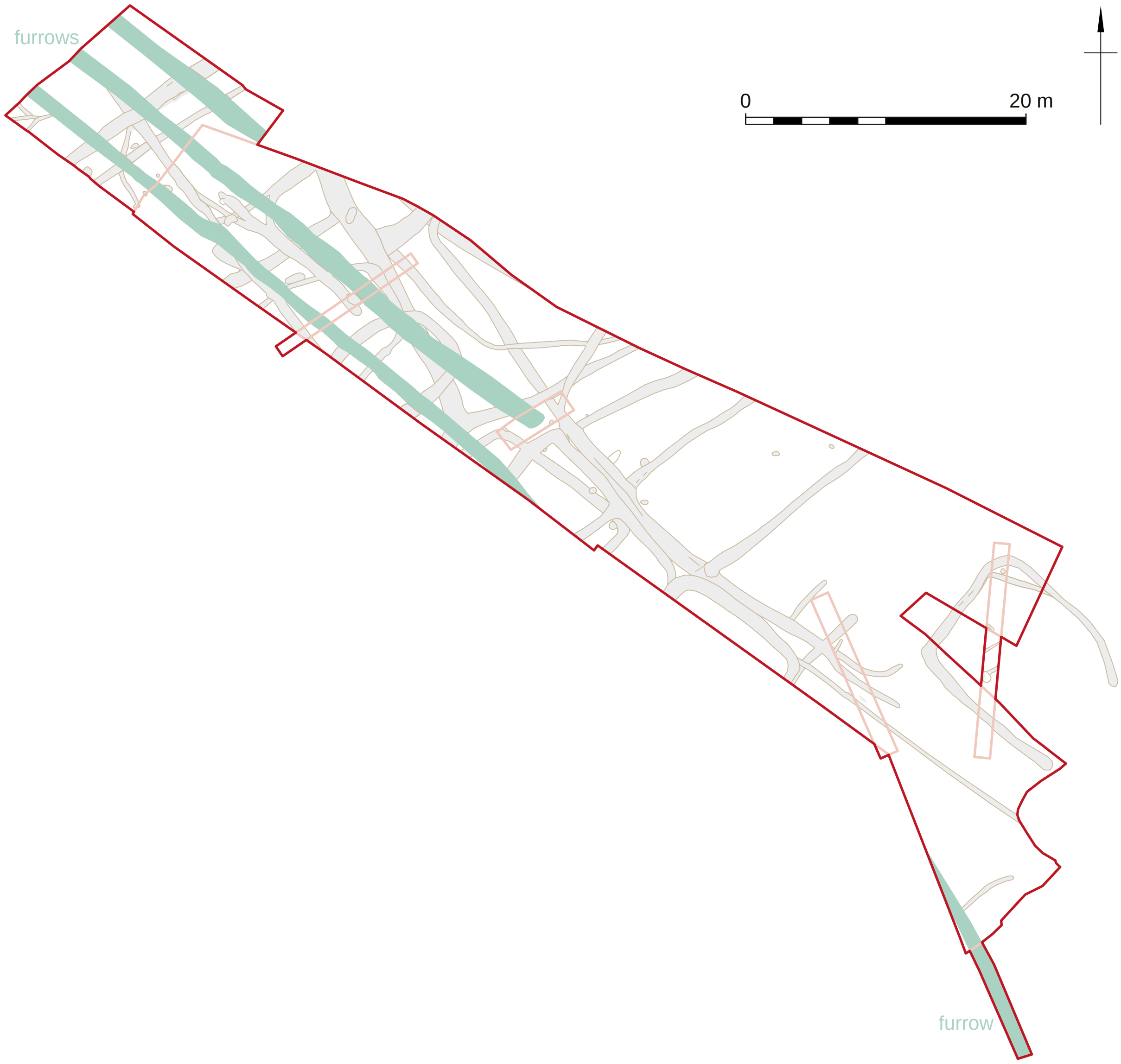


Figure 2.20 Keelby Road plan

the North Beck Drain. The enclosure was defined by ditch 2328 (also excavated in evaluation trench 65; RPS 2013e, where opposite sides of the enclosure were recorded as 65016 and 65020). Pottery of 1st- to 2nd-century date was recovered during the evaluation alongside residual Iron Age to early Romano-British material. The evaluation report (RPS 2013e) speculated about a central palisade within the ditch and suggested that there had been an interior bank that had slumped.

The evaluation also recorded a circular pit (65004) that cut ditch 2328 and was in turn truncated by a recut of the enclosure ditch. The mitigation excavation recorded this recut as 2180 (**Fig. 2.22**, section 7), which continued across the north corner of the enclosure where it was recorded by the evaluation as 65006. The recut yielded late 1st- to mid-2nd-century pottery (from SPE2) and residual Iron Age and Romano-British pottery (from the evaluation).

Interior features suggestive of sub-division were also recorded during the evaluation; these lay outside the irregular area of the set piece excavation. Two parallel gullies (65009 and 65013) were aligned north-east to south-west across the enclosure. Gully 65009 was undated, but 65013 contained a single sherd of 1st- to 2nd-century pottery. A further gully (65003) was aligned north-west to south-east and terminated 1.5 m from gully 65009, perhaps representing an entrance. Gully 65013 was cut by sub-square, steep-sided pit 65011 (at least 1.2 m wide and 0.22 m deep), from which residual Iron Age/Romano-British pottery was recovered.

Figure 2.21 Keelby Road phase plan: early Romano-British

To the north-west of enclosure 2328, the local topography dictated the north-west to south-east and north-east to south-west axes of an early Romano-British rectilinear enclosure system. Three of the north-east to south-west aligned ditches, 2324 (**Pl. 2.14**), 2325 and 2338, were evenly spaced with centres between 15.5 m and 16.5 m apart; however, ditches 2333 and 2340 did not conform to this pattern. Nevertheless, along with ditch 2326 (see below), this group could be interpreted as a ladder system of enclosures. The south-west terminal of ditch 2324 truncated ditch 2326. The relationship intervention also recorded an earlier cut (2288) truncating ditch 2326. Pottery of late 1st- to early 2nd centuries was recovered from ditch 2324, and during post-excavation assessment, human bone fragments were identified amongst the animal bone assemblage. Radiocarbon dating of the human bone failed (GU56059).

Parallel ditches 2325 and 2340 were aligned north-east to south-west and were a maximum of 1.75 m wide and 0.52 m deep. Ditch 2325 had been recut at least once. A pit (2152; **Fig. 2.22,** section 8), cut by ditch 2326, was situated between the two ditches. No dating evidence was recovered from either ditch 2325 or 2340, or from pit 2152.

A further 7.3 m-long small ditch (2333) on the same north-east–south-west alignment contained late 1st- to mid-2nd-century AD pottery. Nearby, evaluation trench 66 (RPS 2013e) recorded two features that do not correlate with the mitigation results (**Fig. 2.21**). Ditch 66037 contained four further sherds of pottery of the same date but

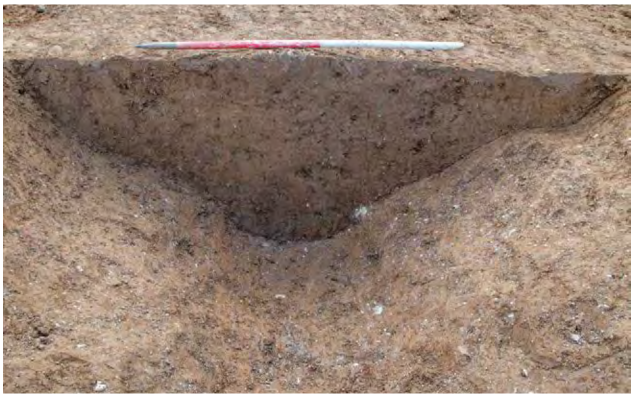


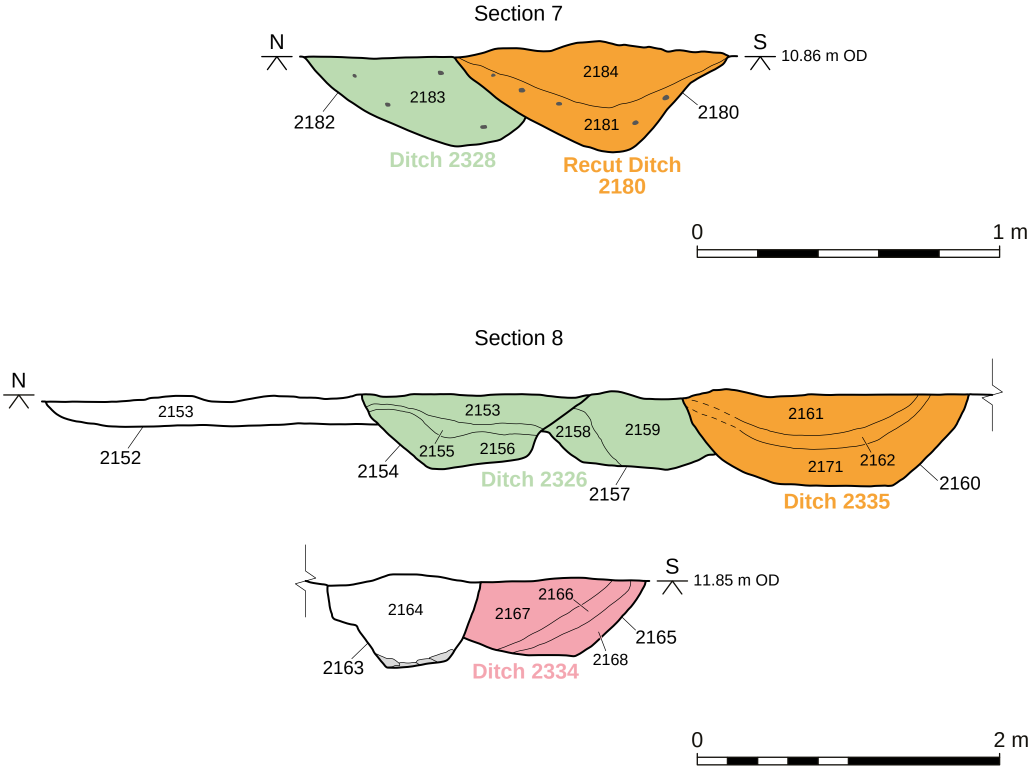
Plate 2.14 Ditch 2324 from north-east

was on a slightly different alignment and to the south-east of ditch 2333. Ditch 66037 also apparently cut a perpendicular ditch (66035), from which a single 1st/2nd-century potsherd was obtained.

Towards the north-western limit of excavation, a partially exposed north-west–south-east-aligned ditch (2101), was not aligned the same as the ditches previously described, but did contain mid-to-late 1st- to early 2nd-century pottery.

Ditches 2101, 2325, 2333 and 2340 were all cut by a clearly related, slightly curving, major north-west–south-east-aligned ditch 2326 (**Fig. 2.21**). This ditch, 1.8 m wide and 0.55 m deep, was recorded in evaluation trench 66 (RPS 2013e) as 66011, recut as 66015, and also in evaluation trench 67 as cut 67011. Pottery of late 1st- to mid-2nd-century date was recovered alongside residual Iron Age pottery. Fragments of two greyware vessels of late 3rd- to 4th-century date were also present and were probably intrusive. Three adjacent interventions revealed evidence of a recut to ditch 2326 (eg, 2154/2157; **Fig. 2.22**), and it is likely that this recut truncated the earlier features, with the earlier cut of 2326 contemporary with ditches 2325, 2333 and 2340. The south-east end of ditch 2326 split into two: the continuation of 2326 turned to the north-east before terminating, respecting enclosure 2328 and leaving a 3 m-wide entrance. The second fork (2327; also recorded in evaluation trench 66 as 66007; RPS 2013e) continued to the south-east for 11.25 m before terminating. Only three residual Iron Age sherds were recovered, all from ditch 2327.

Figure 2.22 Keelby Road sections 1/2



Ditch 2326 was cut by ditch 2338, the relationship established in evaluation trench 66 (RPS 2013e), where ditch 66020 cut ditches 66011/66015. Pottery retrieved during both mitigation and evaluation dated ditch 2338 to the late 1st- to early-2nd centuries AD. The evaluation also recorded a gully terminal (65013) to the south-east of ditch 2338, which was not seen in the set piece excavation. Ditch 2338 was in turn truncated by ditch 2329 (equivalent to evaluation context 66004, RPS 2013e) aligned roughly parallel to ditches 2326 and 2327 (north-west to south-east) and 1.8 m to the south-west. Ditch 2329

Plate 2.15 Ditch 2322 (extending away from camera) truncates ditch 2323 (left to right); view from north-west

continued beyond the area of excavation to the south-east and was relatively small at 0.6 m wide but was 0.5 m deep. It contained 1st/2nd-century pottery. The evaluation also recorded an elongated oval pit (66009) parallel to ditch 2329.

In the south corner of the site, ditch 2339 contained pottery dated to only the broad Romano-British period, but was on the same north-east to south-west axis as other early Romano-British ditches and so may have been contemporary with them.

Ditch 2323 (**Pl. 2.15**) to the north-west was contemporary with the enclosure system and contained pottery dating from the mid-to-late 1st to 2nd centuries. Beyond ditch 2323, in the north-west corner of the site, a small (up to 0.76 m wide and 0.34 m deep) curvilinear gully (2330) also contained pottery dating from the late 1st to early 2nd centuries.

To the south-west of ditch 2326 was a partly exposed sub-rectangular enclosure around 25 m wide, enclosed by a ditch 1.6 m wide and 0.65 m deep (2334, **Figs 2.21** and **2.22**). The latest pottery recovered from the fills of enclosure ditch 2334 dated from the mid-to-late 1st to 2nd centuries. A ditch recorded by evaluation trench 67 (RPS 2013e) as 67007 (not illustrated) did not correlate with the results of the excavation but may have been a branch or continuation of ditch 2334 extending to the north-west.

Although the majority of dateable discrete features were late Romano-British (see below), early Romano-British pits may include 2256 (not illustrated), which was truncated by late-Romano-British ditch 2334, and 861, which contained Romano-British Black Burnished ware dating to the 2nd century or later.

Broadly Romano-British

Curvilinear ditch 2341, up to 1.5 m wide and 0.78 m deep, cut early Romano-British ditch 2326 **(Fig. 2.21)** and was itself cut by late Romano-British ditches 2054 and 2132 (**Fig. 2.23**). It contained no dating material and its alignment is at odds with both earlier and later features.

At the north-west end of the site were three small (maximum 0.55 m wide and 0.15 m deep) gullies. Gully 865 was cut by gully 2316, which was cut in turn by gully 867. Only 2316 contained pottery, of Iron Age to early Romano-British and broadly Romano-British date.

Late 3rd- to 4th-Century AD Late Romano-British

In the late Romano-British period there appears to have been a wholesale reorganisation of the earlier enclosure system at Keelby Road. The new enclosures comprised a similarly aligned possible ladder system of more than one phase (**Fig. 2.23**).

Ditch 2054, up to 3.8 m wide and 0.7 m deep, was oriented roughly north-east to south-west and cut early Romano-British features 2101 and 2341. The pottery from it was a mixed assemblage, most significantly including late 3rd- to 4th-century wares but also an almost complete greyware necked drinking vessel of possible mid- to late 1st-century date.

A large north-west–south-east-aligned ditch, 2322, 3.3 m wide and 0.75 m deep (**Fig. 2.24**; also recorded in RPS 2013e evaluation as 68013) cut ditches 2054 and 2323. Pottery from ditch 2322 consisted of a small mixed assemblage with the latest material

Figure 2.23 Keelby Road phase plan: late Romano-British

of late 3rd- to 4th-century date, including an imitation samian bowl. An iron knife blade was also recovered.

Ditch 2331 (also recorded in evaluation trench 67 as 67005, RPS 2013e) shared fills with ditch 2322. A few sherds of Romano-British pottery were recovered that cannot be more closely dated.

Curvilinear ditch 2132 cut across ditches 2326, 2341 and 2331, but it contained only 13 sherds of residual Late Iron Age pottery (from the evaluation, RPS 2013e context 67012). Its stratigraphic position demonstrates that it belonged to, or was later than, the late 3rd/4th-century phase of activity, and it was probably linked to a pair of enclosures to the south (2335; see below).

Where ditch 2322 continued beyond the area of excavation to the north-west, another probably contemporary ditch (2216) continued to the south-west. Ditch 2216 branched into two gullies, one on the same alignment (2022) and one curving to the south-east (2023). To the north-east of the split, the ditch was 2 m wide and 0.55 m deep and the gullies each up to 1 m wide and 0.44 m deep. The latest pottery recovered was of mid- to late 3rd-century or later date.

Some 13.5 m to the north-west was ditch 2318, which was parallel to ditch 2216 and contained a mixed assemblage including sherds dating to the 3rd century or later.

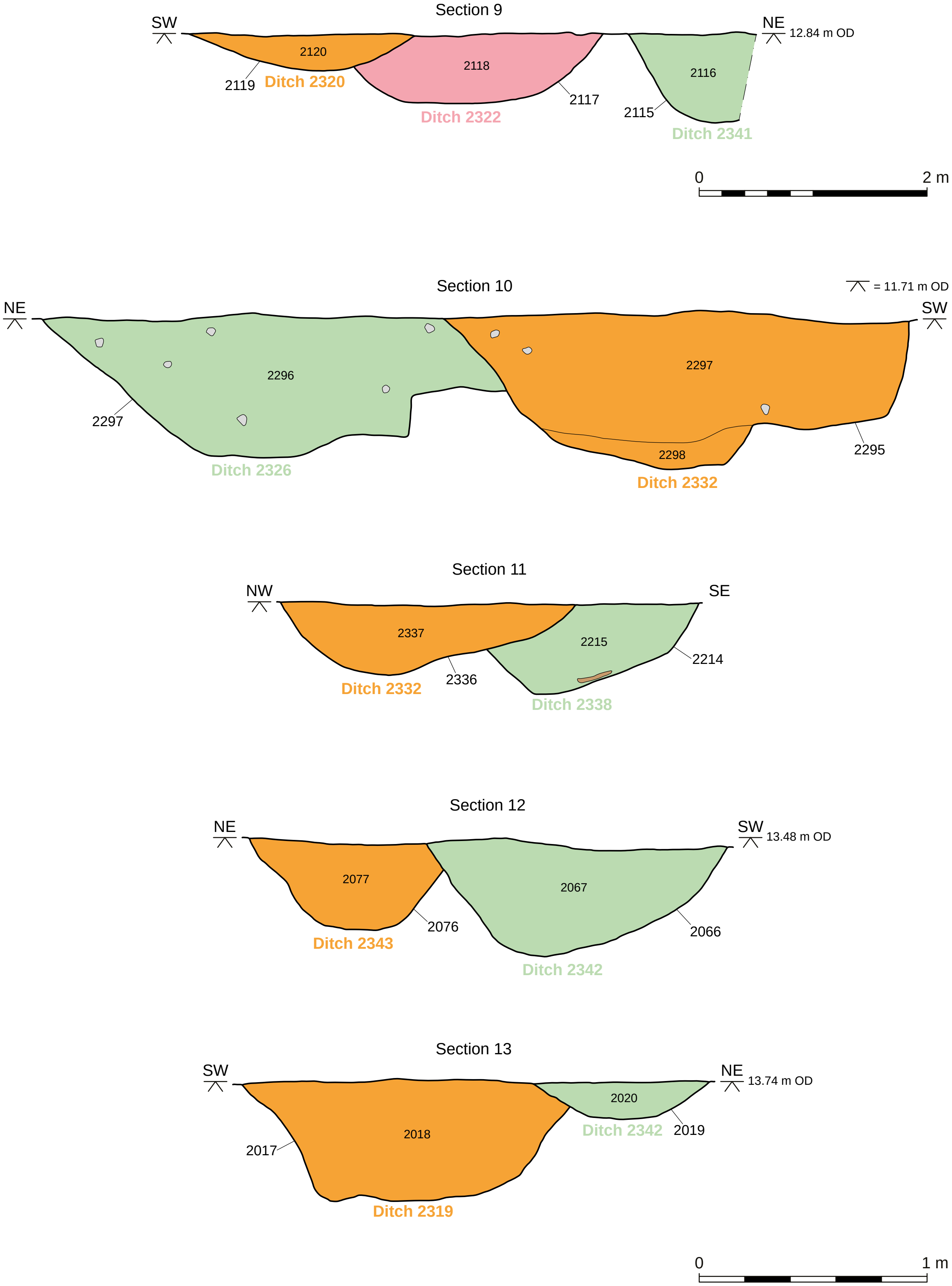


Figure 2.24 Keelby Road sections 2/2

Plate 2.16 Ditch 2321 (intervention 2074) from north-east

An irregularly shaped roughly 16 m-wide enclosure was defined by ditch 2320, 1.9 m in width but only 0.3 m deep (**Fig. 2.24**), which cut the edge of ditch 2322; to the south-west the enclosure extended beyond the area of excavation. The enclosure ditch was also recorded in RPS 2013e trench 68 as 68018, where a possible slumped fill from an internal bank was identified. Ditch 2320 contained pottery of late 3rd- to early 4th-century date as well as four post-medieval sherds.

Another similar enclosure, 2321 (**Pl. 2.16**), around 11 m across, was subsequently imposed on enclosure 2320. The fill of enclosure ditch 2321 contained pottery dating to the mid- to late-3rd-century or later.

Further to the south-east, a pair of conjoined enclosures (2335; **Fig. 2.22**), approximately 12 m across, superseded 1st-/2nd-century enclosure 2334 and ditch 2326. Enclosure ditch 2335, 1.8 m wide and 0.6 m deep, continued beyond the area of excavation to the south-west to probably form a 'figure-of-8' shape in plan. Finds included a sherd of amphora in an assemblage with the latest elements dating to the mid-to-late 3rd century or later.

A final, probably sub-rectangular enclosure, 2332 (**Figs 2.23** and **2.24**; **Pl. 2.17**), 10 m across and also extending beyond the area of excavation, cut the south-east side of enclosure 2335. Enclosure ditch 2332, 2 m wide and 0.7 m deep, also truncated 1st-/2nd-century ditches 2326, 2338 and 2329. Pottery recovered from ditch 2332 dated from the late 3rd to 4th centuries.

At the north-west end of the site, a north-west–south-east-aligned ditch terminal (2343) truncated ditch 2216 and contained mid- to late-3rd century or later pottery as well as a residual shard of early Romano-British glass. Ditch 2343 was recut in part by ditch 2342 (**Fig. 2.24**, section 12), which continued to the south-east, truncating ditches 2323 and 2320 and terminating within earlier enclosure 2320, where evaluation trench 68 (RPS 2013e) recorded the ditch as 68007. This recut contained 3rd- to 4th-century pottery. A more regular ditch, 2319 (**Fig. 2.24**, section 13), 1.5 m wide and 0.5 m deep,

Plate 2.17 Ditch 2332 from south-west

followed a slightly different alignment to the south-east, where it was also recorded in evaluation trench 68 (RPS 2013e) as 68004. This ditch cut across several features but was itself only truncated by ditches 2317 and 2342, and by furrows. The pottery indicates a late 3rd- to 4th-century date. Human bone was also recovered from ditch 2319, but radiocarbon analysis (SUERC-95455) demonstrated that this was residual (200 BC–AD 10).

Ditch 2317 truncated ditch 2319 at right angles and replaced earlier ditch 2318. Ditch 2317 was 2.5 m wide, 0.65 m deep and contained greyware pottery of late-3rd- to 4th-century date.

A variety of discrete features, of variable but generally small size and uncertain function, were scattered across the site. Dated examples were typically late Romano-British. An irregular hearth (2027) measured 1.9 m by 1.6 m and 0.2 m deep, with a variety of pottery of mid- to late 3rd-century date or later in a series of burnt fills. Pit 2005 contained 2nd-century greyware but truncated a second pit (2013) with 3rd-century pottery, indicating a later Romano-British date for both pits. Pits 845, 2030, 2041 (not illustrated), 2050 (recorded in RPS 2013e evaluation as 68009), 2094 and 2313 also yielded late Romano-British pottery, while pits 2056, 2058 (containing a Romano-British millstone fragment), 2123, 2126 and 2163 (**Fig. 2.22**) all cut Romano-British features.

Hornsea Project Two

Excavation during Hornsea Project Two revealed the continuation of remains from the Hornsea Project One results (Network Archaeology 2022). As noted above, this subsequent work has extended the chronology of the site back to at least the Middle Iron Age.

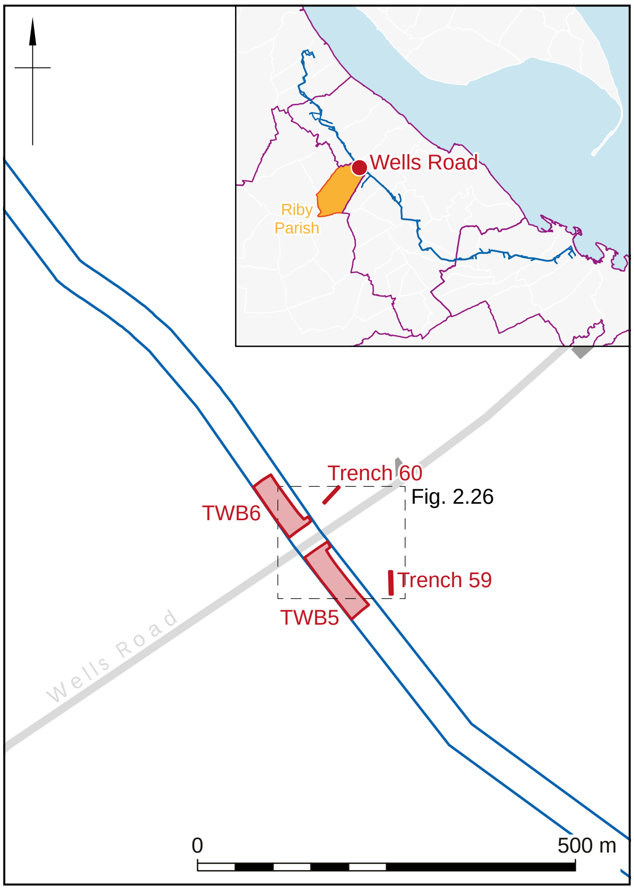


Figure 2.25 Wells Road location

Wells Road Early Romano-British Boundary and Undated Features

Introduction

An area of arable farmland divided by Wells Road in the parish of Riby, in the West Lindsey district of Lincolnshire at NGR 519556 409410, was excavated as TWB5 (south of the road) and TWB6 (north of the road). This area lies some 450 m south-west of Wells Farm (**Fig. 2.25**).

Geophysical survey to the east of the eventual alignment of the cable route identified possible curvilinear features and areas of high response. Fieldwalking recovered a prehistoric flint flake, a fragment of Romano-British brick, medieval and post-medieval building material, a sherd of Early or Middle Saxon pottery, and modern pottery (RPS 2013d). An earthwork survey recorded ridge and furrow north of Wells Road (Wessex Archaeology 2016b), although this did not translate into features detectable by excavation. Two trial trenches (59 and 60, RPS 2013e) were excavated; however, the cable route was subsequently moved west to an unevaluated area.

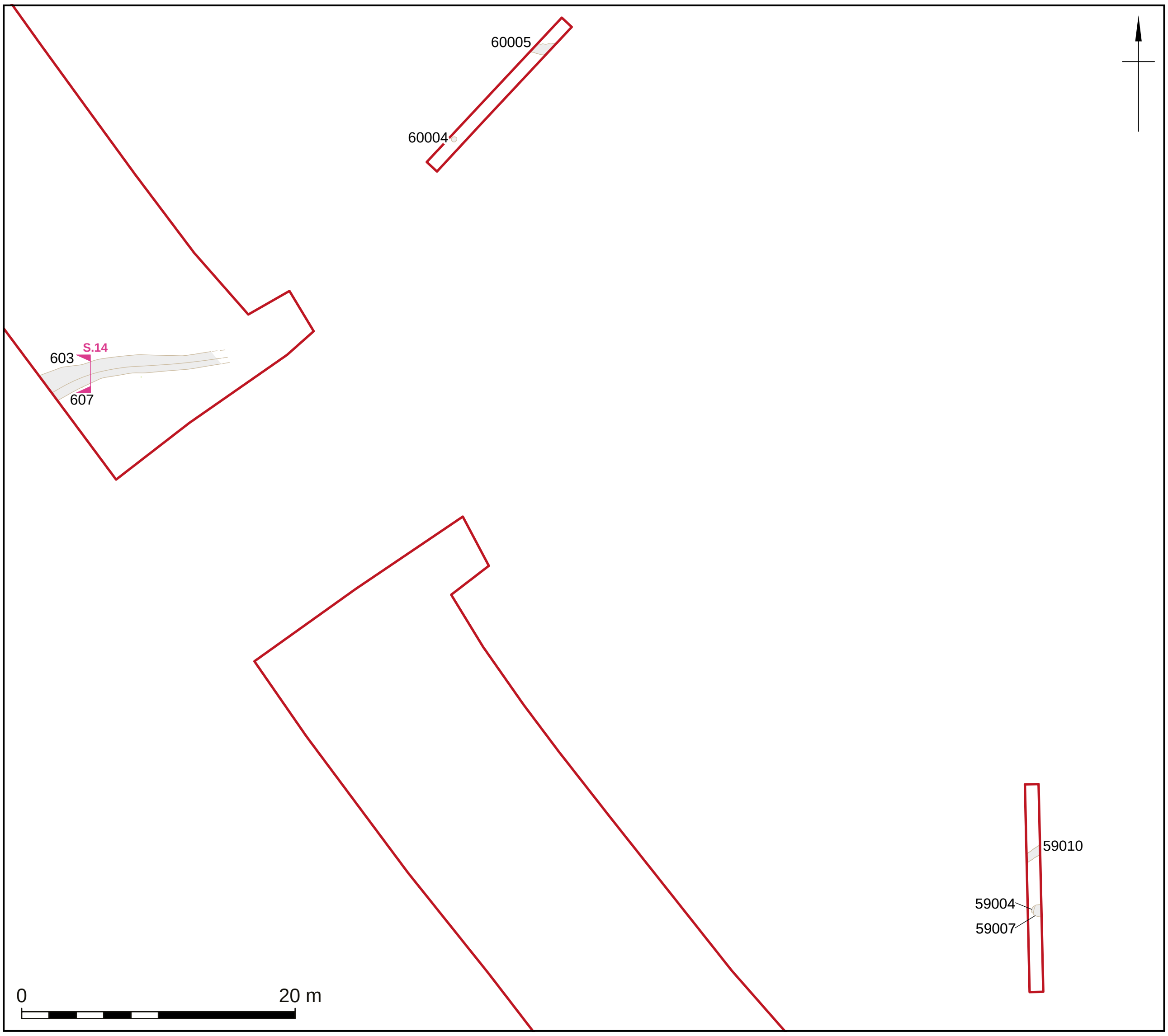


Figure 2.26 Wells Road plan

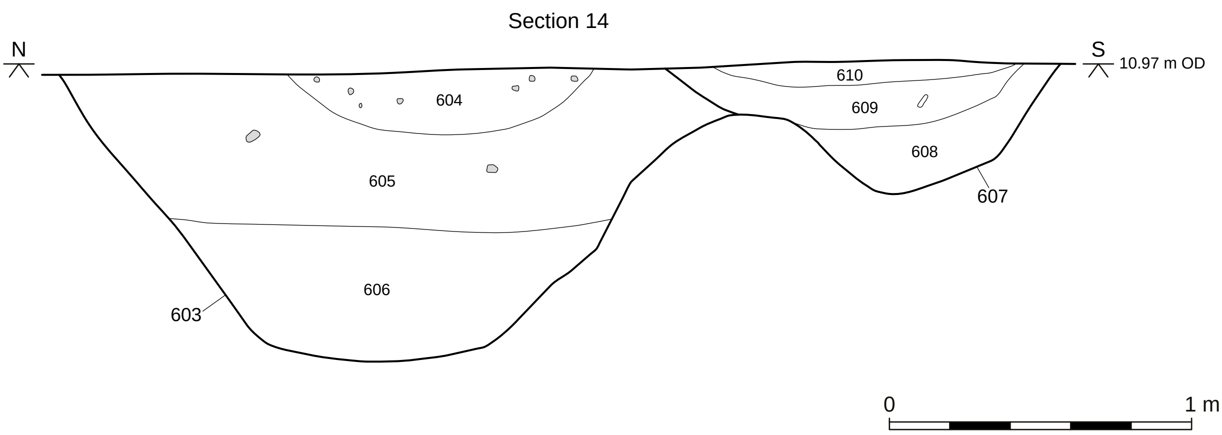


Figure 2.27 Wells Road section

Romano-British and Undated

Two trial trenches (59 and 60, RPS 2013e) targeted geophysical anomalies and recorded two intercutting undated features (**Fig. 2.26**). A small, steep-sided pit (59004) was cut by a larger feature (59007, 1.8 m wide), either a pit or ditch terminal. Nearby, an undated ditch (59010) was 1.2 m wide and 0.72 m deep and might represent a post-medieval agricultural boundary. Trench 60 contained an undated ditch (60005; 1.4 m wide and 0.7 m deep) and an undated pit (60004). The results of both trenches correlated poorly with the geophysical survey results.

The mitigation excavation recorded a large, roughly west–east-aligned probable boundary ditch (603), 2.2 m wide and 0.95 m deep, and a gully (607, 0.32 m to 1.3 m wide and 0.44 m deep; **Fig. 2.27**). The gully cut the south edge of the ditch. A small quantity of Romano-British pottery from these features includes material from the late 1st to 2nd centuries, which may serve to date activity at Wells Road.

Hornsea Project Two

Hornsea Project Two recorded a further three features of similar character to the Hornsea Project One results (Network Archaeology 2022, 106–107). Two contained flint flakes and the third a fragment of horseshoe.

Station Road Iron Age and Romano-British Settlement

Introduction

The archaeological remains at Station Road (**Fig. 2.28**) comprised the main, central focus investigated by SPE1 (NGR 529600 401900), with a western minor focus investigated by SMR4 (NGR 529400 401800), and an eastern minor focus dug as SMR3 (NGR 529700 401950). Three phases of targeted watching brief (TWB2, TWB10 and TWB11) and the general watching brief supplemented the main excavations. The watching briefs in this area produced negative results, confirming that the extent of intensive activity was confined to the three areas investigated.

The majority of the site was located within the parish of Holton-le-Clay, with SMR3 just across the border in Tetney parish. Both parishes are in the East Lindsey district of Lincolnshire. The site lay in open arable farmland to the north of Station Road. Immediately south of Station Road are a series of dispersed large houses and the farm of Holton Grange. The disused East Lincolnshire Railway passes to the west of the site, with the location of the former Holton-le-Clay and Tetney railway station at the intersection of the railway line and Station Road. The modern suburbs on the outskirts of Holton-le-Clay lie less than 500 m to the north of the site, though the historic core of the village is 1200 m to the north-west. Tetney lies roughly 1.5 km to the east. The site is in the Middle Marsh at around 10 m OD. The ground falls to the south towards the Waithe Beck, and at Tetney the ground descends into the Outmarsh.

A cropmark was identified in the 1990s to the west of the site and outside of the area of the cable route (North East Lincolnshire HER ref 46187 – MLI87945). Geophysical survey revealed a complex series of ditched enclosures (RPS 2013c). Fieldwalking of the area later excavated as SPE1 yielded a substantial assemblage of Romano-British pottery, with a single sherd recovered in the west from the area of SMR4 (RPS 2013d). Two evaluation trenches (37 and 38, RPS 2013e) were excavated in the centre of the Station Road site. Trench 40 was located to the west. Between these, a strong geophysical response targeted by trench 39 (RPS 2013e) was probably caused by variation in the drift geology; no anthropogenic features were identified. The east was

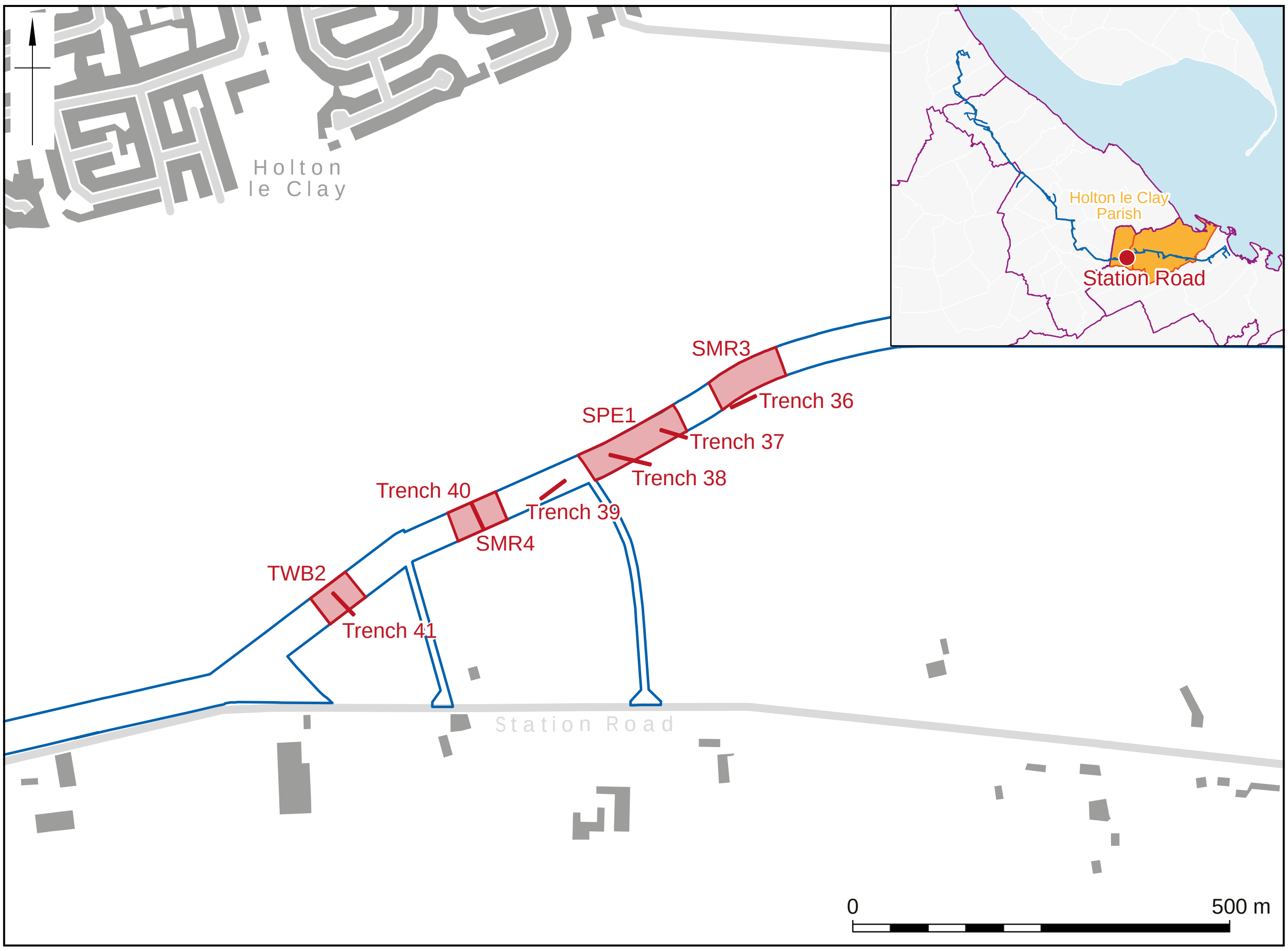


Figure 2.28 Station Road location

targeted by trench 36 (RPS 2013e), which recorded three small (up to 0.4 m wide) gullies, two aligned north-east to south-west, and one older and perpendicular to the others. A sherd of 12th- to 14th-century pottery may have been intrusive. The gullies do not resemble anything recorded by subsequent open-area excavation. They do not appear to have been significant archaeological features and may have been plough scars.

About 350 m south-west of the west of the Station Road site, evaluation trench 41 (RPS 2013e) recorded three furrows (see 'Ridge and Furrow…' at the end of Chapter 3). One of these contained residual Iron Age or Romano-British pottery. For this reason, the area was excavated as TWB2, but with negative result. Nevertheless, the pottery may be evidence for low-intensity Iron Age/Romano-British agricultural activity in the hinterlands of the Station Road site.

Soil Sequence and Natural Deposits

The Station Road site was underlain by light brown glacial till of variable texture and sorting (1002, 10024, 10025 and 10502). A relict-ploughsoil subsoil (1001, 1084 and 10501), derived from the glacial till, comprised orangey brown or grey silty clay. Two distinct layers of subsoils (1001 and 1084) were present at the wetter east end of the central focus. The topsoil (1000, 10000) was similar to this subsoil (brown or grey silty clay), but darker.

Evaluation trench 37 (RPS 2013e), located in the east of the later SPE1 excavation area, recorded a more complex sequence. Three additional layers of relict-ploughsoil subsoil (37031, 37038, 37039) below the upper subsoil (37002) contained a relatively rich assemblage of finds including a range of Romano-British pottery, a fragment of crucible, a silver-washed copper antoninianus of the emperor Gordian III, dating to AD 241–3,

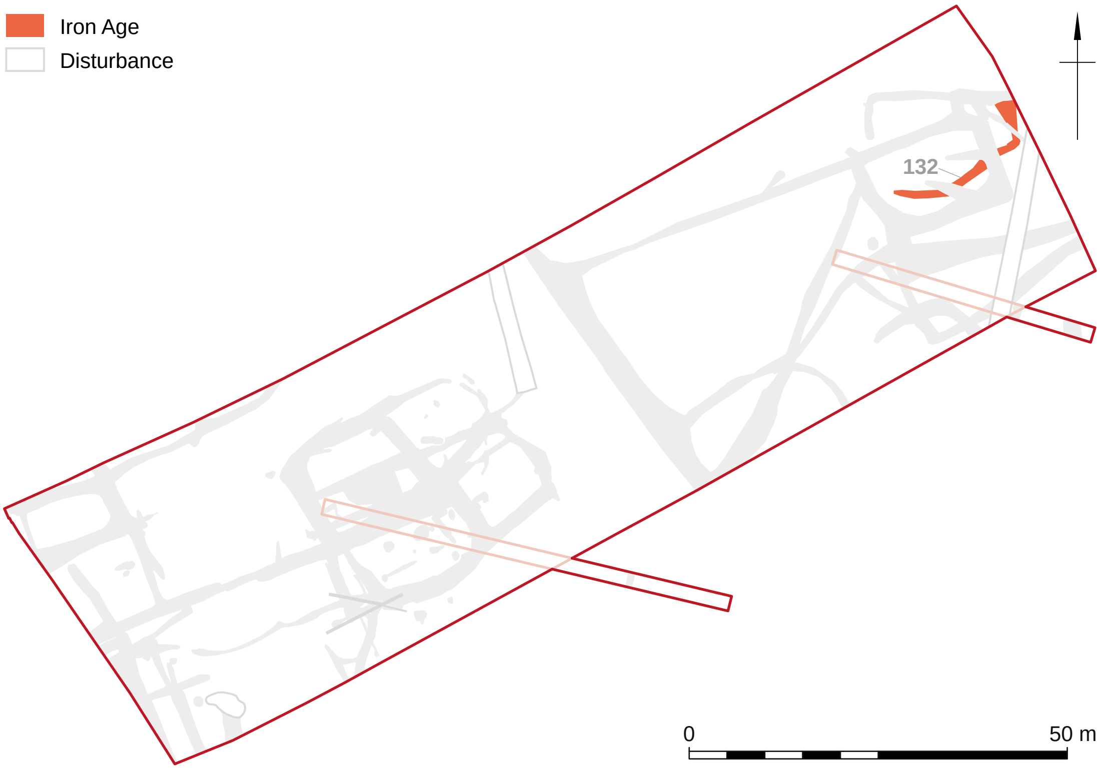


Figure 2.29 Station Road phase plan: Iron Age central focus

an iron knife or cleaver blade, and a further iron object, probably a linchpin. These deposits were cut by an undated pit (37048) that was not identified by subsequent excavation; this pit was sealed by layer 37047, perhaps another relict ploughsoil, from which no artefacts were recovered. It is possible that shallow features 1193 and 1698 from other parts of the site represent surviving fragments of these additional layers recorded in trench 37.

Iron Age and Related Undated

SPE1

A single Iron Age ditch (132) was recorded in the north-east corner of the central excavation area (**Fig. 2.29**) and contained Iron Age and broadly Iron Age/Romano-British pottery. The ditch terminated in the west and curved around to the north-east, where it was truncated.

Plate 2.18 Partial ring ditches 10714–10716 from south

SMR4

The remains in the west of the Station Road site (**Fig. 2.30**) were primarily Iron Age in date. Three intercutting truncated ring gullies (10714–10716; **Pl. 2.18**) may have been too small to represent roundhouses (the earliest, 10714, was 4 m in diameter, the others were unmeasurable but not significantly larger). Iron Age pottery was recovered from the middle of the three ring gullies (10715). To the north-east was a further similar but undated feature, 10710, with a diameter again around 4 m.

Ditch 10711 curved from north to east before terminating to form an entrance with a continuation beyond this (10712; also recorded during the evaluation as 40007; RPS 2013e). The east terminal at least of ditch 10711 had been recut (10607 and 10641). A smaller ditch, 10720, 1 m wide and 0.26 m deep, was in part parallel with ditch 10712 (**Fig. 2.31**). Iron Age pottery was recovered from all three ditches (10711, 10712 and 10720), with a whetstone recovered from ditch 10711. In the east-north-east, ditch 10712

Figure 2.30 Station Road west focus plan

(**Pl. 2.19**) became narrower and shallower to the north-east, from up to 1.67 m wide and 0.52 m deep to a mere 0.22 m wide and 0.28 m deep and then terminating. Roughly parallel to this terminal was another irregular gully (10583), which was 2.5 m long, 0.17 m wide and 0.14 m deep. Gully 10583 was cut by a pit (10643); either or both features (10583 and/or 10643) may have represented truncated parts of ditch 10712, or they may have been associated with an oval arrangement of postholes.

Eight undated postholes (10577, 10596, 10601, 10604, 10613 replaced by 10611, 10703 and two unexcavated examples) formed an oval structure about 6.2 m by 5 m. The postholes ranged between 0.25 m and 0.66 m in diameter and between 0.1 m and 0.45 m deep. One (10703) was cut by ditch 10712, suggesting that they pre-dated the Iron Age enclosures.

Immediately to the north-west, undated pit 10631, larger than the postholes at 1.38 m diameter and 0.45 m deep, lay partially within the area of excavation and was cut by another posthole, 10637, 0.2 m in diameter and 0.35 m deep.

There were further undated groups of postholes that may have been contemporary with the Iron Age activity. Four surviving postholes (10553, 10556, 10559 and 10562; **Pl. 2.20**) had characteristic brownish red fills. These were overlain by an archaeologically sterile layer of greyish brown sandy clay (10576, not illustrated). Cut through this layer was a large irregular pit (10722; 2.6 m long, 0.8 m wide and 0.45 m deep). A further pit (10517) lay to the east of pit 10722, a rectangular pit (10519) to the south, and a second large, irregular pit (10536), 1.86 m long, 0.7 m wide and 0.31 m deep, to the east. Three stakeholes (10521, 10523 and 10525) lay immediately south of pits 10722 and 10536. All four pits (10517, 10519, 10536 and 10722) and the

Plate 2.19 Ditch 10712 (intervention 10698) from north-east

three stakeholes contained similar distinctive green clay fills, suggesting contemporaneity. Pits 10722 and 10536, possibly robber pits, were both curved in plan, suggesting that they had targeted a circular post-built structure. This structure would have been only around 3 m in diameter. The postholes may be evidence for an ancillary structure such as a porch.

About 7 m to the south-east were three further undated pits (10510, 10512 and 10513; up to 0.85 m in diameter and 0.38 m deep), and two undated stakeholes (10538 and 10540).

Near the centre of the area, a series of eight surviving postholes (10668 not illustrated, 10670 not illustrated, 10672, 10674, 10678, 10680, 10682 and 10692) were a maximum of 0.7 m diameter and 0.34 m deep. They formed an irregular arc, along with pit 10713, 2.5 m long, 0.4 m wide and 0.19 m deep.

To the north-east, a large (7.5 m-wide) boundary (10721; **Fig. 2.31,** section 16) comprised three recut ditches (10624, 10628 and 10630). Cut 10624 (2.52 m wide and 1.22 m deep) contained Iron Age pottery.

Mid-1st- to 2nd-Century AD Early Romano-British

SMR4

Boundary 10721 was partly redefined in the early Romano-British period (10709, 3.9 m wide and over 1.3 m deep), this completely removing the south-east end of its antecedents (**Fig. 2.30**). Ditch 10709 and a perpendicular ditch (10708; **Fig. 2.31**, section 17; also recorded as evaluation context 40011, RPS 2013e), contained both Iron Age and a mere three sherds (7 g) of late 1st-century to 2nd-century Romano-British pottery; it would alternatively be reasonable to consider these intrusive sherds and ditches 10708 and 10709 as Iron Age. Overall, ditches 10708 and 10709 appear to form two conjoined, relatively large enclosures, extending beyond the limit of excavation to the south and east. The westernmost enclosure was approximately 40 m long, with ditch 10708 appearing to respect Iron Age ditch 10712 to the north, the 5 m gap between them possibly reflecting a trackway or droveway with a funnel-shaped opening to the south-west. Evidence of one or two possible small recuts (10572 and 10619) of 10708 were also revealed.

Plate 2.20 Robber pit 10515 and associated postholes from south

SMR3

In the eastern focus, ditch 10050 (**Fig. 2.32**; **Pl. 2.21**) was aligned north-north-west to south-south-east and was up to 9 m wide but only 0.56 m deep. The fills comprised greyish brown mixed clays that were difficult to differentiate from the natural. Pottery recovered is of late 1st- to early 3rd-century date. West of ditch 10050, seven possible features (10004, 10006, 10008, 10010, 10012, 10014 and 10040) may have been geological in origin.

Centre of SPE1

Returning to the central focus (**Fig. 2.33**), a series of enclosures in the centre of the area formed a rough square. Dating evidence for these enclosures suggests they

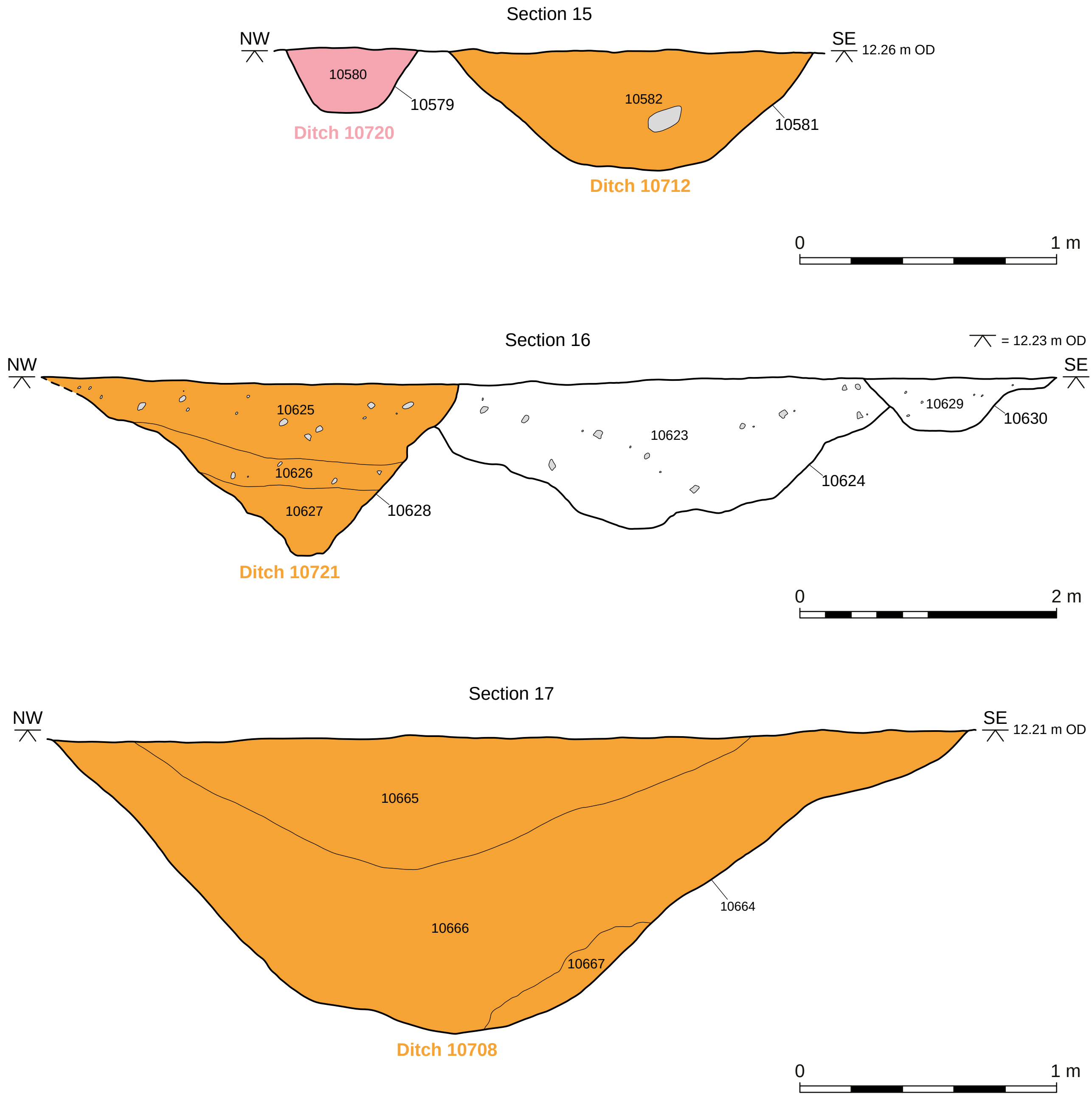


Figure 2.31 Station Road west and east focus sections

were largely late Romano-British, however residual 1st/2nd-century pottery was common, and some features probably of this date survived truncation by later activity. A precursor (1350 and 1447) of late Romano-British ditch 118 contained mid- to late 1st- to 2nd-century pottery.

Pit 1158 was situated outside the west corner of these enclosures and contained mid- to late 1st to 2nd century pottery. Within the central enclosures, there were six further pits that were either of early Romano-British date or undated: 1153, 1175, 1213, 1234 (also recorded as evaluation context 38009; RPS 2013e), 1236 (also recorded as evaluation context 38011) and 1379. (Similar late Romano-British pits 1162, 1164, 1199, 1248 and 1272 in the same area are described separately below.) These pits were generally circular or sub-circular and ranged in diameter from 0.55 m to 2.3 m and up to 0.3 m deep. Pit 1234 contained pottery dating to the mid- or late 1st- to 2nd centuries, pit 1379 pottery from mid- to late 2nd century, and pits 1175 and 1236 broadly Romano-British pottery. Pits 1164 and 1199 might represent a partial continuation to the north-east of the truncated ditch 111 (see Uncertain phasing Romano-British below); pit 1164 was in turn truncated by undated pit 1162.

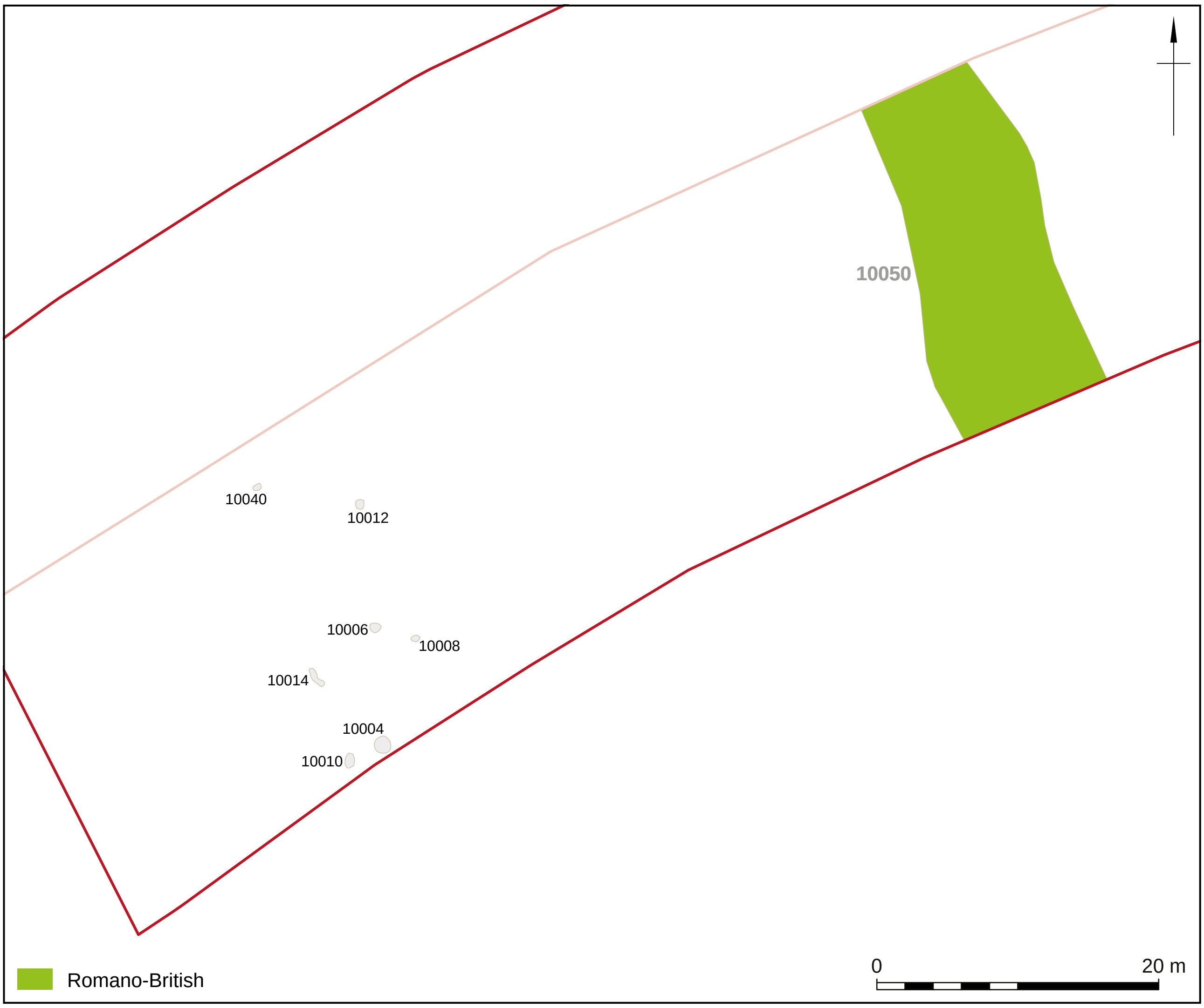


Figure 2.32 Station Road east focus plan

The evaluation pottery report (Irving 2013) records that small, abraded sherds of intrusive Saxon pottery (8th- to mid-9th century) were recovered from pit 1236 (evaluation context 38011). As noted in Chapter 4, the evaluation archive list records an alternative identification (although this is not that chronologically dissimilar: late 9th to mid-11th century). To the south-east of the area of the mitigation excavation, evaluation trench 38 also recorded a 'V'-shaped ditch aligned north-east to south-west (38035). Early to Middle Saxon pottery was reportedly recovered from this ditch (Irving 2013). Given the lack of contemporary material from the mitigation excavation at Station Road, these identifications are of potential interest, but the pottery from trench 38 could not be located among the evaluation archive and could not be checked.

North-east of SPE1

Ditch 38035 (RPS 2013e) was on a similar alignment to early Romano-British ditch 124/125 (**Fig. 2.33**) and may be a continuation of this feature. Ditch 124/125 (**Pl. 2.22**) was aligned north-north-east to south-south-west and was generally a maximum of 2 m wide and 0.36 m deep, although in one intervention (1669) it was 3.48 m wide and 1.04 m deep, where a recut (1675, 0.8 m wide and 0.4 m deep) was also apparent. The latest pottery recovered from ditch 125 dated to the 2nd century AD.

Ditch 124/125 probably defined the west side of a large enclosure extending beyond the limit of excavation, with the north side represented by ditch 1816, from which a single sherd of broadly Romano-British date was recovered. Ditch 1816 was replaced by ditch 131, the latter containing a copper brooch dating from *c.* 50 BC to AD 70. Ditch 131 terminated in the south, possibly forming an entrance with ditch 125, although the

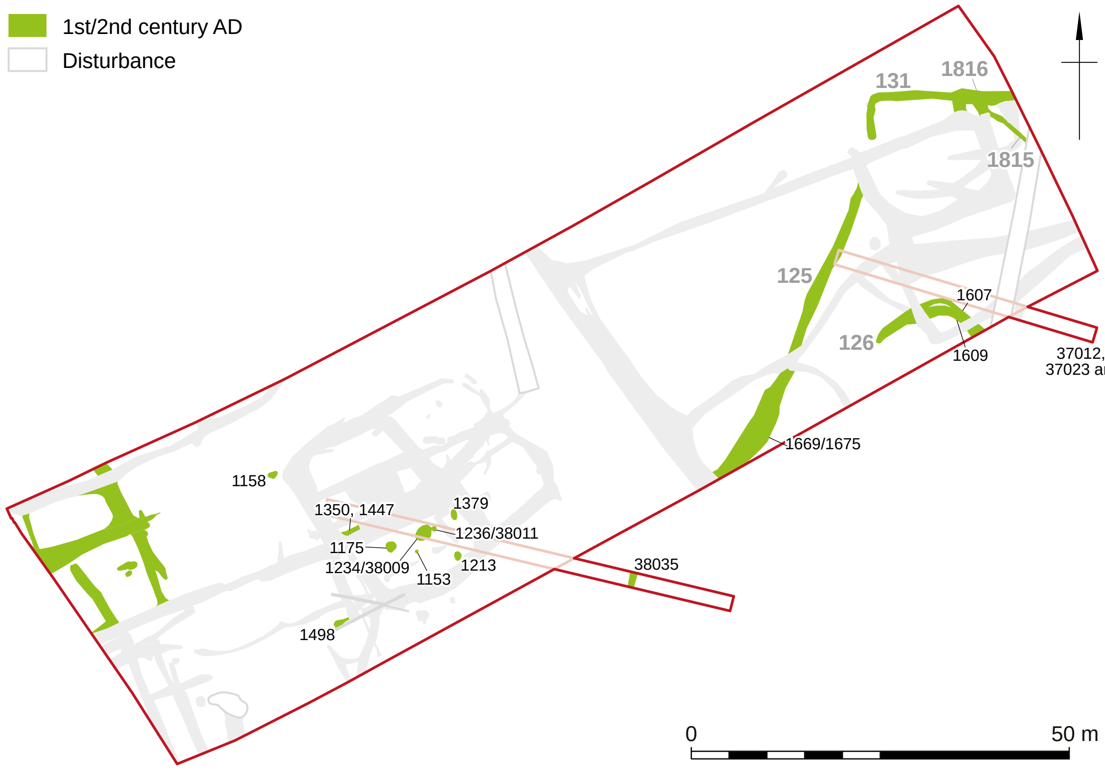


Figure 2.33 Station Road phase plan: early Romano-British central focus

north end of 125 had been truncated. Irregular ditch 1815 cut Iron Age ditch 132 and shared fills with ditch 1816 at the north end of the enclosure.

To the south, curvilinear ditch 126 terminated in the south-west and curved around to the south-east. The ditch had been recut at least once (1607/1609) and yielded pottery including sherds from the late 2nd century or later.

Further east, outside of the area of the set piece excavation, evaluation trench 37 (RPS 2013e) recorded four further intercutting linear features. One (37013) was undated, one (37023) contained pottery of late 1st- to 2nd-century date, and two (37012 and 37026) contained pottery of 2nd-century or later date. A slumped fill may suggest a bank to the north-east of ditch 37012.

Plate 2.21 Ditch 10050 from south (overcut at each end)

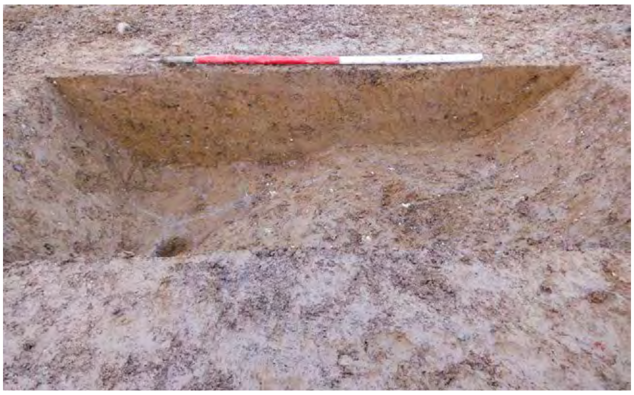


Plate 2.22 Ditch 125 (intervention 1651) from south

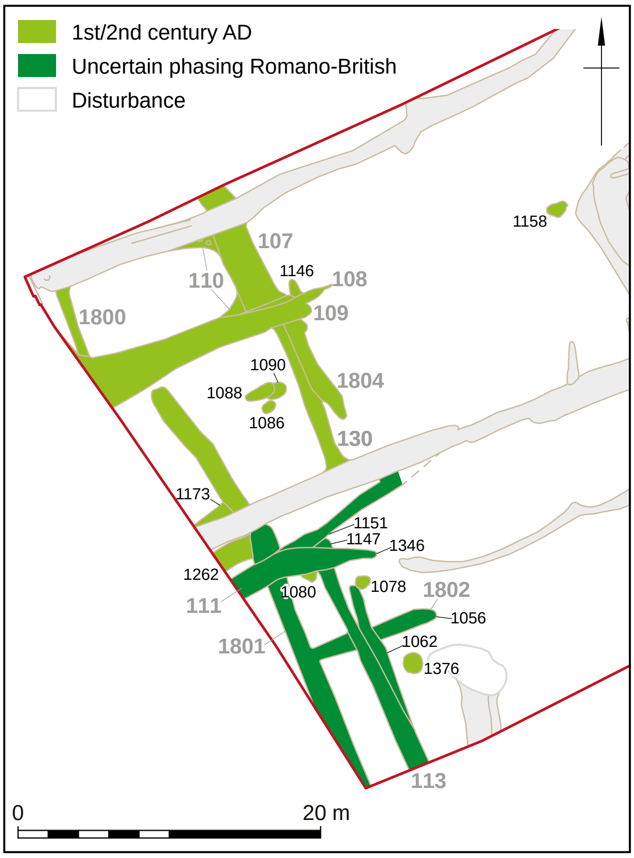


Figure 2.34 Station Road phase plan: early Romano-British detail of south-west part of central focus

South-west of SPE1

The north-west corner of the central focus contained a stratigraphically early group of four roughly rectangular enclosures arranged from north-west to south-east (**Fig. 2.34**). In the north-west these enclosures were of early Romano-British date; however, the chronology of the south-eastern elements is somewhat contradictory (see *Uncertain Phasing Romano-British* below).

The earliest surviving elements of the north-westerly of these enclosures comprised north-west–south-east-aligned ditches 110 and 1800 (**Pl. 2.23**). Though heavily truncated, mid- to late 1st- to 2nd-century pottery was recovered from both. Two pits (1038 and 1040, not illustrated) had been cut through the fills of ditch 110, pit 1040 partially cut by pit 1038. Ditch 110 was replaced by ditch 107, which formed the north-east side of the two north-western enclosures. Ditch 107 had been recut as 1804, which terminated in the south-east, possibly for an entrance (between this and ditch 100). Ditch 1804 contained late 1st- to 2nd-century pottery and 810 g of undiagnostic fired clay. A small pit (1048, not illustrated) had been cut through the fills of ditch 107 and contained pottery that was broadly Romano-British but could not be more closely dated.

Ditches 108 and 109 were aligned north-east to south-west and formed the boundary between the two easternmost enclosures (**Fig. 2.34**), truncating all features they intersected with, including pit 1146. Ditch 109 was replaced by ditch 108, both containing late 1st-century to 2nd-century pottery. A small pit (1144, not illustrated) truncated these features. Ditch 1173/1262 marked the southern extent of the enclosures and contained mid- to late 1st- to 2nd-century pottery.

Pits 1078, 1080, 1086, 1088, 1090 and 1376 (**Pl. 2.24**) were located within these enclosures. Pottery from pits 1080 and 1086 dated from the mid- to late 1st- to 2nd century; the other pits are undated but probably associated with the enclosures.

Uncertain Phasing Romano-British

South-west of SPE1

It is probable that the continuation of these enclosures to the south-east (see **Fig. 2.35**) also had early Romano-British origins. The small amount of pottery recovered from this area was exclusively from the 1st and 2nd centuries AD. However, radiocarbon dating (SUERC-95454) of disarticulated human bone from ditch 1801 provided a date of AD 240–420, suggesting that the surviving features in this area may not have been infilled until the late Romano-British period. If this is the case, it may be that the pottery is residual. Residual early Romano-British pottery is common in late Romano-British features elsewhere at Station Road and from the scheme as a whole. The human bone was either intrusive or stratigraphic relationships were incompletely recorded. Pottery from these features has been included within the late Romano-British phase in the specialist reports in Chapter 4.

Plate 2.23 Ditch 110 (intervention 1042, left) truncated by ditch 106 (intervention 1033, right) from north-east

The south-west side of the westernmost enclosures was delineated by ditch 1801 (**Fig. 2.34**), which had a stepped profile and was recut. Alongside the radiocarbon-dated human bone, the latest closely dateable pottery from ditch 1801 has been assigned to the 2nd century AD. A ditch (1802) with a bowl-shaped east terminal (1056) was contemporary and extended to the east of ditch 1801.

Ditches 113 and 1062 cut across ditch 1802. Ditch 1062 was the earlier of the two, containing mid- to late 1st- to 2nd-century pottery. It terminated to the north, perhaps forming an entrance associated with ditch 111. Ditch 113 replaced ditch 1062 and contained pottery of a similar date, but extended further to the north and did not include an opening.

Plate 2.24 Pit 1376 cut by land drain from north-east

To the north, ditch 1151 was aligned west-south-west to east-north-east and also cut ditch 1801. It was narrow, 0.65 m wide and 0.46 m deep, and steep-sided, almost 'V'-shaped, distinguishing it from other ditches in the area. Pottery of 2nd-century date was recovered.

Ditch 111 cut ditch 1151 at the west end of the site (**Fig. 2.34**) and was irregular in plan, meandering roughly west-south-west to east-south-east over a distance of at least 35 m. Excavation revealed that what seemed to be a terminal (1346) for an entranceway was in fact a plough truncation. At its widest, ditch 111 was 2 m wide and 0.35 m deep, though it was typically smaller (**Pl. 2.25**). Early Romano-British pottery was recovered, the latest being 2nd century in date.

A burnt deposit (1147; **Fig. 2.34**) overlay ditches 111 and 1151 and was probably broadly contemporary with the infilling of these ditches. An environmental sample (Chapter 7) indicates that this may have been the remains of a dismantled crop-drying kiln of Romano-British date, although no kiln structure was identified.

Plate 2.25 Curvilinear feature 111 (intervention 1348) from south-west

3rd-, 4th- and Early 5th-Century AD Late Romano-British

South-west of SPE1

At the north-west end of the enclosures described above, in the south-west of SPE1, was ditch 106 (**Fig. 2.35**), continuing north-east beyond the earlier enclosures. Pottery of 3rd/4th-century date was recovered alongside a fragment of sheet lead

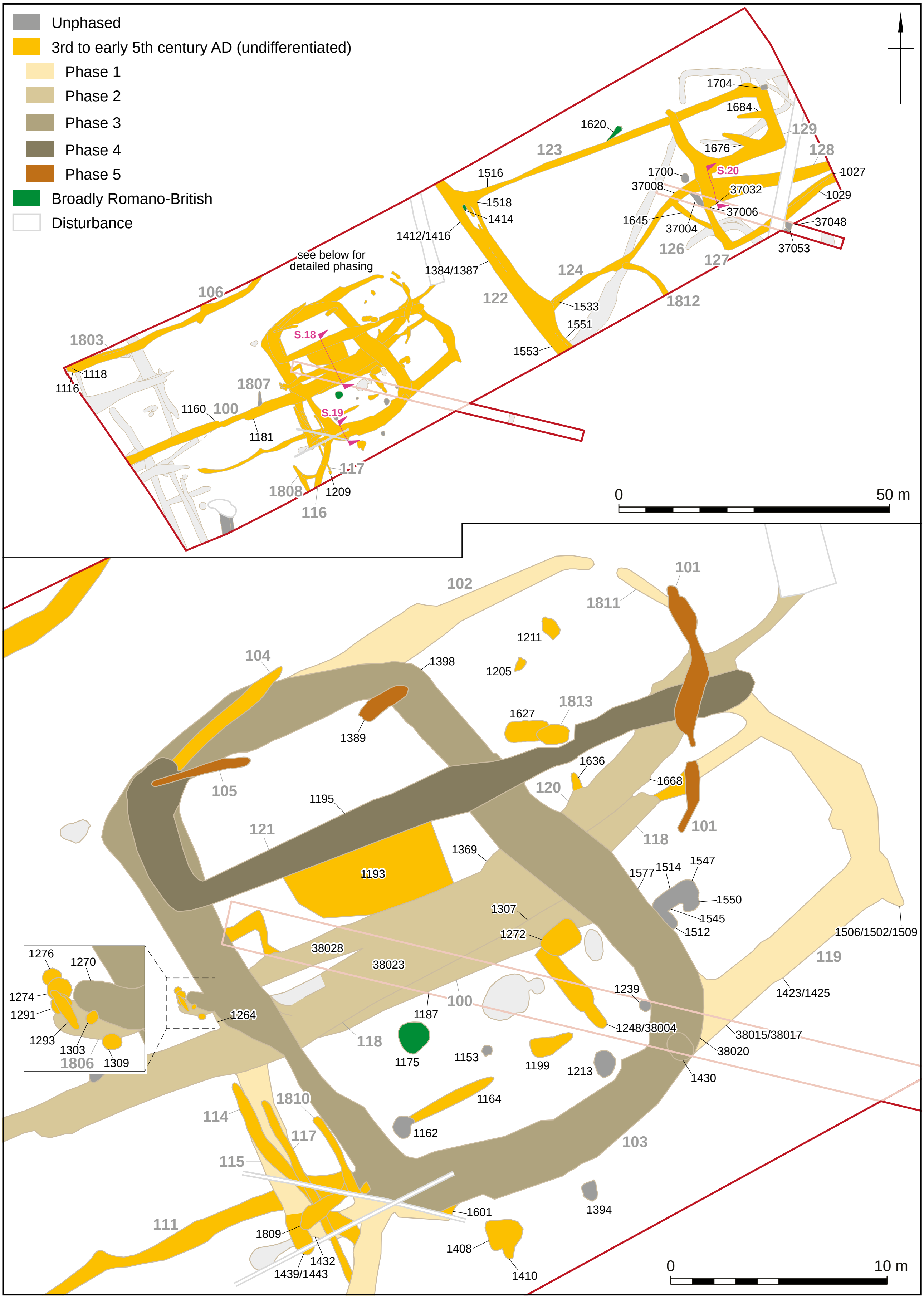


Figure 2.35 Station Road phase plan: late Romano-British central focus

Plate 2.26 Ditch 100 (interventions 1253, 1070, 1138 and 1099) from south-west

and human bone (radiocarbon dating of this failed; GU56056). The south-west end of ditch 106 had a bowl-shaped terminal (1116) with a small depression in the base, possibly a posthole (1118). The boundary was partially recut as a small gully (1803), which also contained probable 3rd/4th-century pottery.

Centre of SPE1 phase 1

The approximately square arrangement of enclosures in the centre of the site mainly dated from the 3rd to early 5th centuries AD (see previous sections for a few earlier features in this area). These features have been divided into five phases.

In the southern corner of these enclosures was a complex sequence of features. Ditch 115 delineated a south-western boundary and truncated ditch 111 and feature 1498 (both described in previous sections). Ditch 115 comprised at least five iterations, the earliest three (1432/1439/1443) containing a mixture of residual 1st/2nd-century pottery and 3rd/4th-century pottery. The latest two iterations of ditch 115 (114/117) were smaller and yielded only 3rd/4th-century pottery. Gully 117 continued south-east beyond the enclosures, where it was truncated by pit 1209, containing broadly Romano-British pottery. A pit (1434, not shown in plan) was also cut through ditch 115 and contained pottery of 3rd century or later date. This pit and gullies 114 and 117 were truncated by ditch 1809 (also containing 3rd/4th-century pottery), forming part of a south-eastern boundary. A perpendicular gully (1810) truncated ditch 1809 but did not contain pottery.

South of these features, north-west–south-east-aligned gully 1808 contained broadly Romano-British pottery and was truncated by a spur of ditch 116. Ditch 116 also truncated features including gully 1810, and was aligned roughly north to south, diagonal to the enclosures, continuing to the south beyond them. It contained mainly residual 1st/2nd-century pottery, but also some 3rd/4th-century sherds.

The northern corner of these central enclosures was defined by ditches 1811 (north-east) and 102 (north-west), containing residual 2nd-century pottery. There was a 1 m gap in the north corner, which was probably caused by plough truncation rather than representing an entrance.

In the eastern corner of these enclosures, the north-east and south-east boundaries were defined by ditch 119. The mitigation excavation recovered residual pottery from

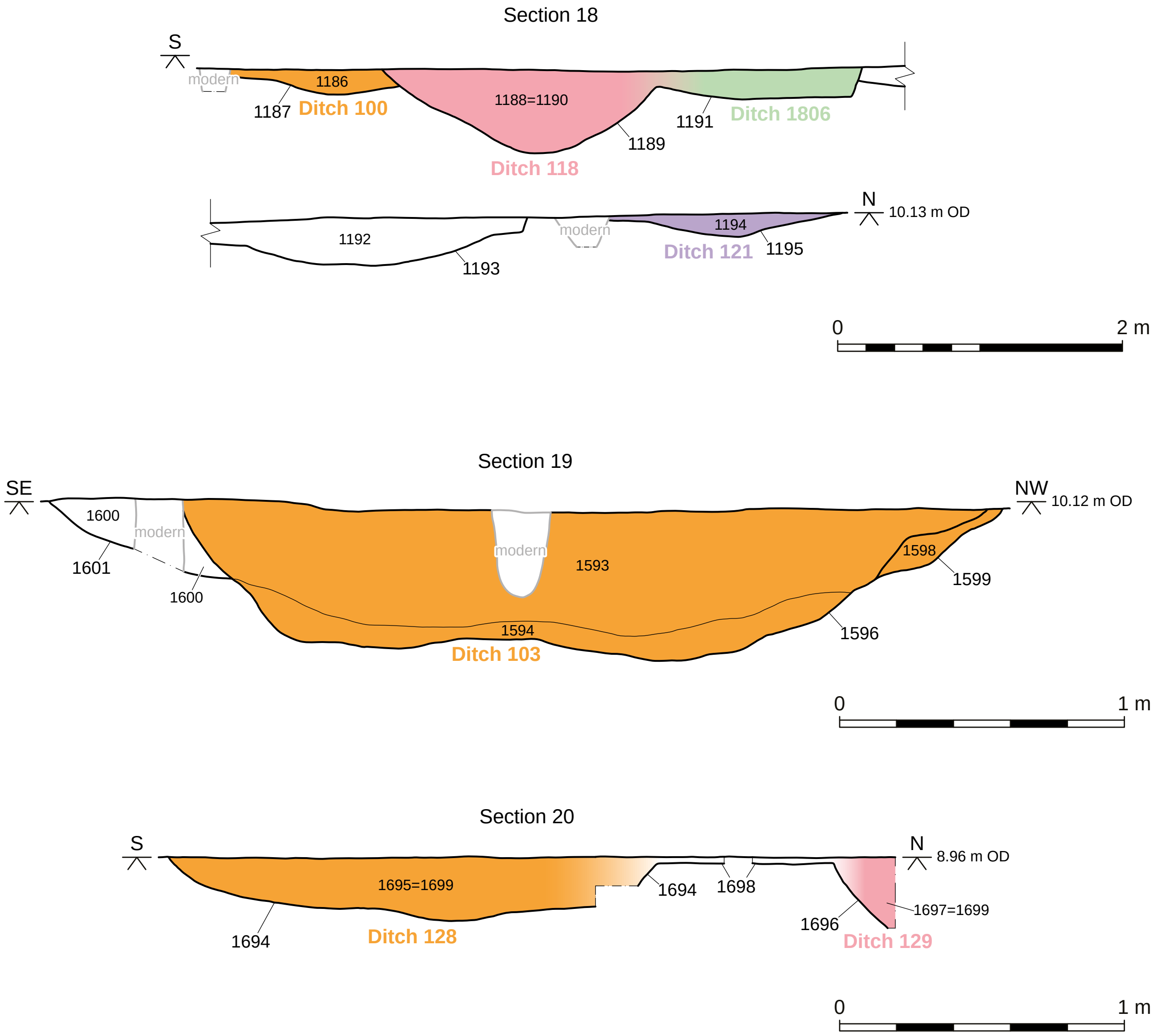


Figure 2.36 Station Road central focus sections

the late 2nd century or later, but mid- to late 3rd-century pottery was recovered during the evaluation (RPS 2013e, feature 38015=38017). There was a possible recut (1423/1425) containing broadly Romano-British pottery.

Centre of SPE1 phase 2

A major boundary ditch (100, 118, 120 and 1806) extended north-east to south-west across both the central and south-western parts of the central focus of the site.

Ditch 100 (**Figs 2.35** and **2.36**; **Pl. 2.26**) truncated ditch 115 among other features. In some places there was evidence of multiple cuts. Some redeposited human bone was recovered, and the varied pottery assemblage included 4th-century material.

Ditch 100 was replaced by ditches 118 and 120/1806 (**Fig. 2.36**, section 18), each of which contained Romano-British pottery of mid-3rd century or later date. Ditch 118 was recorded in evaluation trench 38 as context 38023, and ditch 1806 as 38028 (RPS 2013e). Ditch 120/1806 had been recut at least twice. A small spur contemporary with ditch 120/1806 extended towards the north (1636). Ditch 120/1806 continued north-west beyond the area of the enclosures where it was truncated by modern disturbance.

A heavily truncated ditch (1264) defined the south-west side of the central enclosures. It had continuous fills with ditch 100 and contained 3rd-century pottery.

Plate 2.27 Ditch 103 (intervention 1596/1599) from south-west

Centre of SPE1 phase 3

A sub-rectangular enclosure (103; **Figs 2.35** and **2.36**, section 19; **Pl. 2.27**; evaluation context 38020, RPS 2013e) was imposed on the earlier enclosure system. Pottery from the fills of ditch 103 spanned a wide chronological range and included some 4th-century sherds alongside residual earlier material.

A contemporary spur (1270) extended to the south-west of ditch 103, recutting part of the terminal of phase 2 ditch 1806, and contained residual 2nd-century pottery. A series of six, mainly circular, undated pits representing at least three phases of activity (1274, 1276, 1291, 1293, 1303 and 1309) cut the ditch spur and earlier terminal.

Subsequent to the infilling of ditch 103, gully 104 (0.5 m wide and 0.25 m deep), containing residual pottery and a whetstone, redefined part of the north-west boundary of the enclosure.

Plate 2.28 Ditch 122 (intervention 1387) and recut 1384 from north-west

Centre of SPE1 phase 4

Ditch 121 (**Figs 2.35** and **2.36**, section 18) was dug across the earlier enclosure ditches, with a large bowl-shaped terminal and a 90° turn. A single sherd of mortarium, dated to the late 3rd to 4th century, came from the fill.

Centre of SPE1 phase 5

Ditch 121 was cut by gully 105, which was only 5 m long. This is the stratigraphically latest feature in the area. It contained very late Romano-British pottery from the late 4th to early 5th centuries. The gully might originally have continued as elongated pit 1389, which contained pottery of broad Romano-British date.

In the north-east of the central enclosures, shallow truncated ditch 101 (up to 1.9 m wide and 0.24 m deep) was the stratigraphically latest feature in this area, also cutting ditch 121. Residual pottery of 3rd-century date was recovered alongside broadly Romano-British material.

Centre of SPE1 discrete features

As well as some earlier examples described above, a range of pits were present in and around the central enclosures, several with evidence for recutting.

Two or three undated pits (1502, 1506 and 1509) lay at the corner of enclosure ditch 119. Pit 1502 cut pit 1506; both in turn were cut by pit 1509 and ditch 119, though pit 1509 had no direct relationship with ditch 119.

A short length of gully (1248) yielded 3rd/4th-century pottery (it had also been recorded in evaluation trench 38 as context 38004; RPS 2013e). Both gully 1248 and ditch 100 were cut by pit 1272 containing residual 2nd-century pottery.

A sequence of intercutting sub-circular pits (1512, 1514, 1545, 1547 and 1550) represented at least three phases of activity. Pit 1512 was cut by pit 1545, pit 1547 was cut by pit 1550, and both pits 1545 and 1550 were cut by larger pit 1514. The pits were subsequently truncated by ditch 103. Pottery of broad Romano-British date was recovered from pit 1514.

In the south, pit 1601 (containing broadly Romano-British pottery) was cut by ditch 103 (**Fig. 2.36**, section 19), while to the east, pit 1430 truncated the fills of ditch 103.

Plate 2.29 Hearth 1704 cut through fills of ditch 129 (intervention 1702) from south

Four undated sub-circular or oval pits (1205, 1211, 1627 and 1813) lay in the north of the enclosures, pit 1813 cutting pit 1627.

South of the enclosures were pits 1394, 1408 and 1410, with 3rd- to 4th-century pottery recovered from pit 1408, which was truncated by pit 1410.

North-east of SPE1

Aligned north-west to south-east, ditch 122 was a major boundary crossing the excavation, perhaps dividing zones of different activities (**Fig. 2.35**; **Pl. 2.28**). The main cut of ditch 122 was up to 3.04 m wide and 1.1 m deep. Elsewhere, ditch 122 had one or possibly more recuts (1384/1387 and 1551/1553) and was up to 1.2 m wide and 0.72 m deep. At the north end, near the junction with contemporary ditch 123, ditch 122 comprised three parallel features: 1412, 1416 and 1518, 0.7 m, 0.55 m and 1.14 m wide respectively and up to 0.2 m deep. Here it cut earlier feature 1414, 0.3 m deep, containing pottery of broad Romano-British date.

The fills of ditch 123 were continuous with those of ditch 122. Pottery of 3rd-century or later date was recovered from ditch 122, while the same fills within ditch 123 yielded pottery with a range of dates from the late 4th to early 5th century.

Plate 2.30 Ditch 128 (intervention 1641) from north-east

Ditch 123 was aligned east-north-east to west-south-west. It truncated elongated pit or ditch terminal 1620 that contained pottery of broadly Romano-British date. To the east-north-east, ditch 123 defined the north-west side of an enclosure. Ditches defining the remaining sides of the enclosure were grouped as ditch 129, which contained 3rd/4th-century pottery. Two spurs (1676 and 1684) contemporary with ditch 129 extended into the centre of the enclosure, with residual mid- to late 1st-century to early 2nd-century pottery recovered from ditch 1684.

An undated but stratigraphically late hearth (1704; **Pl. 2.29**) truncated the fills of ditch 129. The hearth was 1.3 m in diameter and 0.29 m deep, with a concave, bowl-shaped profile, and contained a mottled silty clay fill in a variety of colours (brown, red, orange, black and grey); the surrounding natural showed no evidence of scorching. A single sherd of 1st/2nd-century pottery was residual. The fill was somewhat laminar and probably represents ash and fired clay waste from multiple episodes of *in situ* burning. Charcoal had been raked out of the hearth towards the east, into a hollow in the top of the largely infilled early Romano-British ditch 1815.

Ditch 129 shared fills with shallow feature 1698 (**Fig. 2.36**, section 20), the latter also sharing fills with enclosure ditch 128. Feature 1698 was 3 m long, 1 m wide but only 0.04 m deep and contained late-3rd- to 4th-century pottery.

Enclosure ditch 128, up to 5 m wide and 0.68 m deep (**Pl. 2.30**; also recorded in evaluation trench 37 as 37032; RPS 2013e), cut early Romano-British ditches 124 and 1812. Along with another ditch (127; evaluation context 37043), ditch 128 appeared to form a funnel-shaped enclosure, with ditch 127 represented by three intercutting ditches (RPS 2013e, contexts 37004, 37045 and 37006=37034), whereas the mitigation recorded two cuts (1027 and 1029). Late 3rd-century pottery was recovered from ditches 127 and 128 in both phases of work, in addition to a fragment of human skull from the evaluation. The evaluation (RPS 2013e) also recorded two intercutting pits (37048 and 37053) adjacent to the funnel-shaped enclosure.

Extending west from the putative funnel-shaped enclosure, and east of boundary ditch 122, 45 m to the south of ditch 123, were ditches 124 (recorded in the evaluation as 37008; RPS 2013e) and 1645. Features 124, 127, 128 and 1645 shared fills. Only residual early to mid-2nd century pottery was recovered from ditch 124 during the mitigation excavation; however, the evaluation recovered mid- to late-3rd-century material. A recut of ditch 124 (1533) appeared to terminate in the south-west, respecting ditch 122, while a curvilinear ditch (1812) extending to the south contained pottery dating to the mid- to late 3rd century or later; this terminated to the west, at the intersection of earlier ditches 124 and 125.

A large (2 m by 1.6 m and 0.18 m deep), undated pit (1700) lay adjacent to the north-east end of ditch 124.

Hornsea Project Two

Hornsea Project Two recorded the continuation of the SPE1 central part of the Station Road site to the north (Allen Archaeology 2018a; 2022; Network Archaeology 2022). The provisional results correlate well with the results of Hornsea Project One, comprising dense multi-phase Romano-British enclosure ditches as well as a possible watering hole, animal burial and pits. Many of the ditches recorded from Hornsea Project One (eg, 106, 107, 122, 131, etc.) appear to continue into the Hornsea Project Two excavation area with the same general pattern and character. Network Archaeology's results (2022, 53) included an inhumation. The chronology of Allen Archaeology's results matched those from Hornsea Project One (Iron Age to early 5th century AD), but Network Archaeology (2022, 54, 63 and 68) did not identify anything later than 3rd century in date.

Humberston Road Iron Age and Romano-British Settlement

Introduction

The division between the Middle Marsh and Outmarsh runs through the parish of Tetney in the district of East Lindsey, Lincolnshire. The Humberston Road site (**Fig. 2.37**) lay on the boundary of the glacial till and tidal flats superficial geological deposits (British Geological Survey 2020), that is, the approximate edge of the Outmarsh and, therefore, on the former littoral fringe. The site was located 550 m to the north-east of the village of Tetney at NGR 531700 402150, on arable farmland spread across two fields bounded by straight modern drainage channels. The A1031 Humberston Road lies 400 m to the west. The site is low-lying at between 3.19 m and 3.93 m OD.

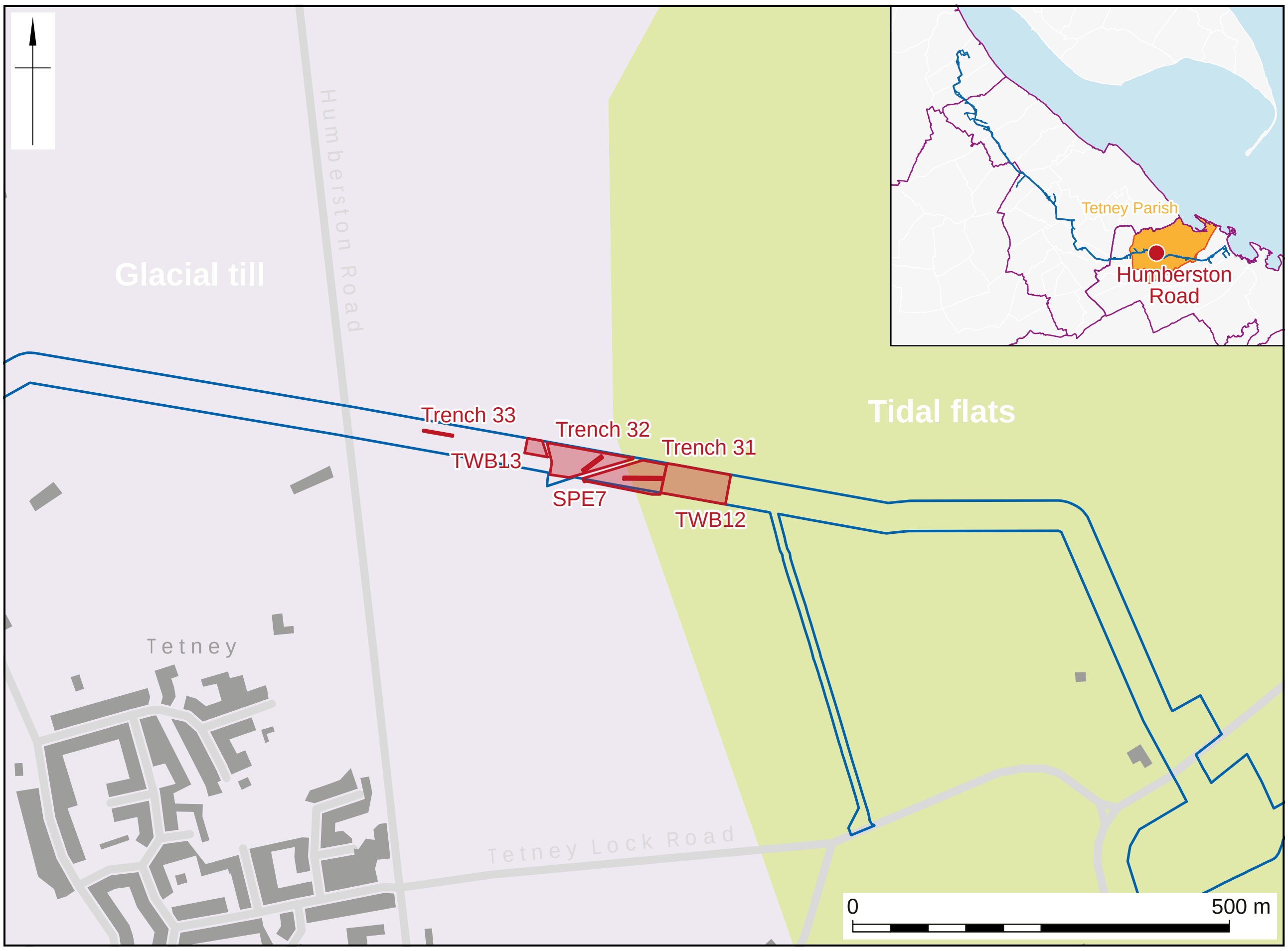


Figure 2.37 Humberston Road location

The geophysical survey recorded a complex of ditched enclosures with internal divisions and potential pits, as well as residual traces of ridge and furrow cultivation (RPS 2013c). Trial trenches 31 and 32 (Wessex Archaeology 2015a) revealed a series of ditches containing Iron Age and Romano-British pottery, animal bone, ceramic building material, worked stone, shell and fuel ash slag, representing multiple phases of settlement enclosures. Trench 33 (Wessex Archaeology 2015a) was situated beyond the focus of archaeological activity and was blank. On the strength of these results, SPE7 was undertaken. The excavation area was later extended to the east as TWB12 and to the west as TWB13, although it proved difficult to identify the continuation of previously recorded features.

Soil Sequence and Natural Deposits

Glacial till present in the centre and west of the site comprised orange sandy clay with grey veins, chalk flecks and stones (7002). To the east, the glacial till was different (greyish brown silty clay with chalk flecks and stones 120152) and was overlain by a layer of tidal flats deposits comprising grey and brown sandy clay or sandy loam with chalk and stones (7022, 7307, 7309 and 120151). These deposits sealed Iron Age and Romano-British features dating to the 3rd century AD at the latest, whereas features perhaps dating from the late 3rd to 4th centuries (as well as later plough furrows) were cut through them, suggesting that the tidal flats deposits were laid down around the end of the 3rd century AD. Redeposited pottery of 2nd- and 3rd-century date had become incorporated into the tidal flats deposits.

Subsoil was absent across the site, suggesting that recent ploughing may have impacted archaeological preservation, particularly where tidal flats deposits were also absent. The ploughsoil consisted of an average of 0.44 m of dark brownish grey sandy clay or loam (7001, 120150).

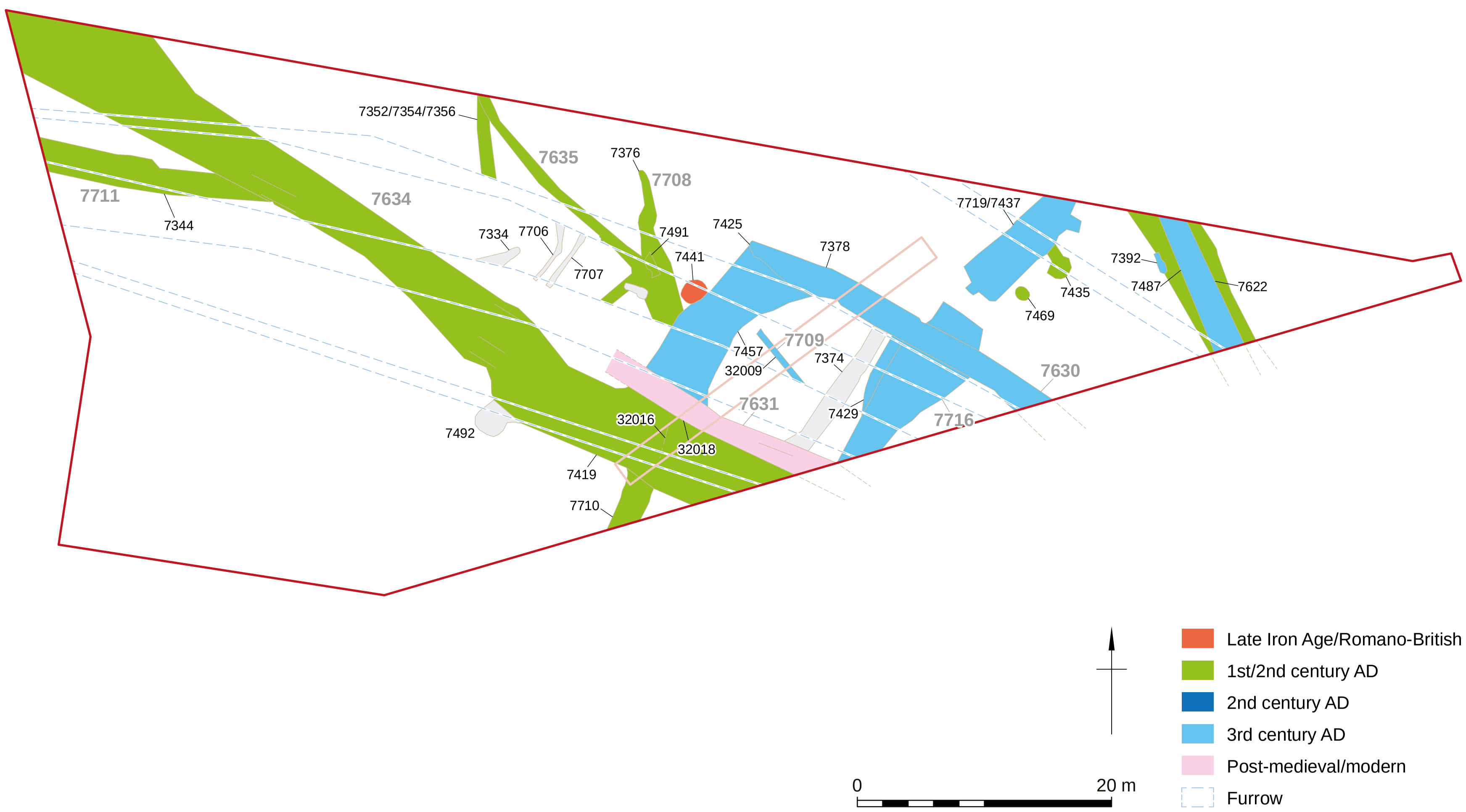


Figure 2.38 Humberston Road plan north-west

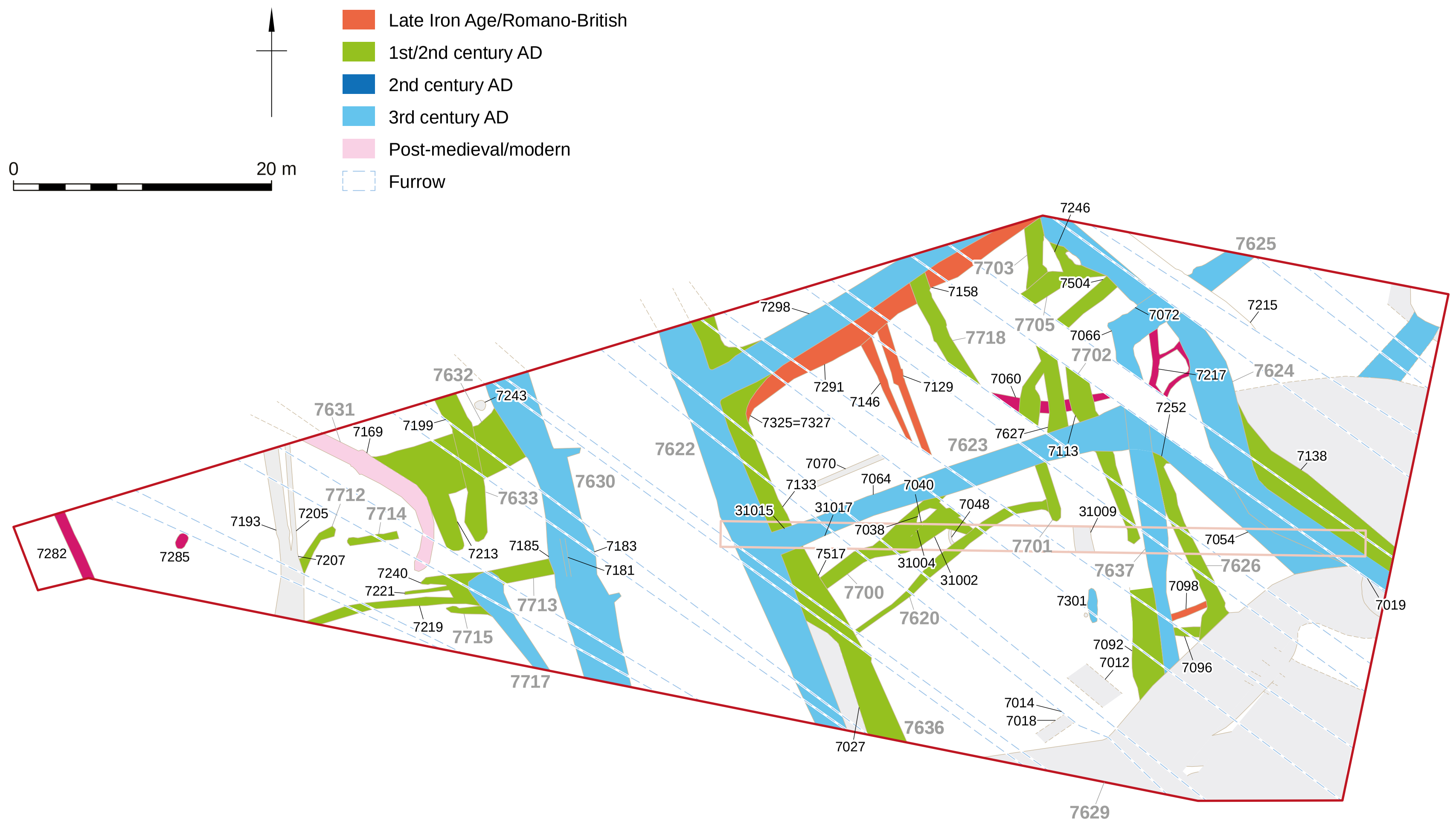


Figure 2.39 Humberston Road plan south-east

Plate 2.31 Well 7441 from north-east

Iron Age and Iron Age to Early Romano-British

Although a moderate amount of residual Iron Age pottery was recovered, it has been difficult to definitively identify a clear phase of Iron Age features (**Figs 2.38–2.40**).

An unlined circular well (7441; **Fig. 2.41,** section 21 and **Pl. 2.31**) was 2.8 m in diameter with vertical sides. It was excavated to a maximum safe depth of 1.2 m below the upper archaeological horizon without reaching the base. The lowest fill observed (7442) comprised grey silty clay with orange patches and animal bone and may represent accumulation in the open well. Fill 7443, a dark brownish grey silty clay with gravel, may be a deliberate backfill. Two similar organic layers (7444 and 7445) followed, each comprising greenish grey silty clay with gravel. The green hue might indicate that organic material was a component in their formation, introduced during waste disposal into the (former) well. Layer 7445 contained pottery of Late Iron Age to early Romano-British date. Next came backfill 7446, a dark brown silty clay with gravel and charcoal. The subsequent fill (7447) was moderately well-sorted, suggesting water-borne deposition, perhaps a result of flooding, and comprised light bluish grey silty clay with gravel and a concentration of charcoal at the base. The next deposit (7448) may have been a soil forming within the former well and comprised mid-brownish grey silty clay with rare gravel. This was overlain by 7449, perhaps again representing water-borne silting, comprising mid-reddish yellow silty clay with gravel. Finally, the upper fill (7450) consisted of dark brown silty clay with gravel, shell, animal bone and pottery of Late Iron Age to early Romano-British date.

Plate 2.32 Ditch 7626 (intervention 7364) from south-east

Two minor features in the west of the southern field (ditch 7282 and pit 7285; **Fig. 2.39**) contained pottery of possible Iron Age date, although the sherds were not strongly chronologically distinctive and also residuality cannot be ruled out.

Further east, parallel truncated ditches 7129 and 7146 were stratigraphically early but contained no dateable artefacts. They were cut by ditch 7291 (**Figs 2.39–2.41**), which had an irregular 'V'-shaped profile and had been recut three times (7293, 7295 and 7298). The stratigraphically intermediate recuts 7293 and 7295 contained pottery of Late Iron Age or Romano-British date (recut 7298 was Romano-British and is described separately below), as did 7158 and 7325=7327.

To the south-east, truncated minor ditch 7098 also contained Late Iron Age to Romano-British pottery. A second almost parallel truncated ditch (7096) contained mid-1st- to mid-2nd-century pottery, and the similarity of the two features suggests the later chronology for both.

Truncated, stratigraphically early but undated curvilinear gullies including 7060 and 7217 were situated in the centre of the site just beyond the boundary of the tidal flats deposits and probably represent drainage features.

Mid-1st- to 2nd-Century AD Early Romano-British

A system of enclosures continued to develop in the early Romano-British period, to the north-east and south-west of a probable trackway approximately 10 m wide (**Figs 2.42, 2.38, 2.39**).

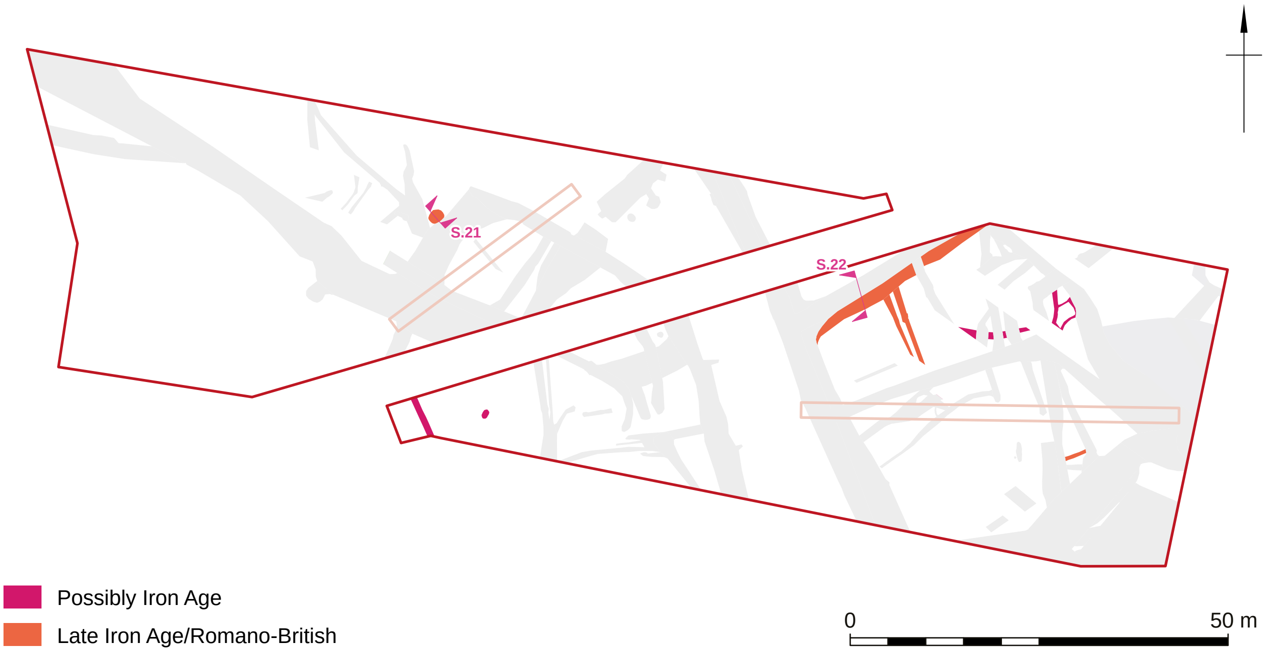


Figure 2.40 Humberston Road phase plan: Iron Age

On the north-east side of the trackway (see below), three or four ditches (7070, 7620, and 7700, which branched into 7038 and 7040; **Fig. 2.39**) were orientated north-east to south-west broadly parallel to ditch 7291 described above. The maximum width of these ditches was 0.9 m and the maximum depth 0.42 m. The south-west end of ditch 7700 truncated ditch 7517, which was an early iteration of ditch 7636, which in turn cut 7700. The trial trench evaluation (Wessex Archaeology 2015a, contexts 31002/31004) recovered mid- to late 1st- to 2nd-century pottery from ditch 7700 alongside residual Iron Age material. The set piece excavation recovered 1st/2nd-century pottery from ditch 7620. Ditch 7070 did not yield any dating evidence. Ditch 7040 and ditch 7620 also truncated a further small north–south-aligned undated gully (7048).

A series of north-west–south-east-aligned ditches (7092, 7138, 7626, 7627, 7701, 7702, 7703 and 7718) to the east of those described above may have been roughly contemporary with ditches 7138 and 7626 (**Pl. 2.32**), containing small amounts of mid-1st- to 2nd-century pottery. Ditch 7626 was a recut of an earlier ditch (7704, not illustrated), which also contained 2nd-century pottery. The middle fill (7142) of ditch 7701 comprised a dump of oyster shells.

Two undated parallel ditches (7504 and 7705) cut across the line of ditches 7627, 7702 and 7703 from north-east to south-west. Ditch 7705 shared contemporary fills with a heavily truncated 'V'-shaped north-west to south-east aligned ditch (7246) that contained mid- to late-2nd-century pottery.

In the west of the site, ditch 7634 was the largest and most significant feature (**Figs 2.38–40**). It was aligned west-north-west to east-south-east and was at least 60 m long, terminating within an unexcavated area to the south-east, but continuing beyond the limit of excavation to the north-west. The maximum width was 4.4 m and the maximum depth at least 1.2 m and it was made up of a series of recuts (**Fig. 2.41**, section 23). Pottery recovered from all cuts originated in the 1st to 2nd centuries AD. A lens of oyster shells (7417, not illustrated) was present and a human tooth was recovered from another fill. Any continuation of ditch 7634 to the south-east beyond an unexcavated modern field boundary was not identified (**Fig. 2.39**).

Three features 7492, 7710 and 7711, were truncated by ditch 7634. Ditch 7710, 2.2 m wide and 0.7 m deep, may have continued to the north-east of 7634, as ditch 7451, recut as 7453 (not illustrated), later replaced as 7457. The fills of ditches 7710 and 7453 contained 1st- to 2nd-century pottery. Feature 7492 was undated and may have been

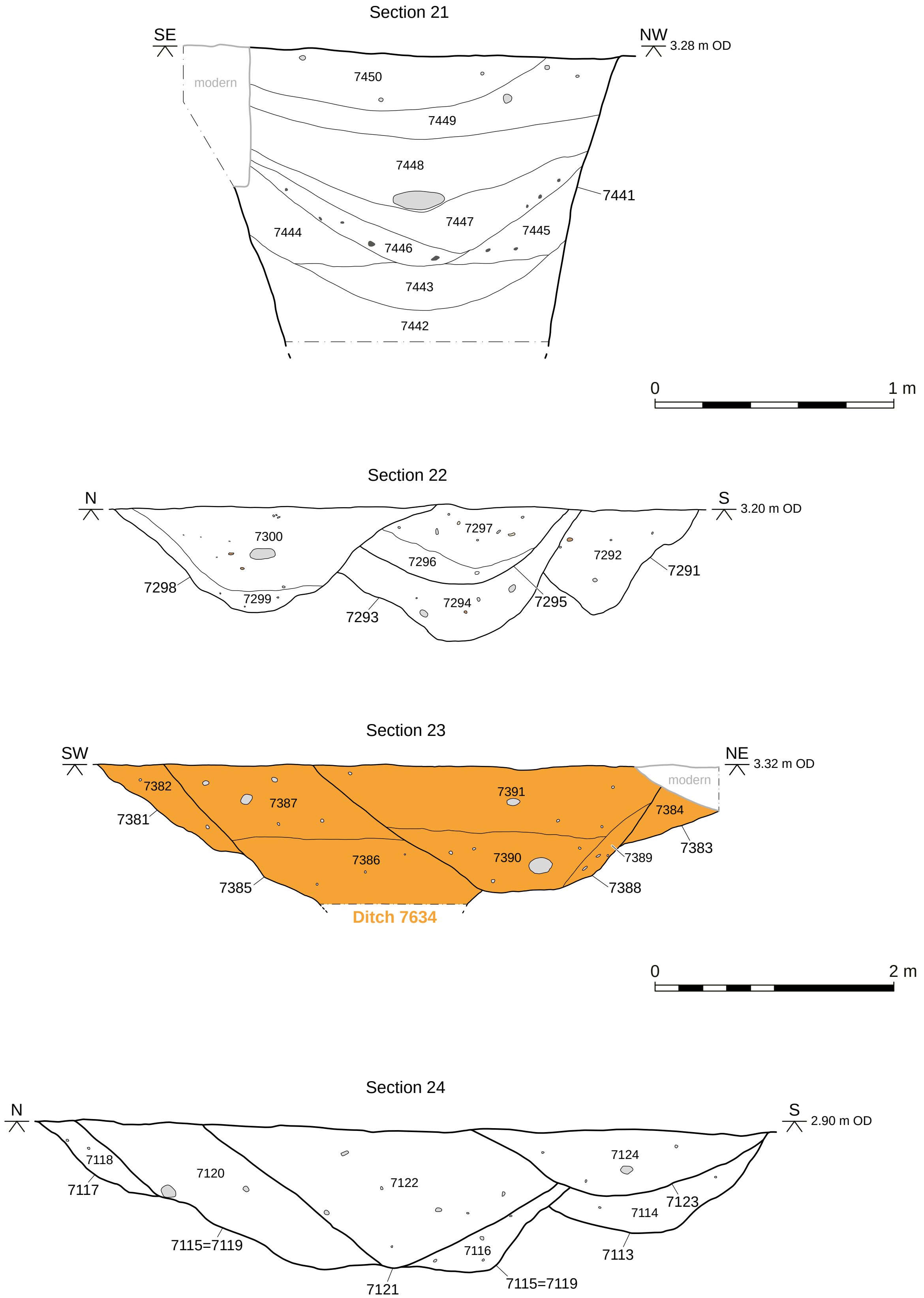


Figure 2.41 Humberston Road sections

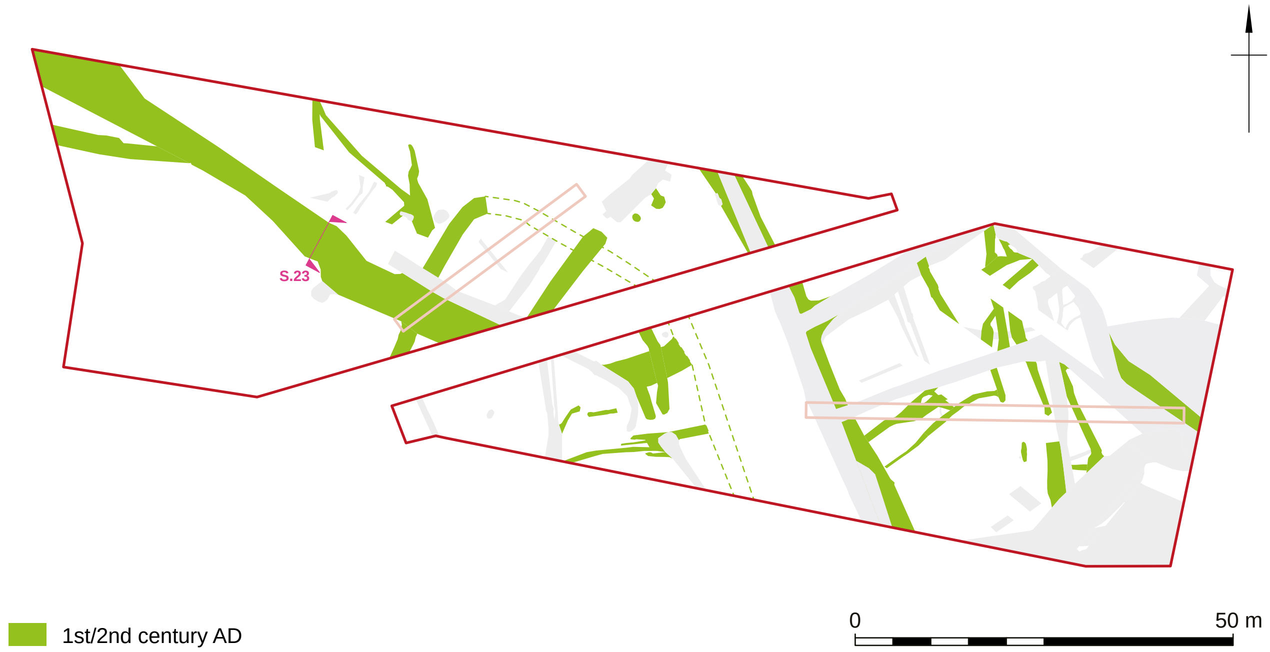


Figure 2.42 Humberston Road phase plan: early Romano-British

a pit or ditch terminal. Further to the west, ditch 7711 contained 1st- to 2nd-century pottery and may have been an early branch of ditch 7634. Although the ditch was of a substantial size (up to 2.5 m wide and 0.9 m deep), the TWB13 excavation failed to identify its continuation to the west.

To the north of ditch 7634, ditches 7352, 7354 and 7356 were all aligned north to south. The latest of these (7356) contained 2nd-century pottery. Ditch 7635 cut these ditches, was aligned north-west to south-east and contained pottery broadly dated to the Romano-British period. Ditch 7708 to the east contained 2nd-century pottery and meandered from its northern terminal (7376) south to merge with ditch 7635. A pit with burnt fills (7491) cut ditch 7635, and was a maximum of 2.6 m long, 0.6 m wide and 0.12 m deep. This contained an archaeobotanical assemblage suggesting that it was crop-drying debris of Romano-British date (see Chapter 7). The basal fill (7490) was a 0.03 m thick layer of charcoal and black silty clay and the upper fill (7489) a bright red, heat-affected silty clay, perhaps derived from an associated structure.

In the same area was a cluster of undated and irregularly arranged small ditches. Three gullies, 7334, 7706 and 7707, maximum width 1.04 m and depth 0.21 m, were aligned broadly north-east to south-west.

Ditch 7632 (**Fig. 2.39**) may have been contemporary with ditch 7634 and was aligned north-east to south-west. Ditch 7632 was 5.4 m wide, and although a full profile was not obtained, it appeared to be no deeper than 0.41 m. It contained 2nd-century or later pottery. A short contemporary spur (7213) was present, 0.8 m wide and 0.21 m deep.

Ditch 7632 was cut by ditch 7633, up to 1.7 m wide and 0.41 m deep and aligned north to south. It terminated in line with the terminal of ditch spur 7213. A nearby undated pit (7243) may have been contemporary with these ditches or with later activity in this vicinity.

To the south of ditch 7632 were a series of small (up to 0.7 m wide and 0.22 m deep) linear features, most aligned approximately west to east, containing 1st- to 2nd-century pottery, that may represent Romano-British plough scars.

In the centre of the site was a trackway aligned north-north-west to south-south-east (**Figs 2.38–39** and **2.42**). Surviving dating evidence is primarily from the 3rd century AD. However, in the mid-1st to 2nd century, the east side of the trackway was defined

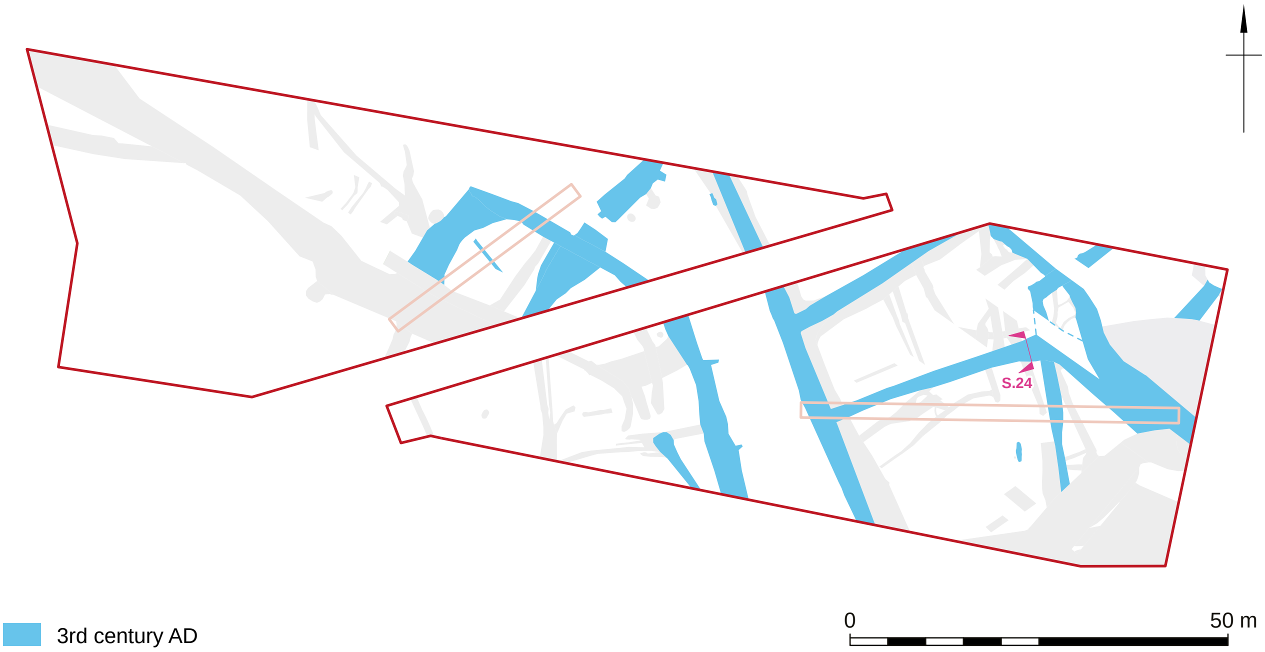


Figure 2.43 Humberston Road phase plan: 3rd century Romano-British

by ditch 7636, up to 2.4 m wide and 1.26 m deep. Ditch 7636 was also recorded in evaluation trench 31 (Wessex Archaeology 2015a) as 31013, containing 2nd-century pottery. It is likely that the west side of the trackway was defined by a contemporary 2nd-century ditch that was later completely truncated.

The trackway was constricted or blocked by a ditch that left an entrance only 1.67 m wide (**Fig. 2.38**). An early iteration of this blocking ditch (7437) contained mid-1st- to 2nd-century pottery and was a similar size to other contemporary ditches, at up to 1.6 m wide and 1.14 m deep, although it was almost completely truncated by 3rd-century recuts (see below). Mid-1st- to 2nd-century pottery was also recovered from one (7435) of two pits (also 7469) immediately east of the blocking ditch. The fills of both pits and the ditch contained large amounts of oyster shell. A ditch (7427, obscured in plan by 7429/7716) continued on the alignment of the blocking ditch to the south-west.

3rd-Century Romano-British

The earlier pattern of enclosures (**Fig. 2.42**) was succeeded by what appears to have been a similar but perhaps simpler system of larger enclosures (**Fig. 2.43**).

Ditch 7427 (see above) was recut at least twice, first as 7429, then as 7716, and was much wider than its predecessor, at up to 4 m wide and 0.9 m deep (**Fig. 2.38**). Blocking ditch 7437 was similarly recut, as 7719. These later iterations contained 3rd-century pottery. Undated ditch 7374, 1.5 m wide and 0.45 m deep, ran parallel and immediately to the west of 7427, 7429 and 7716; the phasing of ditch 7374 is uncertain.

Ditch 7716 was truncated by ditch 7630 (**Pl. 2.33**), a maximum of 3.9 m wide and 0.85 m deep, forming the south-west side of the trackway. In one intervention in the south-east (**Fig. 2.39**), ditch 7630 was recorded as three cuts (7181, 7183 and 7185), with the central cut (7181) truncated by two flanking cuts (7183 and 7185). Despite the late stratigraphy of ditch 7630, which places it in the 3rd century or later, only a small assemblage of 1st- to 2nd-century pottery was recovered. However, evaluation trench 32 (Wessex Archaeology 2015a) recorded four definitions of this ditch (32003–32006), with mid- to late 3rd-century pottery recovered alongside a dump of oyster shell. The ditch terminated in the north-west (terminal 7425; **Fig. 2.38**), where a large, broadly contemporary ditch (7457) extended at 90° to the south-west.

The north-east side of the trackway was defined in the 3rd century by ditch 7622, up to 3.2 m wide and 1.2 m deep, replacing mid-1st- to 2nd-century ditch 7636. In the south, a recut (7027) was identified between 7636 and 7622 (**Fig. 2.39**) that did not contain dating evidence. As with ditch 7630, only a small quantity of 2nd-century pottery was recovered from ditch 7622, although it was a similar stratigraphically late feature.

Ditch 7298 (2.7 m wide and 0.9 m deep) ran north-east from ditch 7622 and contained pottery dating from the middle of the 3rd century or into the 4th. It was a redefinition of a boundary established in the Iron Age, previously defined by ditches 7291, 7293 and 7295 (described above), and likely turned to the south-east as a replacement of earlier ditch 7624, bounding the north-east side of an enclosure.

Ditch 7623, 2.1 m wide and 0.61 m deep, was roughly parallel to ditch 7298 and yielded a varied pottery assemblage including material of mid-3rd-century or later date. The ditch had been previously recorded in evaluation trench 31 (Wessex Archaeology 2015a, contexts 31015 and 31017). Towards the north-east, ditch 7623 turned at approximately 60° and continued south-east, appearing to form an earlier enclosure to that defined by 7298/7624 (which cut ditch 7623). In some locations (eg, intervention 7064), a single cut was recorded, but in others (eg, 7113; **Fig. 2.41**), up to five cuts were identified (three of which contained 3rd-century pottery; two did not contain dateable artefacts).

Plate 2.33 Ditch 7630 (intervention 7378) from south-east

A further ditch, 7624, cut both ditches 7623 and 7138, and extended to the north-west. This ditch contained mid- to late 3rd century pottery, but radiocarbon analysis (Poz-123510) on short-lived plant remains must have targeted residual material as it returned an Iron Age date (120–320 BC).

Ditch 7624 was in turn cut at right angles by ditch 7625, which turned 60° to the south and cut ditch 7623, continuing beyond this as 7637. Both ditches 7625 and 7637 contained no pottery later than the 2nd to 3rd centuries, although stratigraphically they were some of the latest features on the site. One intervention (7066) demonstrated that this ditch had been recut at least once.

West of the trackway (**Fig. 2.39**), ditch 7717 terminated in the north-west and contained 3rd-century pottery. Further to the west, ditch 7457 (**Fig. 2.38**), 2.86 m wide and 0.74 m deep, replaced earlier ditches 7451 and 7453 and contained pottery of mid- to late 3rd-century date; earlier residual material was obtained during the trial trench evaluation (Wessex Archaeology 2015a, context 32016). A short gully (7709) ran from a terminal in

Plate 2.34 Grave 7392 containing remains of inhumation burial 7393 from north-east

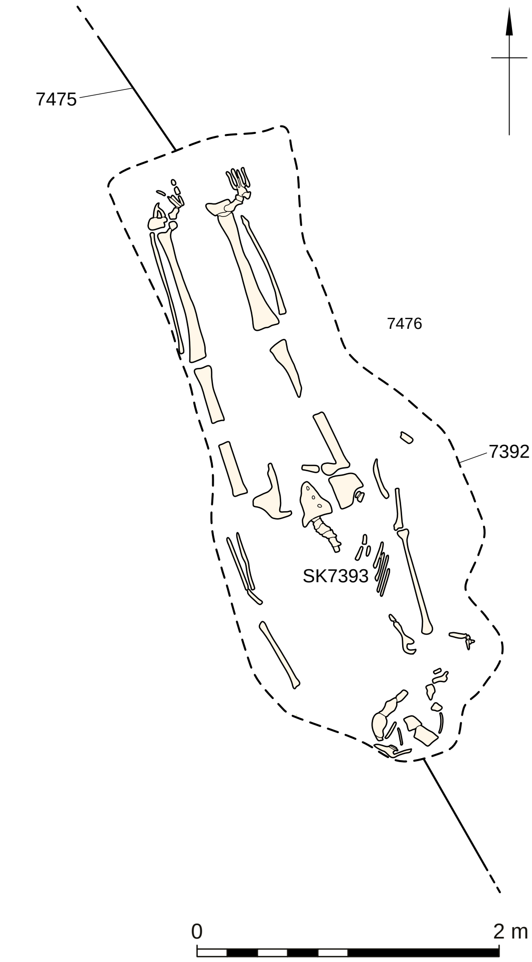


Figure 2.44 Humberston Road plan of grave 7392 containing inhumation 7393

the north-west to the south-east, the trial trench evaluation recovering mid- to late 3rd-century pottery from this feature (Wessex Archaeology 2015a, context 32009).

Immediately south-east of the blocking ditch (7437) on the trackway was inhumation grave 7392, 1.76 m long, 0.79 m wide and 0.15 m deep (**Figs 2.38** and **2.44**; **Pl. 2.34**). The extended supine burial (7393) was that of an older woman and is described fully in Chapter 6. Grave cut 7392 was dug within, and adjacent to, the 3rd-century trackway, into the silted-up fill of ditch 7636, which was an earlier definition of the trackway boundary. Ditch 7636 itself contained fragments of human bone from a different individual or individuals. The burial provided an anomalously early radiocarbon date of 150 BC–AD 70 (SUERC-95457), with pottery from the grave fill including mid- to late 3rd-century sherds.

Pit 7301 (**Figs 2.39** and **2.45**; **Pl. 2.35**) to the east of the trackway was reminiscent of an inhumation grave, although no human remains were identified. It was sub-rectangular in plan, 2.7 m long, 0.76 m wide and 0.37 m deep. The base of this pit contained a stakehole (7319) 0.14 m in diameter and 0.14 m deep. A basal organic fill (7304) contained mid- to late 3rd-century or later pottery. This deposit was sealed with clean clay (7303), and a broken millstone (ONs 702 and 703) had been carefully laid in the upper part of the pit. An adjacent posthole (7321) was 0.27 m in diameter and 0.13 m deep and contained no dateable artefacts.

Elsewhere, evaluation trench 31 (Wessex Archaeology 2015a) revealed a further north–south-aligned ditch (31009; **Fig. 2.39**) that did not correlate with any feature recorded during the set piece excavation, although it did contain pottery from the mid-3rd to 4th centuries, corresponding to a late phase of occupation.

In the east, a series of long, hand-dug interventions revealed that there was a complex series of linear (and possibly also discrete) features beneath a series of tidal flats deposits (group 7629, **Fig. 2.39**). Pottery of mid-1st- to 2nd-century, 2nd-century and 3rd-century date was obtained from different features, suggesting that they represent a palimpsest of activity contemporary with the various phases of occupation described above. As these features were recorded primarily in section, it is hard to be certain about their alignment, stratigraphic sequence or form.

Plate 2.35 Grave-shaped pit 7301 from south-east

Late 3rd- to 4th-Century AD Late Romano-British

Two features were recorded further east (120175 and 120176; **Fig. 2.46**) in an area that was probably in the littoral zone during the main period of the Humberston Road settlement. These features contained Romano-British pottery including sherds of late 3rd- to 4th-century date, therefore perhaps post-dating the main focus of activity in the centre of the site. Ditch 120175, 2.3 m wide and 0.55 m deep, was the earliest of the two features and was aligned east to west. The west end of 120175 was truncated by north–south-aligned ditch 120176, 1.67 m wide and 0.73 m deep. Ditch 120175 contained a gap likely representing an entrance. The features were cut from above tidal flats deposit 120152 (greyish brown silty clay). The edge of the settlement may have been inundated around the time of abandonment, perhaps at the end of the 3rd century, leading to the formation of layer 120152. These few later features therefore post-date this inundation.

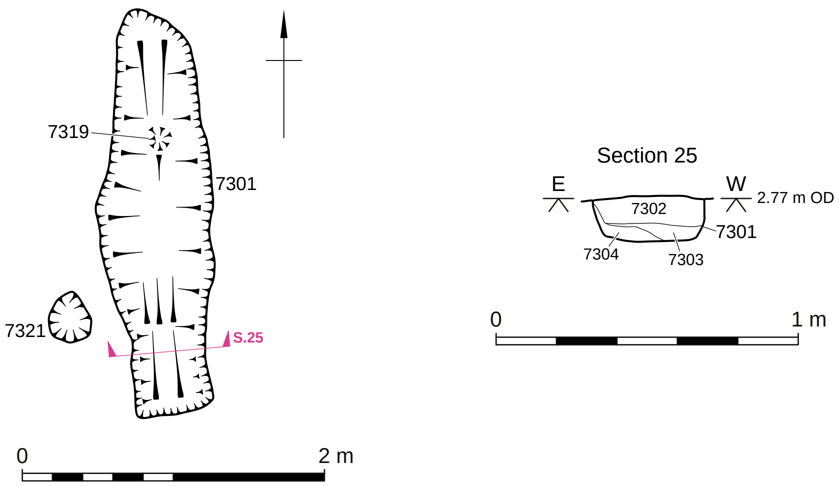


Figure 2.45 Humberston Road plan and section of grave-shaped pit 7301 and associated features

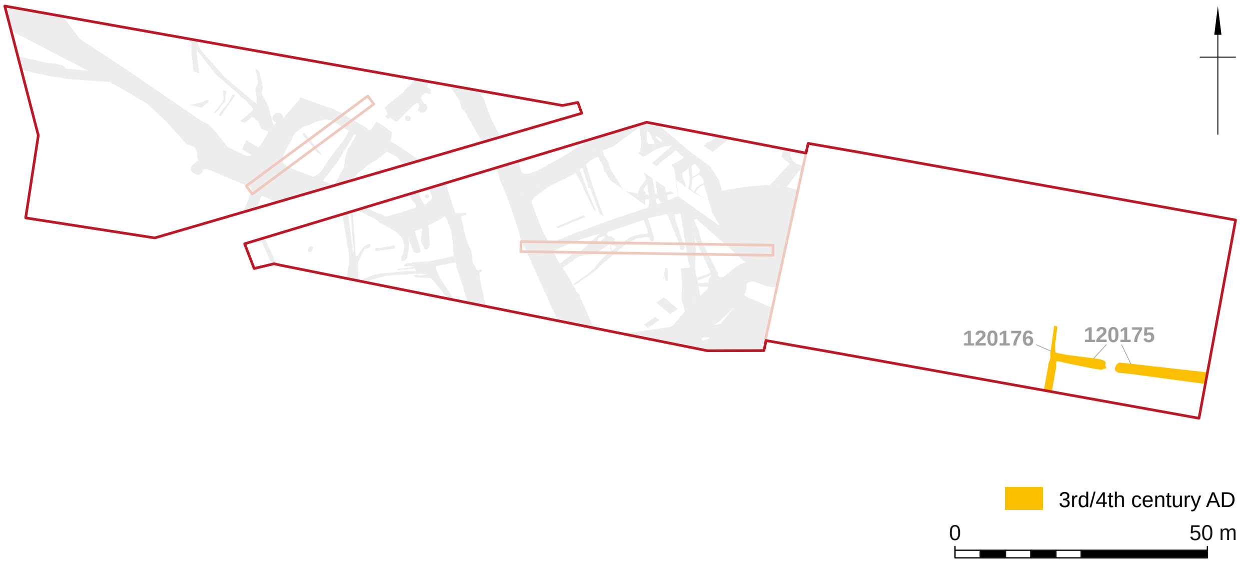


Figure 2.46 Humberston Road phase plan: late 3rd to 4th century AD Romano-British

Post-Medieval

One ditch of this period was present at Humberston Road. Ditch 7631 (see **Figs 2.38** and **2.39**) also recorded as 32018 by the evaluation (Wessex Archaeology 2015a) contained 17th/18th-century pottery alongside residual Romano-British material. The ditch followed the north-east side of Romano-British ditch 7634 with the south-east terminal of ditch 7631 turning to the south-west. Ditch 7631 may have been a boundary or drain following a depression reflecting the location of the earlier Romano-British ditch.

Hornsea Project Two

Hornsea Project Two recorded the continuation of the settlement to the north of the Humberston Road site (Allen Archaeology 2019; 2022; Network Archaeology 2022). The provisional results correlate well with the results of Hornsea Project One. Some limited 4th-century remains were recorded in the east of the Humberston Road site by Allen Archaeology (2022, 49); however, nothing later than the 3rd century was recorded by Network Archaeology (2022, 45).

Chapter 3
Anglo-Saxon to Post-Medieval Sites and Findspots and Undated and Negative Results

Laceby Beck Anglo-Saxon Settlement and Neolithic to Romano-British Activity

Introduction

Laceby Beck occupies a minor valley on the outskirts of the village of Laceby in North East Lincolnshire. The Laceby Beck site was located at NGR 522050 407300 on the north bank of the beck, opposite a modern sewage works (**Fig. 3.1**). The site primarily occupied a single arable field adjacent to the beck, but also extended north beyond a public footpath into the next field. The site lies some 500 m north-east of the modern outskirts of Laceby, and nearly 1 km from the parish church of St Margaret's. The North East Lincolnshire HER records that late 10th- to early 11th-century grave slabs are incorporated into the church, which has Norman 12th-century fabric in the nave and north arcade (Pevsner and Harris 1978; see also APS 2005). The modern outskirts of Grimsby are some 1.3 km to the north-east where the Laceby Beck develops into the River Freshney, which reaches the sea at Grimsby docks about 6 km from the site.

The site had largely escaped investigation prior to the mitigation excavation. Dense vegetation had prevented geophysical survey (RPS 2013c) and fieldwalking was not carried out until immediately before the excavation. Topsoil was stripped prior to fieldwalking, so fieldwalking finds were assigned to subsoil 461 (see Chapters 5 and 6). However, the Anglo-Saxon chronology of the site was not entirely unknown as the Portable Antiquities Scheme had previously recorded metal detecting finds including a square-headed brooch (NLM-434932), an annular brooch (NLM-A94A57) and a cruciform brooch (NLM-ECA896), all of 6th-century date. An Anglo-Saxon strap-end (NLM-ECBC20) was also recorded, as were three Roman coins.

Evaluation trench 55 (RPS 2013e) was situated in the east of the site and contained a single undated feature (55007) with a primary fill of charcoal (55006). The trench also recorded the limit of a layer of colluvium (55003) extending between the trench and the beck to the south-east. This colluvium did not extend into the main area of the site to the west. To the north-west, outside the area of the Laceby Beck site, evaluation trench 56 (RPS 2013e) was blank.

Although the site had not been identified for set piece excavation (SPE) or strip, map and record (SMR), a targeted watching brief (TWB) was recommended (TWB4). This was successful in identifying the significance of the site, which was then excavated following a similar methodology to the other major sites of the project.

Soil Sequence and Natural Deposits

Undisturbed glacial till (462) underlay the site, comprising greyish brown clay with chalk flecks and including lenses of yellow sand and grey gravel.

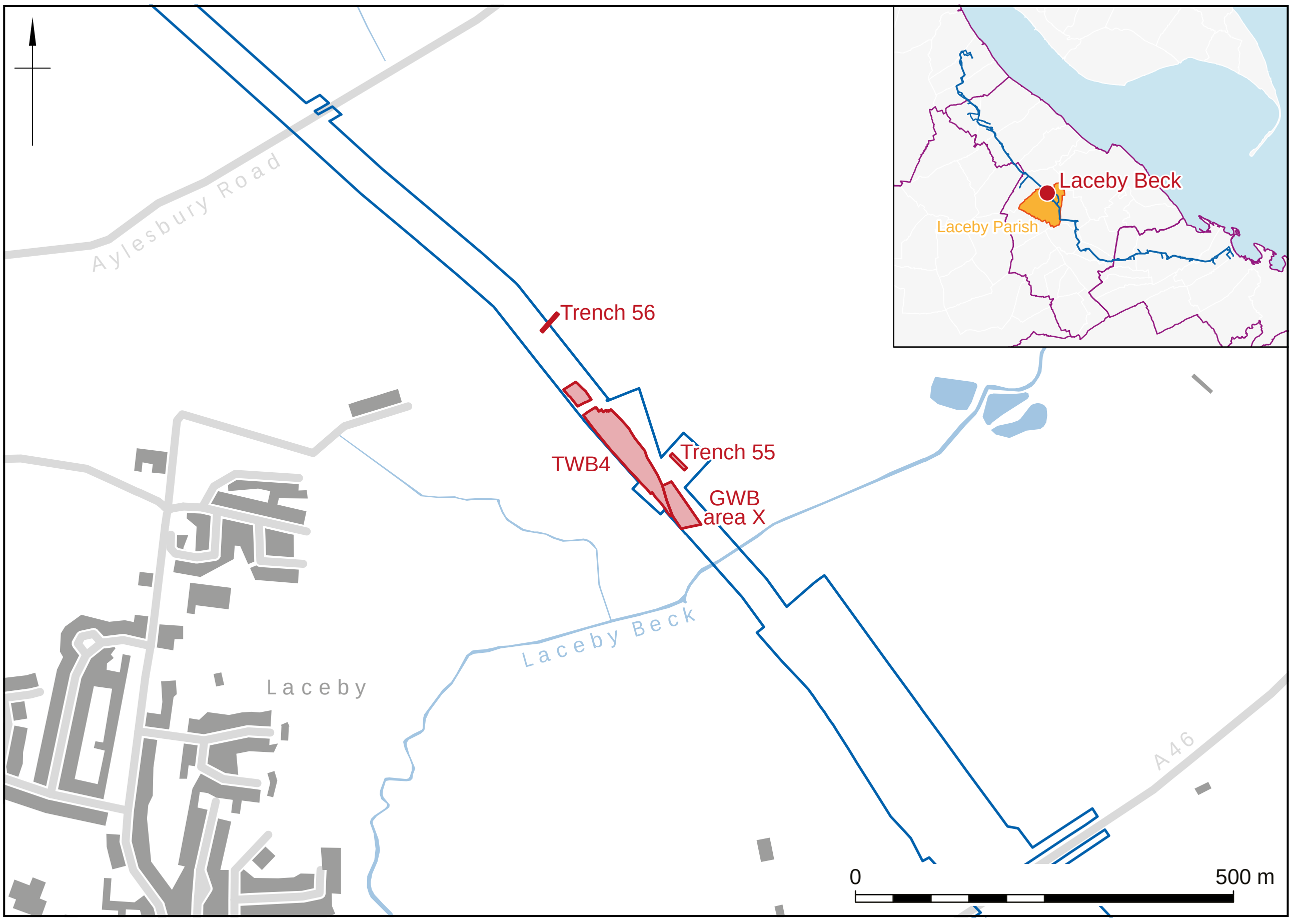


Figure 3.1 Laceby Beck location

The natural was overlain with relict-ploughsoil subsoil (461) comprising light greyish brown sandy loam with 20% gravel. Some Anglo-Saxon features (493 and part of ditch 21008) first became visible following the removal of topsoil, but prior to the machine stripping of subsoil from the site. This suggests that the deeper ploughing that created subsoil 461 was not thorough or sustained. The subsoil also contained a small number of later finds, including 16th- to 20th-century pottery, as well as residual prehistoric pottery and a whetstone. The later material was probably introduced as a result of manuring. Areas of bioturbation were also recorded within the subsoil (478, 480 and 482) along with a pit (489, maximum 3 m diameter and 0.27 m deep) contained entirely within the subsoil and yielding possibly residual Anglo-Saxon pottery. The topsoil (460) was greyish brown loam with 10% gravel.

Prehistoric and Romano-British

Pit 646 (**Fig. 3.2**) was located towards the southern end of the excavation area. It had an elongated shape and irregular profile 1.2 m long, 0.5 m wide and 0.12 m deep. The fill of the pit (fill 647, dark greyish brown silty sand) contained possible Beaker pottery and three cattle bones. A second similar irregular pit to the south-east (636; maximum 1.6 m diameter and 0.45 m deep) did not contain any dating material.

A further small assemblage of Neolithic, Bronze Age and Iron Age pottery was all residual. Middle Neolithic Peterborough Ware was recovered from the burnt primary fill of Anglo-Saxon feature 21022 and Late Neolithic Grooved Ware from Anglo-Saxon ditch 21003. Early Bronze Age pottery was recovered from Romano-British feature 807 and from Anglo-Saxon ditch 21002. Ditch 21002 also contained residual Iron Age pottery, as did Anglo-Saxon ditch 21015.

A Romano-British feature (807) was located in the densest area of Saxon features and as a result had been truncated. Feature 807 was at least 1.16 m wide and 0.3 m deep

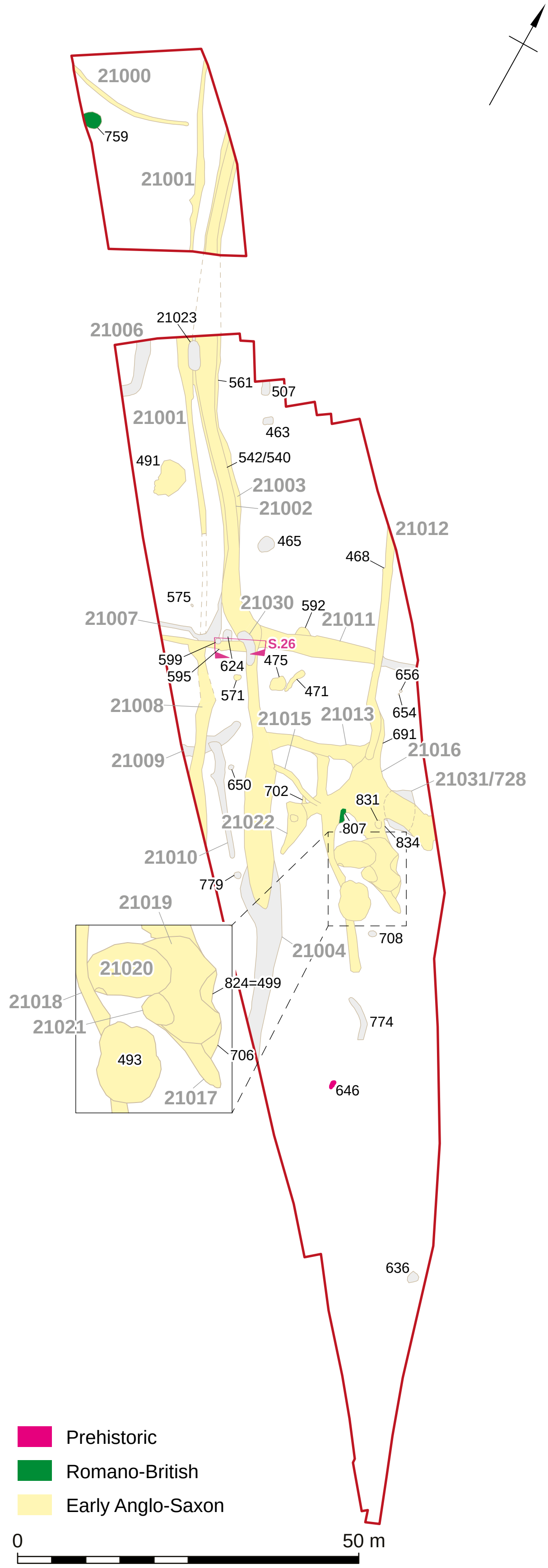


Figure 3.2 Laceby Beck plan

and may have been discrete or part of a linear feature. As noted above, residual Bronze Age pottery was present, alongside late 1st/2nd-century Romano-British sherds.

Sub-circular pit 759, up to 2.5 m diameter and 0.73 m deep, was located in the north-west of the site. One edge of the pit was outside of the area of excavation, but enough was exposed to determine that the feature was probably not a ditch terminal. Pit 759 had a primary fill of yellowish brown clay derived from the natural (760) and a main fill of greyish brown clay which contained Romano-British pottery dating to the 2nd century or later.

Residual late Romano-British pottery (late 3rd to 4th century), the only material of that date from the site, was recovered from Anglo-Saxon pit 471.

Stratigraphically Early and Unstratified Undated

Stratigraphically early features at Laceby Beck could generally not be dated. The features in this section are perhaps most likely to be Anglo-Saxon but some might be prehistoric or Romano-British, or of later date.

In the north of the main field at Laceby Beck, angled ditch 21006 curved from the north to the west, perhaps representing the south-east corner of a small sub-rectilinear enclosure. It contained a light bluish-grey sandy silt fill that was different to other features on the site, suggesting a different formation process and perhaps chronology.

Three undated discrete features (463, 465 and 507) were located to the east of ditch 21003. Hearth 463 was sub-rectangular, 1.5 m by 1.05 m in plan and 0.21 m deep, with a charcoal fill and evidence of *in situ* burning. Pit 465 was sub-circular, up to 2.2 m diameter and 0.3 m deep, and contained a relatively large amount of animal bone, suggesting intentional disposal. Feature 507 was probably a pit but may have been a ditch terminal and was 2.04 m long, 1.3 m wide and 0.68 m deep.

Near the centre of the site, sub-oval pit 624 and pit 599 (the latter seen only in section; **Fig. 3.3**, section 26) were undated and stratigraphically early. West of these was undated curvilinear ditch 21007, and immediately north of this was an undated pit or posthole (575).

South of ditch 21007, ditch 21009 curved from west to north-east, where it terminated. It was truncated by the north-west terminal of another undated ditch (21010), which terminated in the south-east. Nearby were undated pits 650 and 779, the former containing a dark, charcoal-rich fill. In the east of the excavation area were a pair of undated postholes (654 and 656), while pit 21031 and its recut 728 were around 3 m in diameter and 0.46 m deep, bisected by later ditch 21016.

Further south, undated pit 708 contained a dark fill with charcoal and animal bone suggestive of waste disposal, and nearby was undated short curvilinear ditch 774.

Mid-5th- to 8th-Century AD Anglo-Saxon

Features in the centre of the Laceby Beck site have been dated to the Anglo-Saxon period on the basis of pottery and other dateable artefacts, by radiocarbon analysis and on stratigraphic grounds (**Fig. 3.2**).

Anglo-Saxon ditch 21011 (**Pl. 3.1**), 3.3 m wide and 0.79 m deep, was aligned west to east (**Figs 3.2** and **3.3**). The west end of this ditch was truncated, and it is possible that it continued as ditch 595 but with a reduced width. Pit 592, cut by ditch 21011, resembled nearby undated pit 465 in form (see above) and it also contained much animal bone. Radiocarbon analysis (Poz-123508) of short-lived charred plant remains from pit 592 returned a 5th/early 6th-century date of AD 420–550. This result provides the earliest possible date for ditch 21011, which truncated pit 592. A latest possible date for ditch 21011 is also available as it was itself truncated by features (eg, ditch 21012) dated by pottery to the Anglo-Saxon period.

The roughly west–east-aligned ditch 595, 1.3 m wide and 0.66 m deep (**Fig. 3.3**), shared continuous fills with north-west to south-east aligned ditch 21008, this larger at 2 m wide and 0.81 m deep and containing Anglo-Saxon pottery with conjoined sherds across two fills.

Plate 3.1 Ditch 21011 (intervention 582) from west

Ditch 21002 cut ditches 595 and 21011 and, with ditches 21003 and 21004, formed a major north-west to south-east boundary through the site. Ditches 21003 and 21004 were antecedents of ditch 21002 and may represent truncated parts of the same feature. Ditch 21003, up to 3.42 m wide and 1.22 m deep, was not reliably dated. A radiocarbon determination (SUERC-95458) of short-lived plant remains from ditch 21003 returned an Iron Age date (400–230 BC), but this material was probably residual. Ditch 21003 was generally recorded with a single fill, but in intervention 540/542 there were four fills (or possibly one or more recuts) and in intervention 561 there were three. Ditch 21004 was up to 5.6 m wide, though typically around 2.5 m wide and 1.18 m deep, and became visible south-west of the terminal of ditch 21002.

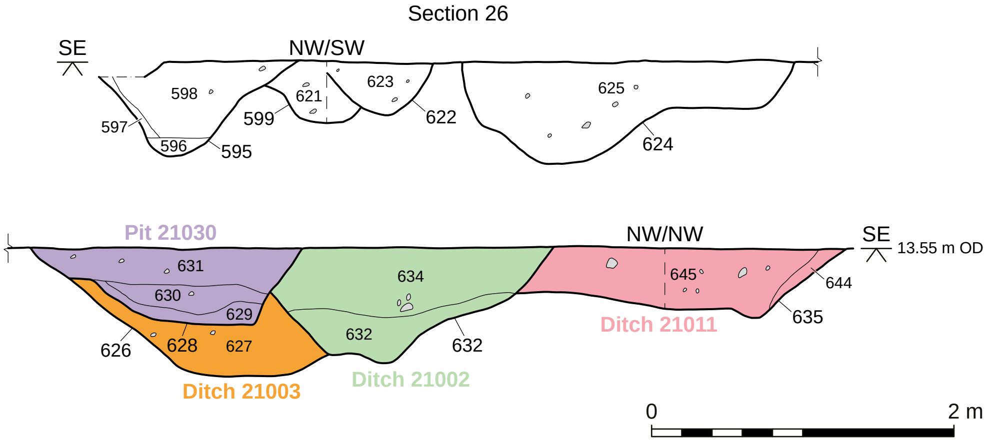
Undated ditch 21001 was parallel to ditch 21003 (**Pl. 3.2**) and petered out at its south-south-east end near the centre of the site, perhaps due to plough truncation. A further ditch (21000) was curvilinear and terminated respecting ditch 21001, suggesting contemporaneity.

Ditch 21003 was almost completely recut as 21002, up to 3.9 m wide and 1.24 m deep, with darker fills than the surrounding features. Recut 21002 contained Iron Age and early Romano-British pottery; however, on stratigraphic grounds this must be residual. A small sherd of probably intrusive medieval pottery was also recovered. Three fragments of human bone were identified, but radiocarbon dating of these failed (GU56063).

The best dating evidence for ditch 21002 was the continuity of fills between it and ditch 21013. Ditch 21013 did not itself contain dating evidence, but it was also continuous with features to the south-east which have been radiocarbon dated to the Anglo-Saxon period (see below), and was truncated by Anglo-Saxon ditch 21012.

Ditch 21012 was aligned approximately north to south, cut Anglo-Saxon ditches 21011 and 21013, and contained Anglo-Saxon pottery. It was a recut of an earlier ditch on the same alignment (691).

Figure 3.3 Laceby Beck section



To the south-east of ditch 21012 was an irregular area of broad, shallow features (**Pl. 3.3**) that appeared to share fills with several of the ditches that intersected them. The delineation of features and the relationships between them were often unclear in this area. The central part was recorded as four cuts (791, 794, 796 and 799), overall measuring 7.2 m wide and a maximum of 0.75 m deep.

On the east side, ditch 21016 contained articulated animal bone that was subjected to radiocarbon analysis (Poz-123812), with a resulting date of AD 430–660.

On the west side of the cluster of features, and probably post-dating them, was north-west–south-east-aligned ditch 21018, cut by feature 21020 and, further south, by pit 493. This pit was large, 5.9 m by 4.7 m and 0.4 m deep, and contained a primary fill with a significant concentration of finds including Anglo-Saxon pottery, a bone comb, bone pins, a glass bead, a stone spindlewhorl and ironworking slag, as well as a dog skeleton minus its skull (**Pl. 3.4**).

To the south-east, ditch 834, 2.18 m wide and 0.25 m deep, was cut by a series of discrete features (706, 831, 21017, 21019, 21020 and 21021; see **Fig. 3.2**). Pit 831 was 0.8 m in diameter and 0.42 m deep; the remaining features were broad and shallow, and their fills may represent midden material. Environmental samples (see Chapter 7) indicate that there were pools of eutrophic water in the vicinity, and this may be consistent with an interpretation of such waste. Feature 706, surviving 1.1 m wide and 0.44 m deep, yielded Anglo-Saxon pottery, as did short linear feature 21017, 3.8 m long, 2.2 m wide and 0.5 m deep. Feature 21017 was in turn cut by broad, shallow feature 21019, over 3 m long, 1.3 m wide and 0.42 m deep. Finally, 21019 was truncated by features 21020 (4.7 m by 2.4 m and 0.4 m deep) and 21021 (2 m by 1.5 m and 0.57 m deep), each containing Anglo-Saxon pottery.

Plate 3.2 Ditches 21003 (intervention 561, right), 21002 (intervention 565, recut on right), and 21001 (intervention 557, left) from south

Plate 3.3 Working shot showing complex character of Laceby Beck site from south-east. Closest intervention contains features 21019 (right) and 21021 (left)

A large, irregular feature (21022), 7.5 m by 3.6 m in plan and 1.1 m deep, had a burnt primary fill (837) comprising red orange burnt clay with residual Neolithic Peterborough Ware pottery. Radiocarbon analysis (Poz-124392) of short-lived charred plant remains from the same context confirmed the Anglo-Saxon date of the feature with a date of AD 410–550. Feature 21022 cut small, undated north-west–south-east-aligned gully 702, 0.86 m long, 0.63 m wide and 0.08 m deep, with both truncated by gully 21015, which yielded only residual Iron Age pottery.

Three pits (471, 475 and 571) in the centre of the complex of ditches were of Anglo-Saxon date: pits 471 and 571 contained Anglo-Saxon pottery, whilst a radiocarbon determination (Poz-123509) on short-lived charred plant material from pit 475 produced a date of AD 420–550.

Finally, an area of root disturbance (491) towards the north of the site also yielded Anglo-Saxon pottery.

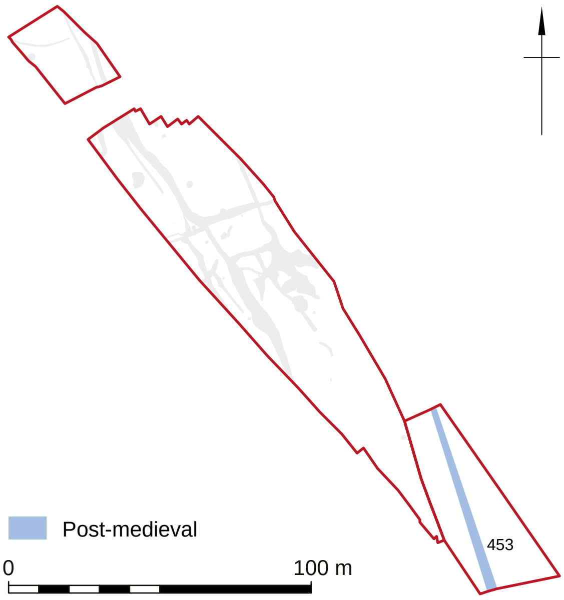


Figure 3.4 Laceby Beck phase plan: post-medieval

Post-Medieval and Stratigraphically Late Undated Features

Two undated pits cut ditch 21002: pit 21023, and pit 21030, which had a square base and straight sides, suggesting a modern origin.

To the south of the Laceby Beck site, north-west–south-east-aligned furrows were recorded. These were also recorded by earthwork survey (Wessex Archaeology 2016b). One furrow was truncated by ditch 453 (**Fig. 3.4**), suggesting a late chronology for the ditch, which correlates with a boundary shown on the 1st edition 1888 Ordnance Survey map. Ditch 453 was on a broadly parallel orientation to ditches 21002, 21003 and 21004, suggesting some continuity in land use.

Plate 3.4 Near complete articulated dog skeleton in pit 493 from south-east

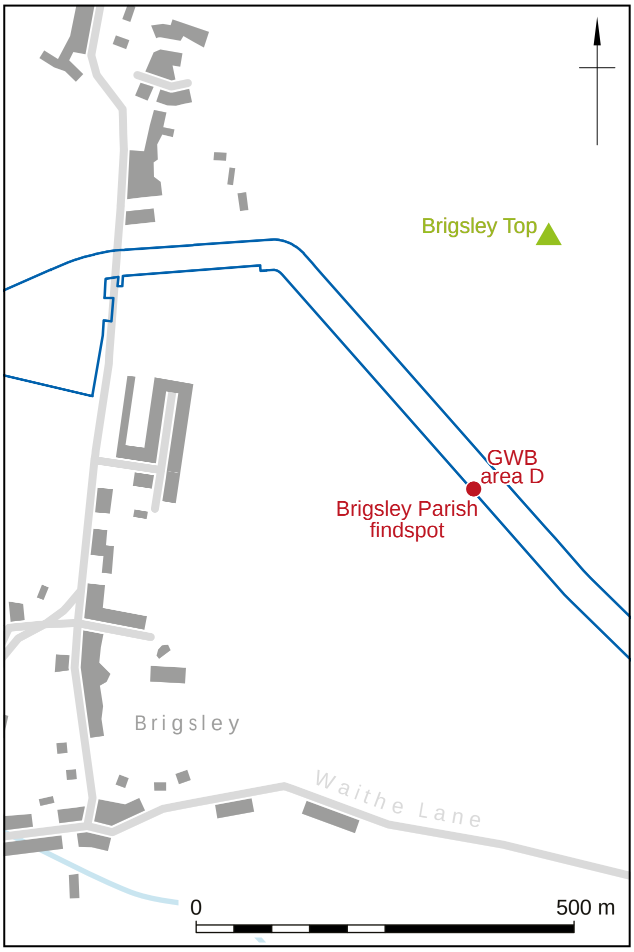


Figure 3.5 Brigsley parish findspot location

Hornsea Project Two

Excavation during Hornsea Project Two revealed a continuation of the features described here. Artefacts included prehistoric flint flakes, Anglo-Saxon pottery and part of an Anglo-Saxon brooch. A timber-lined pit was also revealed (Network Archaeology 2022, 99–101).

Brigsley Parish Bronze Age, Iron Age and Saxon Findspot

Summary

A small irregular area of root disturbance (184) was investigated at NGR 525956 402138, designated as 'general watching brief area D' (GWB area D; **Fig. 3.5**). This non-anthropogenic feature was notable for containing three sherds of pottery from quite different periods – one Early Bronze Age, one Iron Age and the third Anglo-Saxon. This findspot was located in the parish of Brigsley, North East Lincolnshire, on relatively high ground (25 m to 30 m OD), between the village to the south-west and the summit of Brigsley Top (35 m OD) to the north-east. The slopes of Brigsley Top facing the village may have been subject to low-intensity agricultural exploitation from at least the Early Bronze Age until the Saxon period, and probably continuously until the present day.

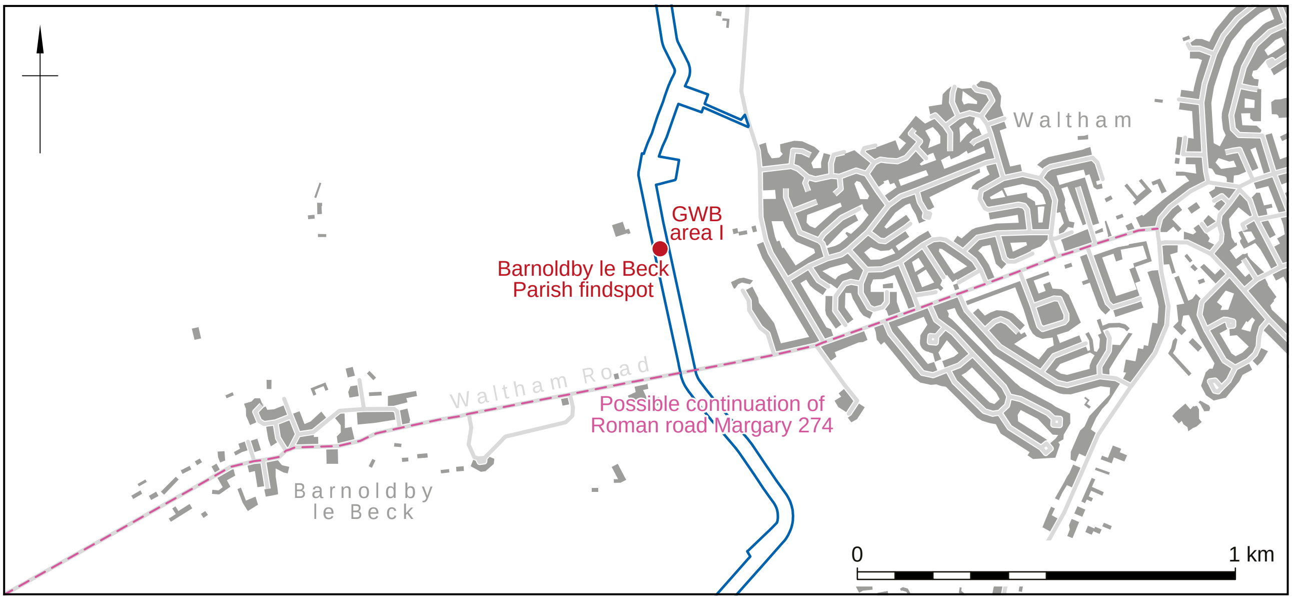


Figure 3.6 Barnoldby le Beck parish findspot location

Barnoldby le Beck Parish Romano-British and Medieval Findspot

Summary

Geophysical survey (RPS 2013c) recorded possible linear features at NGR 524579 403739 in an arable field immediately north of Waltham Road adjacent to the outskirts of Waltham, but in the parish of Barnoldby le Beck (**Fig. 3.6**). This road may be a continuation of the Roman Road Margary 274 from Ownby to Normanby le Wold (Kirkby 1953, 27–28; Owen 1984, 48). A farm or agricultural complex (not named on any consulted map) is situated immediately to the north-west of the findspot.

A trial trench (RPS 2013e, trench 42) targeted the geophysical anomalies but did not identify any below-ground features. Fieldwalking recovered a single sherd of very abraded medieval pottery. Subsequently, during excavation of GWB area I, Romano-British pottery was also recovered from the topsoil, although no features were identified. The findspot may be best understood as lying in the hinterland of the nearby potentially ancient road.

Blow Field Medieval Moated Site

Introduction

The Blow Field moated site is contained wholly within the parish of South Killingholme, North Lincolnshire, although the north side of the moat is bounded by the parish boundary, and features contemporary with the moat extend into North Killingholme parish. The site overlaps with the Iron Age/Romano-British site of Westfield Farm described separately in Chapter 2. For convenience, all post-Roman remains from both sites have been described together here. Blow Field is located at NGR 514800 416600 amongst arable farmland (**Fig. 3.7**). In the south, a community centre occupies the site of the 19th-century 'Moat House'. Beyond that is the village of South Killingholme, where the expansion of new dwellings towards the moated site has led to the identification of medieval pottery and drainage gullies (North Lincolnshire HER 22692 – MLS22692). To the north is Westfield Farm, the Immingham railway and at a distance of some 700 m, the outskirts of the village of North Killingholme. North Killingholme contains the church of St Denys, with a 12th-century tower arch and a 13th/14th-century chancel and nave arcades alongside later fabric (Pevsner and Harris 1978, 326).

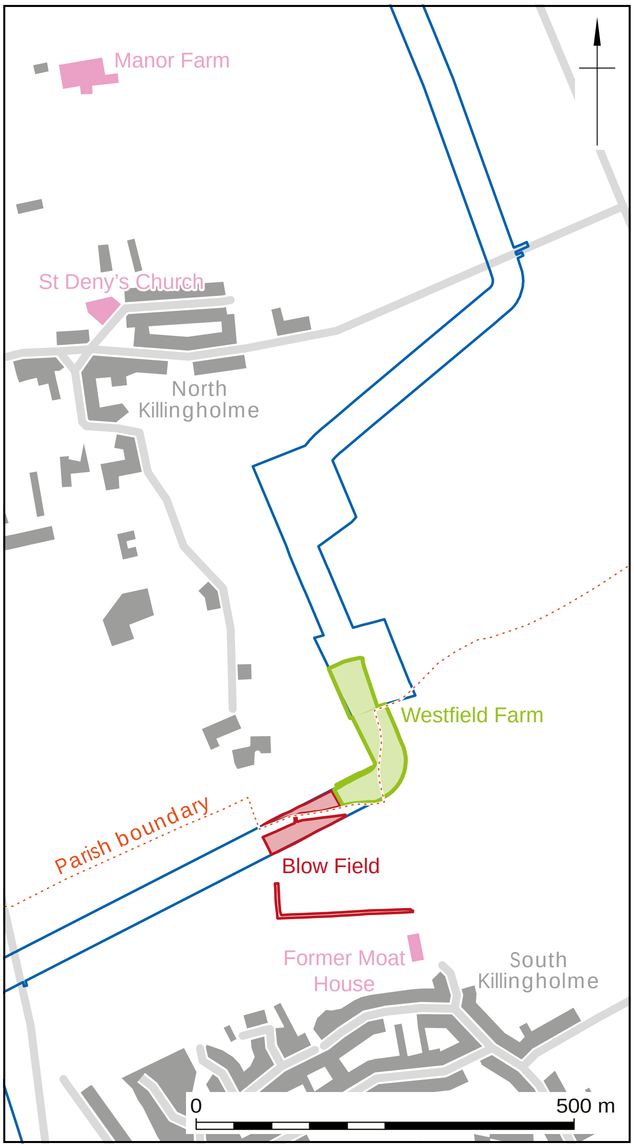


Figure 3.7 Blow Field location

The industrial spread of the Killingholme refineries begins some 900 m to the east and the former RAF Killingholme is located around 1.3 km to the west-north-west. Blow Field is at 17 m OD.

The Blow Field moat has been depicted on Ordnance Survey maps since 1887 (**Fig. 3.8**). The ditch of the moat was clearly visible until 1970, when multiple notes in the North Lincolnshire HER (1606 – MLS1606) record that the moat was filled in. At this time, field boundaries were removed and Blow Field was incorporated into a larger field. The moated site can clearly be seen as a soilmark or cropmark on aerial photographs, including those commonly available on online map applications.

The HER entry includes a description pre-dating the 1970 levelling of the site. It describes the moat as being 140 m from west to east and 200 m from north to south, with internal ditches, double islands in the northern half and a possible third island in the south. According to the HER, there were visible earthworks on the north-east and south islands in the areas of buildings shown on a map of 1824 (not consulted). The Hornsea Project One excavations focused on the north-west island where these earthworks were absent. Examination of 1940s RAF aerial photographs is also recorded in the HER, with measurements of 145 m by 100 m probably representing only the northern part of the moated complex. The HER also suggests that the site represents a deserted medieval village, perhaps Holtham, rather than a manorial site.

Alternatively, Blow Field may be one of three pre-conquest manors associated with Killingholme in the Domesday survey. Further moated sites at North Garth and Manor Farm could be the locations of the other two. These manors had belonged to Saxon lords named as Briford, Siward and Turgis, but were in the hands of Ivo Taillebois by 1086 (RPS 2013a). The combined population of these manors was 23 households.

William Stukeley (1724) mentions that a 'mile east of Thornton are the ruins of another great castle called Kelingholme'; this reference has been speculatively linked to various moated sites in the area and may describe Blow Field.

Geophysical survey (RPS 2013c) revealed a dense array of ditches and pits consistent with previously known information about the interior of the former moat. However, the moat ditch itself did not produce a clearly defined magnetic response. Fieldwalking of the wider area retrieved a substantial assemblage of pottery, including 17 sherds of medieval date relevant to the moated site (RPS 2013d). One of these was reported as a 9th- or 10th-century Lincoln-kiln type shelly ware, six sherds dated to the 11th to mid-14th centuries, and three were from the mid-14th to mid-16th centuries. All were of locally or regionally produced fabrics with no exotic imports. An earthwork survey (Wessex Archaeology 2016b) recorded the parish boundary adjacent to the moated site, but did not record the moat itself as the field is now level.

Three campaigns of excavation targeted Blow Field. The first of these was the trial trench evaluation, when trial trenches 95, 96, 97 and 98 (RPS 2013e) directly investigated the moated site. Trench 94 (RPS 2013e) was situated to the west of the moated site and was blank, indicating that it lay beyond the bounds of the site.

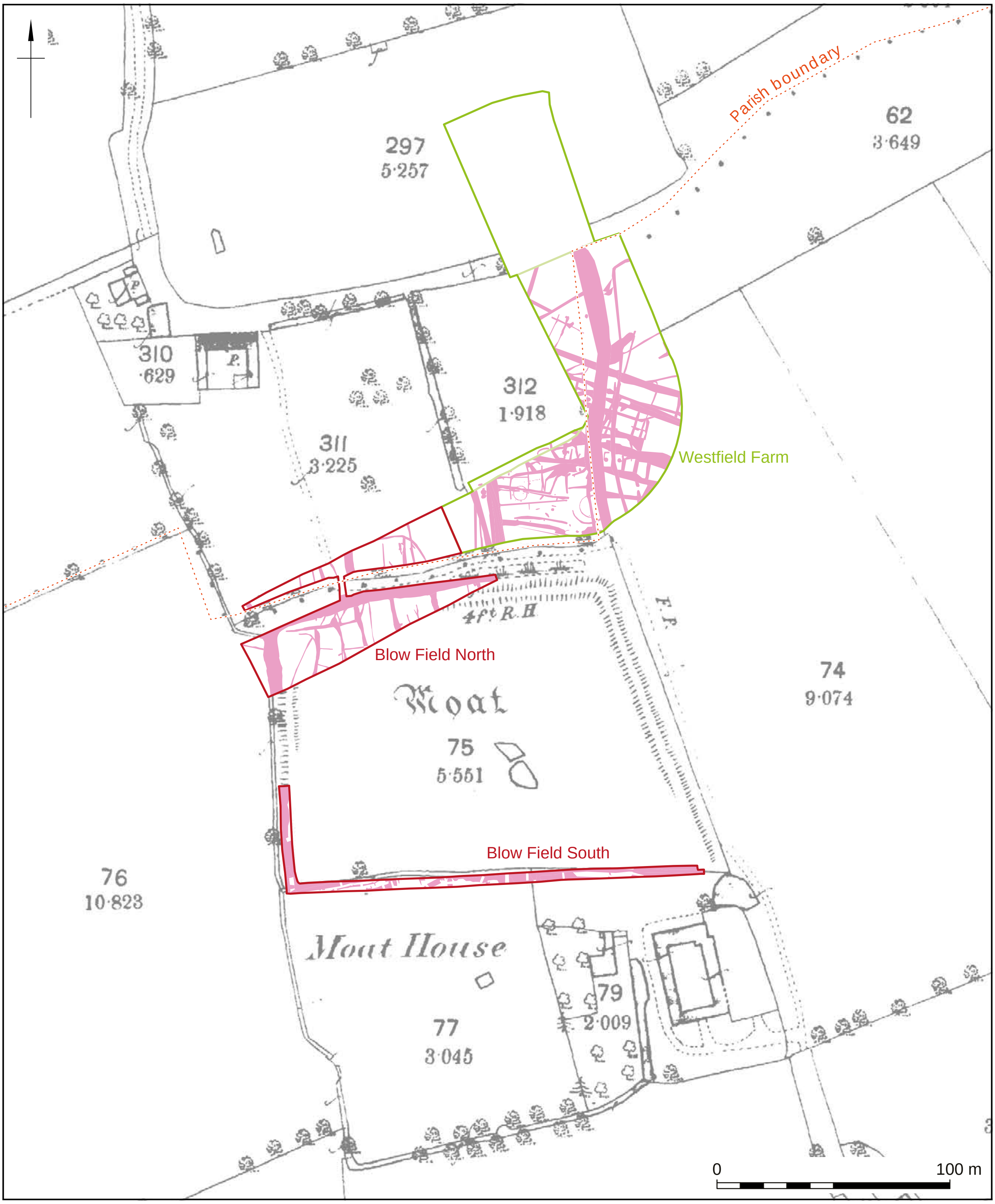
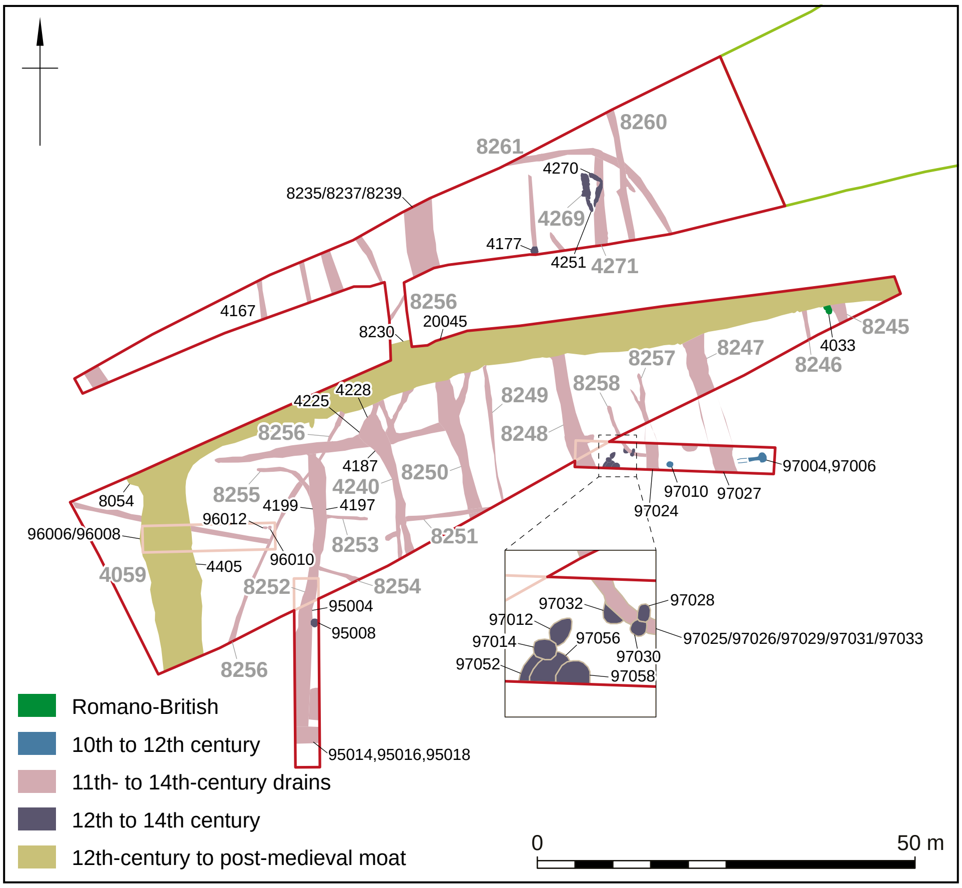


Figure 3.8 Blow Field historic map: Ordnance Survey 1887

Trenches 99 (RPS 2013e), 99a and 99b (Wessex Archaeology 2015a) were located within the adjacent Westfield Farm site and are described in Chapter 2. The main investigation of Blow Field was SPE4, which investigated part of Blow Field and part of the Westfield Farm site (**Fig. 3.9**). This was followed by the 'strip, map and record south of SPE4/4a' (**Fig. 3.10**; the '4a' here refers to works undertaken as part of the parallel Hornsea Project Two scheme). Excavation areas were constrained by the design of the construction project, with SPE4 following the cable route through a 90° turn, interrupted by a field boundary (following the parish boundary), and the attendant SMR area taking the form of a 5 m-wide 'L'-shaped trench following the route of a drain.

Figure 3.9 Blow Field north plan



Soil Sequence and Natural Deposits

The undisturbed natural geological substrate was orange and grey clay glacial till with chalk and other stone inclusions (4003). Relict-ploughsoil subsoil (4002) overlay the natural, and comprised orange or yellowish brown sand or silty clay with gravel. The topsoil (4001) was grey or yellowish brown sandy clay, silty clay or loam with gravel.

Iron Age and Romano-British

The Westfield Farm site adjacent to Blow Field contained a major Iron Age and Romano-British site and is described separately in Chapter 2. One Romano-British pit (4033) was situated south of the parish boundary in Blow Field. Further Romano-British features were identified in evaluation trench 98 (RPS 2013e), situated to the east of the main Hornsea Project One excavation area but within the later Blow Field moat platforms.

Saxon and Saxo-Norman

A few Saxon and Saxo-Norman features were present south of the main area of investigation. These were revealed within a 5 m wide strip, map and sample excavation area. They were located at the northern limit of the later south moat platform (**Fig. 3.10**). A single sherd of late 9th- to 10th-century pottery came from one of two truncated parallel linear features (300030 and 300032). Ditch 300076 ran roughly north to south and in part preceded another ditch (300202), although the later feature incorporated a 90° turn. Both were of Saxon date, containing early/mid-10th-century and late 9th- to 10th-century pottery respectively.

Evaluation trench 97 (RPS 2013e) on the north-west moat platform identified two Saxo-Norman pits (97004 and 97010) and a contemporary gully (97006). The pits contained

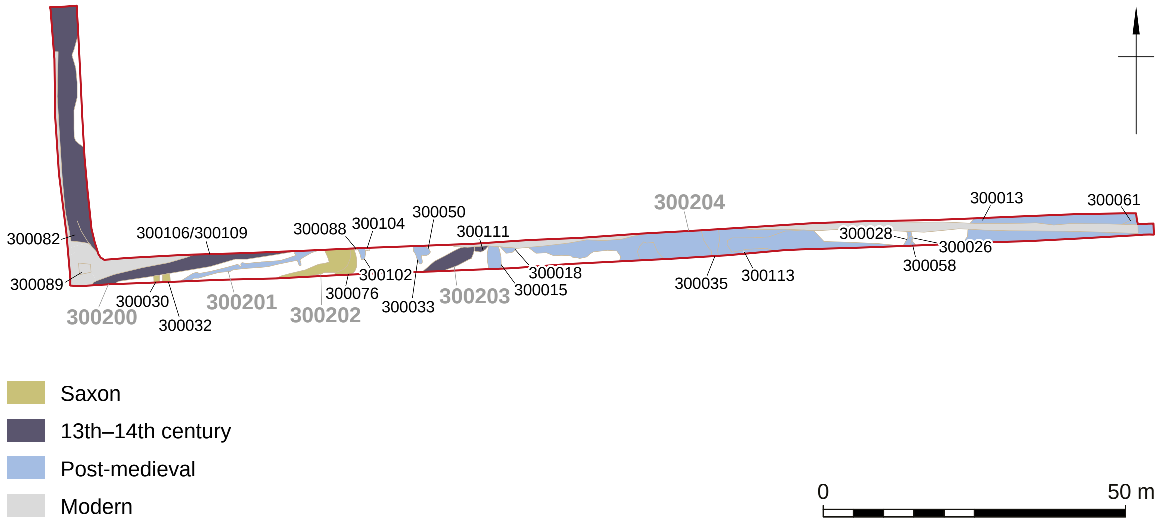


Figure 3.10 Blow Field south plan

late 10th- to 12th-century and 10th/11th-century pottery respectively. Further pits in the vicinity were undated but may also be of Saxo-Norman origin. A single sherd of Anglo-Saxon (5th or 6th century) date was recovered during the evaluation.

North of the parish boundary at Westfield Farm (**Fig. 3.11**), ditch 8309 terminated in both the west and east without intersecting any other features. It was probably an iteration of the same boundary as 12th/13th-century ditch 8311. Ditch 8309 contained 11th/12th-century pottery alongside residual Iron Age and Romano-British material.

Near the centre of the Westfield Farm site, ditch 8213 contained 11th/12th-century pottery and curved north-north-west from the east where it was cut by post-medieval parish boundary ditch 8264.

Further north, ditch 4483 contained 12th-century pottery; its recut 4485 contained potentially slightly earlier 11th–12th century pottery.

11th- to 14th-Century drains

A complex range of drainage features were located on the north-west moat platform and continued both to the north and west of the moated enclosures (**Fig. 3.9**). These drainage features were generally aligned north to south, although some (8251, 8253, 8254 and part of 4240) were aligned east to west, one (8256) was aligned north-east to south-west, and three (8255, 8258 and 8261) were curvilinear. Curvilinear feature 8261, which was distinct in having a darker, more organic fill than the other drains, may have defined the north-eastern extent of the drainage system.

The drainage system had its origins in the Saxo-Norman period, continued throughout the 12th/13th centuries and may have already been out of use by the 14th century. Only two drains (8245 and 8253) could be definitively dated to the Saxo-Norman period. Evaluation trench 97 (RPS 2013e) revealed that drain 8258 was Saxo-Norman or slightly later, containing 11th- to 13th-century pottery. Drainage features 4167, 4240, 4271, 8235/8237/8239, 8249, 8251, 8252 (also revealed in evaluation trench 95; RPS 2013e, context 95004), 8257 (evaluation trench 97; context 97024), 8258, 8261 and 95016 (evaluation trench 95) contained pottery consistent with a 12th/13th-century date. Drain 8247 (equivalent to evaluation context 97027) yielded a variety of pottery, overall suggesting a 14th-century date. Residual Romano-British glass was recovered from drain 8246 which otherwise contained no dateable artefacts. The remaining drains could not be directly dated.

At least seven sub-phases of drains were present. There were too few intersections to build a reliable stratigraphic sequence, although some detail can be drawn out.

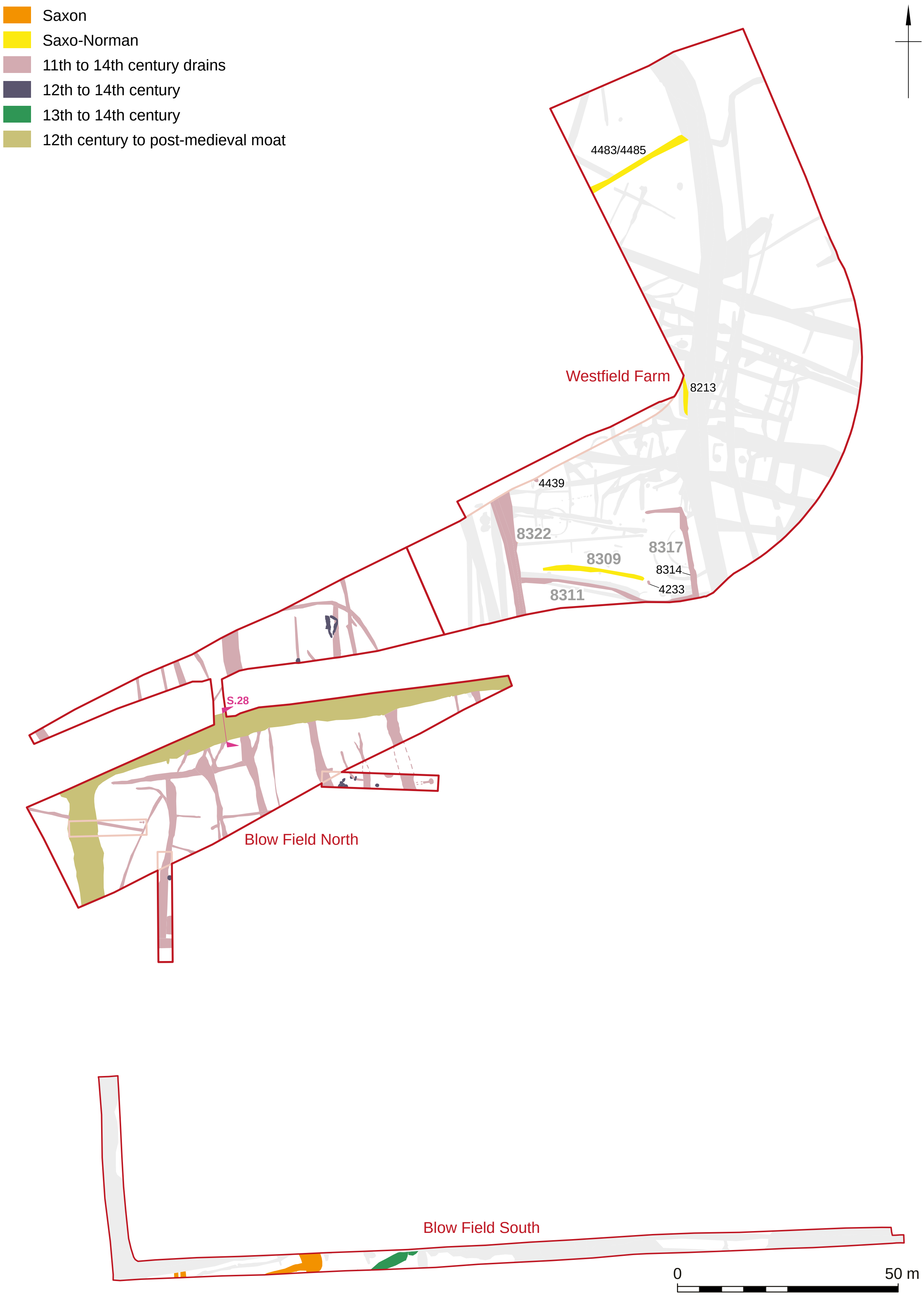


Figure 3.11 Blow Field phase plan: Saxo-Norman and Saxo-Norman/medieval drainage system

Curvilinear gully 8255 and east–west-aligned gullies 8254 and 8253 (the latter containing Saxo-Norman pottery) were truncated by north to south ditch 8252, which had itself been recut (4199/4197) and was truncated by north-east–south-west-aligned gully 8256. Gully 8256 was then cut by feature group 4240, which was in turn truncated by ditch 8250. Finally, ditch 8250 was cut by west–east-aligned gully 8251, containing 12th/13th-century pottery. Other elements of stratigraphic sequences were also recorded amongst the Blow Field drains. For example, ditch 4271 was truncated by curvilinear gully 8261, which was in turn cut by drain 8260. The earliest two features in this sequence contained 12th/13th-century pottery. Another ditch was recut twice (8235/8237/8239), with 12th/13th-century pottery in the fills of both the earliest and latest cuts. Evaluation trench 95 (RPS 2013e) contained a sequence of recut ditches (95014, 95016 and 95018), the middle of which contained 12th/13th-century pottery. One of the earlier iterations of this feature (perhaps 95014 or 95016) was probably contemporary with ditch 8252. Evaluation trench 97 (RPS 2013e) revealed that drain 8257 (equivalent to 97024) truncated 8258 (equivalent to 97025/97026/97031/97033). Although dating evidence for the drains was sparse, the stratigraphic and ceramic sequences appear to correlate, representing centuries of modification and maintenance.

Feature group 4240 comprised a central sump (interventions 4187, 4225 and 4228) surrounded by a network of linear drainage features, all with contemporary fills. Sump 4225 was approximately 4.2 m in diameter and 0.35 m deep with an irregular profile and a series of heterogeneous silty clay fills likely derived from multiple deposition events including in standing water, from localised water-based erosion, deposition and slumping. One fill of the sump (deposit 4185, intervention 4187) contained 11th- to 13th-century pottery.

Plate 3.5 Redeposited human remains in fill of ditch 4271

The fill of drain 4271 (**Pl. 3.5**; deposit 4236) contained incomplete partially articulated human skeletal remains. These were of a large adult male, who appeared to have been redeposited as part of a deliberate backfill (4237). They represent a non-normative burial in a liminal location (just outside the later moat), adjacent to the parish boundary. A peri-mortem blunt-weapon injury to the skull reveals violence around the time of death. Radiocarbon analysis of the human bone (SUERC-95456) provided a date of AD 1170–1310 consistent with recovered mid-12th- to mid-13th-century pottery. The human remains are discussed further in Chapter 6.

Further south (**Fig. 3.10**), an east-north-east–west-south-west-aligned ditch (300203) ran across the north end of the southern moat platform, parallel to later moat 300200. Ditch 300203 contained a variety of pottery, the latest of which was 13th century in date, and it is possible that this was another element of the drainage network. A probable pit (300111) could instead have been a remnant of a continuation of this ditch and contained pottery of 10th- to mid-13th-century date.

Other 12th- to 14th-Century Features

A cluster of three pits (4251, 4269 and 4270) were present to the north of the north-west island (**Fig. 3.9**). Two of the pits (4269 and 4270) contained 12th/13th-century pottery. Pit 4270 cut 12th/13th-century drain 4271, and pit 4269 cut pit 4251. The pits were elongated north to south and highly irregular, a maximum of 4 m long, 1.06 m wide and 0.4 m deep. A further undated pit (4177) in the vicinity was more regular, sub-circular and 1.1 m in diameter and 0.45 m deep.

Six intercutting pits (97012, 97014, 97052, 97056, 97058, 97062, the latter not illustrated on **Fig. 3.9**) on the moat platform at Blow Field were recorded in evaluation trench 97 (RPS 2013e). Although residual Iron Age/Romano-British pottery was recovered from the second pit in the sequence (97052), the pits are probably all roughly 13th-century in date as evidenced by 13th/14th-century pottery recovered from the third pit in the sequence (97056) and 12th/13th-century pottery recovered from pit 97012, the latest in the sequence. Other finds included a variety of animal bones, including dog bones probably from the same animal that had become spread across the pits. Fired clay fragments bore the impression of sticks or lath, suggesting the presence of a structure.

Further undated pits at Blow Field (95008, 96010, 97028, 97030 and 97032) were recorded in evaluation trenches 95, 96 and 97 (RPS 2013e). Pit 97028 contained a single sherd of Late Saxon pottery; however, this must have been residual as the pit cut the fills of 12th/13th-century drain 8258. Elsewhere, pit 95008 truncated drain 8252.

A high density of linear and discrete features was recorded in evaluation trench 98 (not illustrated; RPS 2013e), situated to the east of the main Blow Field excavation areas. These results are consistent with those of the nearby excavation areas, with similar Romano-British activity to that at the adjacent Westfield Farm site, overlaid by 12th- to 14th-century features that may represent a continuation of the Blow Field drainage system. The results from trench 98 are detailed in full in the evaluation report (RPS 2013e). They cannot be directly linked to the main results of Hornsea Project One and may be best interpreted following the completion of the Hornsea Project Two works.

A scatter of 12th/13th-century features (**Fig. 3.11**) were imposed over the Iron Age and Romano-British activity at Westfield Farm. Ditch 8322 redefined, perhaps not coincidentally, the former western limit of the Westfield Farm Romano-British settlement. It contained probable 13th-century pottery and was recut twice as 8323 and 8324; see **Figs 3.12** (location of section 27) and **3.13** (section).

Ditch 8322 also cut west–east-aligned ditch 8311 that was the final surviving iteration of a boundary that had been defined in the Romano-British (8312) and Saxo-Norman (8309) periods. Ditch 8311 contained mid-12th- to early/mid-13th-century pottery alongside residual material.

Close to its east terminal, ditch 8311 was truncated by north–south-aligned ditch 8314, which continued after a 90° bend as 8317 before terminating. A sub-rectangular enclosure with a mostly open north side may have been formed by ditches 8311, 8314, 8317 and 8322. Both ditches 8314 and 8317 contained mid-12th- to early/mid-13th-century pottery.

Three medieval pits (4233, 4439 and 8215, the latter not illustrated) were spread across the Westfield Farm site. The pits were similar in form, sub-circular and a maximum of 1.24 m in diameter and 0.85 m deep. Pit 4233 contained mid-12th- to early/mid-13th-century pottery, pit 8215 contained 11th- to 13th-century pottery, and pit 4439 was later, containing 13th- to early/mid-14th-century pottery. Further undated pits in this area have been described alongside the Iron Age and Romano-British remains under Westfield Farm above; it is possible that some or all of these may also be medieval in origin.

Plate 3.6 Moat 4059 intervention 20045 from east

12th-Century to Post-Medieval Moat

The moat ditch was revealed on the north and north-west sides of the north-west moat platform (group 4059; **Figs 3.9** and **3.11**; **Pl. 3.6**). This moat truncated many of the drains described above. Dateable artefacts were rare. Small amounts of early or mid-12th-century pottery were recovered from intervention 20045, with some 12th-/13th-century pottery recovered during the evaluation (RPS 2013e, context 96008). Much of the pottery was of 13th- to 14th-century date, but some early modern sherds were also recovered. Two radiocarbon analyses were undertaken on material from a monolith sample

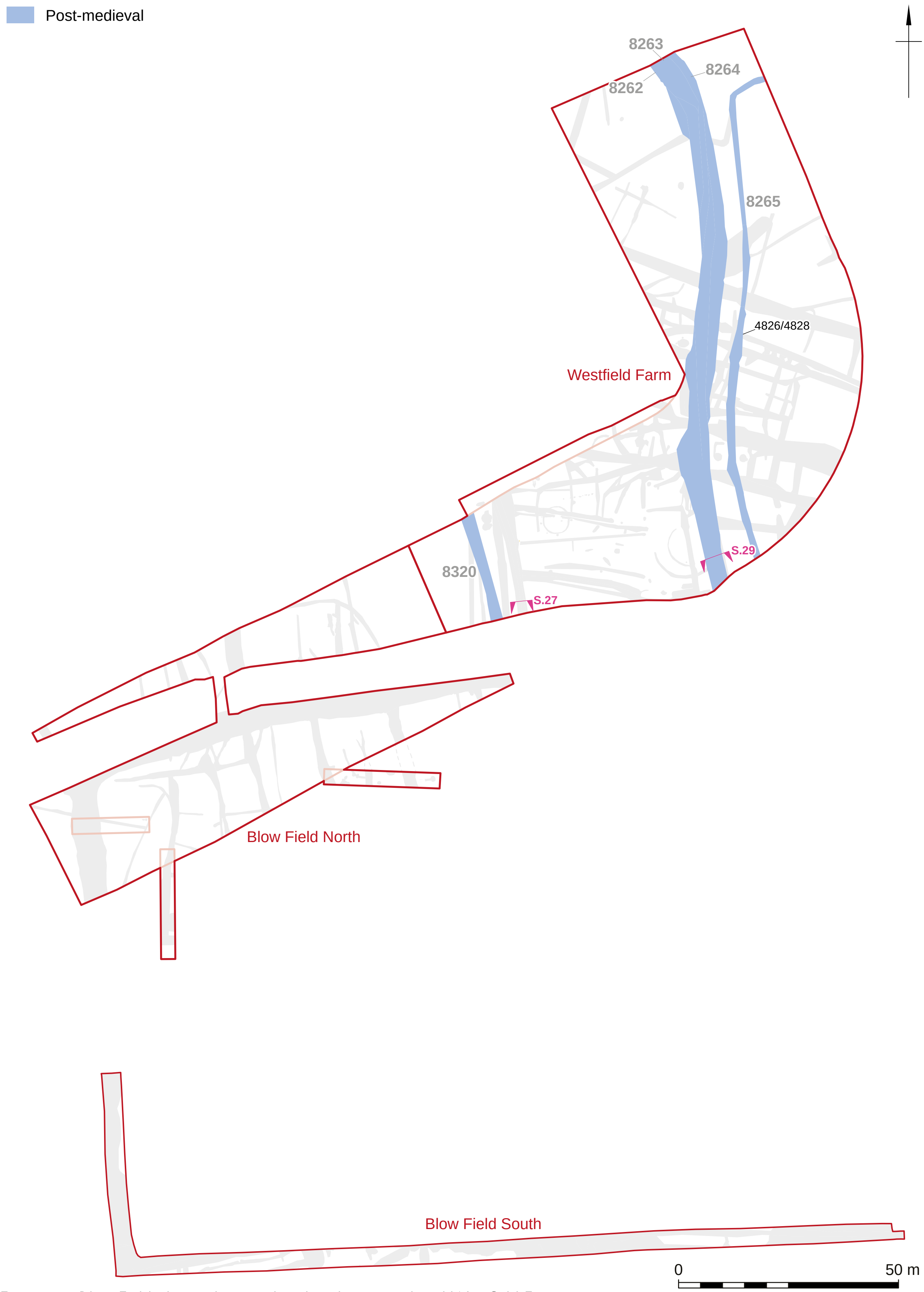


Figure 3.12 Blow Field phase plan: medieval and post-medieval Westfield Farm

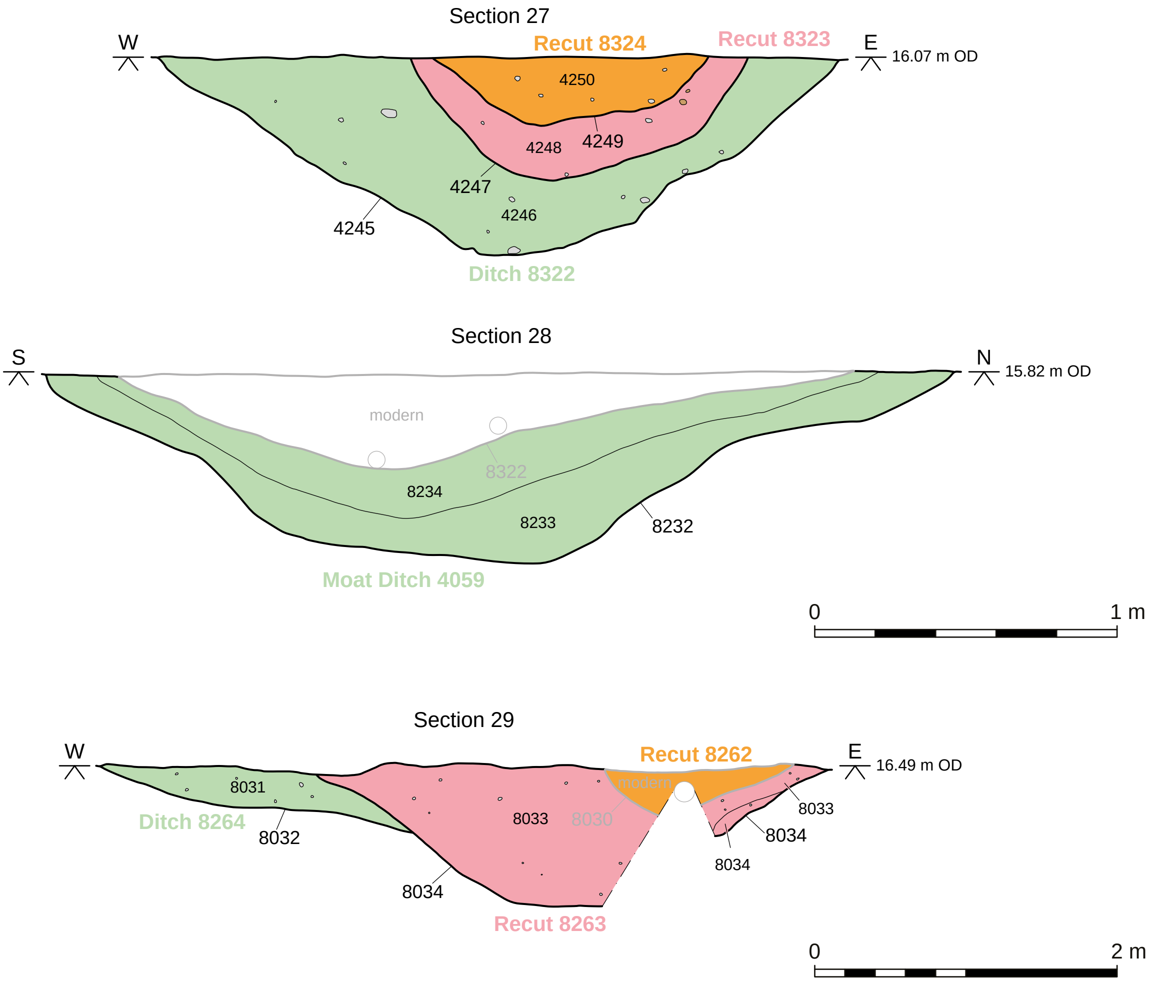


Figure 3.13 Blow Field sections

taken from intervention 4405: one of these (Poz-126497), using a sample of a humic fraction, turned out to be from residual prehistoric material (1410–1220 BC), and the other (Poz-126653), on a snail shell, returned a 15th-century date of AD 1410–1480. Only three full profiles (one from the evaluation) were obtained across moat 4059 (**Fig. 3.13**, section 28) due to the position of the hedgerow defining the modern parish boundary, which could not be removed during excavation. In the north (intervention 8230 and evaluation context 96008), the moat was up to 6.6 m wide and 1.6 m deep with between one and three fills recorded. It is probable that the moat was made up of a series of recuts or scourings, with the majority of the surviving fill deposited or reworked towards the end of the life of the moat.

Undated feature 8054 was truncated by the north-west corner of moat 4059 and may have been an earlier definition of the moat, or may have been an unrelated feature. It was over 3.4 m wide and 1.2 m deep. Further evidence for an earlier cut of moat 4059 was observed in the relationship slot between the moat and drain 8246. Here, a small part of an earlier cut (4048, not illustrated) of the moat was identified, although cut 4048 did not have a direct relationship with drain 8246.

Moat ditch 8248 (2.4 m wide and 0.83 m deep) divided the north-west and north-east moat platforms and shared contemporary fills with moat 4059. This division between the moat platforms is shown on a 1962 survey held in the HER. The latest pottery from 8248 was of 13th-century date.

Further south (**Fig. 3.10**), parts of the west side of the moat and also the moat ditch (300200) dividing the north-west and south moat platforms were recorded across three interventions. Interventions 300082 and 300089 were stepped sondages dug into the middle of the moat, which was wider than the excavation area (the excavation area was 5 m wide). The moat was bottomed at a maximum of 2 m below ground level. Intervention 300106 recorded the south side of the west–east-aligned portion of the moat, revealing a cut with a shallow angle and some slumping, perhaps suggesting the former presence of a bank at the northern limit of the south island. The fills of the moat contained pottery from three different vessels; each vessel could accommodate a 14th-century date. The moat had been heavily impacted by modern drains, test pits (not excavated as part of Hornsea Project One) and other disturbance.

The south side of moat 300200 was accompanied by a single contemporary posthole (300088) with a charcoal-rich fill containing 13th/14th-century pottery.

A late recut (96006; **Fig. 3.9**) of the west side of moat 4059 contained 19th/20th-century pottery and a metal tooth from a machine excavator bucket (RPS 2013e trench 96). Moat 300200 (**Fig. 3.10**) was also seen to be recut in one location (300109). Both recuts may represent a late agricultural boundary or drain.

Other Post-Medieval and Modern

The southern strip, map and sample excavation (**Fig. 3.10**) identified post-medieval features in the east, close to the 19th-century 'Moat House'. A curvilinear gully (300201) parallel to the south side of moat 300200 was likely a drain dug around the outside of a post-medieval field and contained mid-16th- to mid-17th-century pottery. A ditch terminal (300102) contained mid-16th- to mid-17th-century pottery and was accompanied by an undated pit (300104). A further ditch terminal (300033) was cut by pit 300050 containing mid-15th- to mid-16th-century pottery. Two parallel ditches (300015 and 300018), the latter petering out to the south, each contained pottery dating from the mid-16th to 18th centuries.

An irregular and approximately west–east-aligned feature, (300204) obliquely crossed the narrow area of excavation. A complete profile was not obtained, but both shoulders were shallow. Some slumping had occurred on the south side, perhaps suggesting the former presence of a bank. The fills were generally unremarkable but contained some stony layers, although these probably do not represent surfaces. Post-medieval artefacts – pottery, ceramic building material (CBM), glass, nails, etc. – were recovered throughout the sequence, suggesting a late date for infilling, perhaps as late as the 19th/20th centuries. Feature 300204 was cut by a north–south-aligned ditch (300035) and a lamb burial (300113) dated by 19th-/20th-century pottery. Three minor features (300026, 300028 and 300058) may represent parts of the same curvilinear ditch and contained 16th-century pottery alongside residual Late Saxon material. Both 300028 and 300058 were truncated by pit 300026, which yielded three sherds of 19th-20th-century pottery.

The eastern 30 m of the southern SMR area was occupied by a former pond (300013). This feature was likely an extension of a smaller pond depicted on historic maps to the south-east, and may have originated as a shallow (0.45 m deep) quarry or perhaps a garden feature associated with the former Moat House. Water may have fed into the pond, either intentionally or coincidentally, from the remains of the moat. An undated ditch (300061) was seen below the base of the pond, aligned north-east to south-west. The pond contained some chalk and flint rubble dumped at the edge. The main fills probably represented gradual water-borne silting and contained 16th- to 18th-century pottery and CBM, including rough handmade bricks. A final fill may have represented a deliberate attempt at filling and levelling out the remains of the pond.

A major post-medieval ditch (8264; **Fig. 3.12**; **Pl. 3.7**) crossed the Westfield Farm excavation area, post-dating every feature it intersected with, and following the line of the parish boundary. Although the parish boundary was aligned west to east along the north side of the Blow Field moat, it then turned at 90° to the north across the

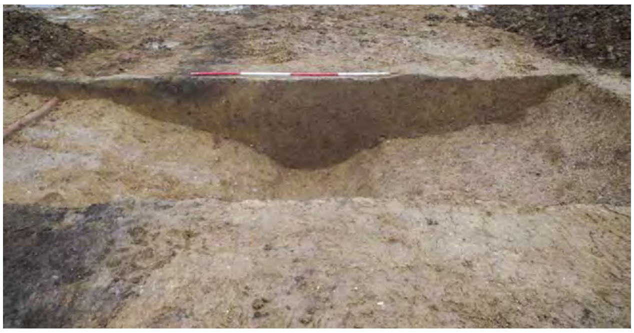


Plate 3.7 Parish boundary 8264 from south

Westfield Farm site before turning 90° again to the east. Parish boundary ditch 8264 was very large, between 6.8 m and 11.8 m wide and up to 1.1 m deep, although in one location (8032) it was heavily truncated (only 2.1 m wide, 0.52 m deep). Pottery recovered from it comprises exclusively residual late Romano-British material; this is not surprising as it truncated a large number of features of this period.

Parish boundary ditch 8264 was recut first as 8263 (up to 4 m wide and 1.3 m deep), and then again for a land drain (8262; **Fig. 3.13**, section 29). The boundary could be seen as a depression on the ground prior to excavation and is visible on aerial photographs. Residual early Romano-British pottery was again recovered from the fills of recut 8263 alongside mid-17th- to 18th-century sherds.

Plate 3.8 Drain 8265 parallel to parish boundary from south

Ditch 8265 (**Pl. 3.8**), 2.3 m wide and 0.62 m deep, mostly ran parallel to the east side of parish boundary ditch 8264, and shared the same late stratigraphic position. At the north end, this ditch turned east, respecting a modern trackway and a field boundary depicted on the 1877 1st edition Ordnance Survey map. This ditch may have been a drain dug around the inside of the boundaries of a former field. A recut (4826/4828) was recorded in a single intervention. Again, the dateable finds assemblage comprised exclusively residual Romano-British pottery, although in this case including both early and late Romano-British material.

At the western boundary of the Westfield Farm site, ditch 8320 was also visible as a depression prior to excavation and on aerial photographs. This ditch correlated with a field boundary depicted on the 1877 Ordnance Survey map and was the final definition of a boundary that had been in existence since the Iron Age (as 8321, see **Chapter 2**). It contained 18th-century pottery.

Hornsea Project Two

Hornsea Project Two recorded the continuation of the Blow Field site to the south-east. The provisional results correlate well with the results of Hornsea Project One, and, excitingly, include a Late Saxon (9th to 11th century) domestic structure constructed of timber and wattle and daub (Allen Archaeology 2022, 56–58).

Habrough Medieval Moated Site

Introduction

The Habrough site is located in Habrough parish in North East Lincolnshire amongst arable farmland (**Fig. 3.14**). The site is bounded to the south by the B1210 Immingham Road and there is sporadic residential development along this and nearby roads, including Killingholme Road leading north. Immingham is 1.5 km to the east. St Margaret's church is situated at a road junction only 200 m west-south-west of the moated site. St Margaret's was rebuilt in 1868/9 on the site of an earlier church and contains restored 14th-century arches (Pevsner and Harris 1978, 260). Before restoration, Kelly's directory of 1868 recorded that 'the oldest portion belongs to

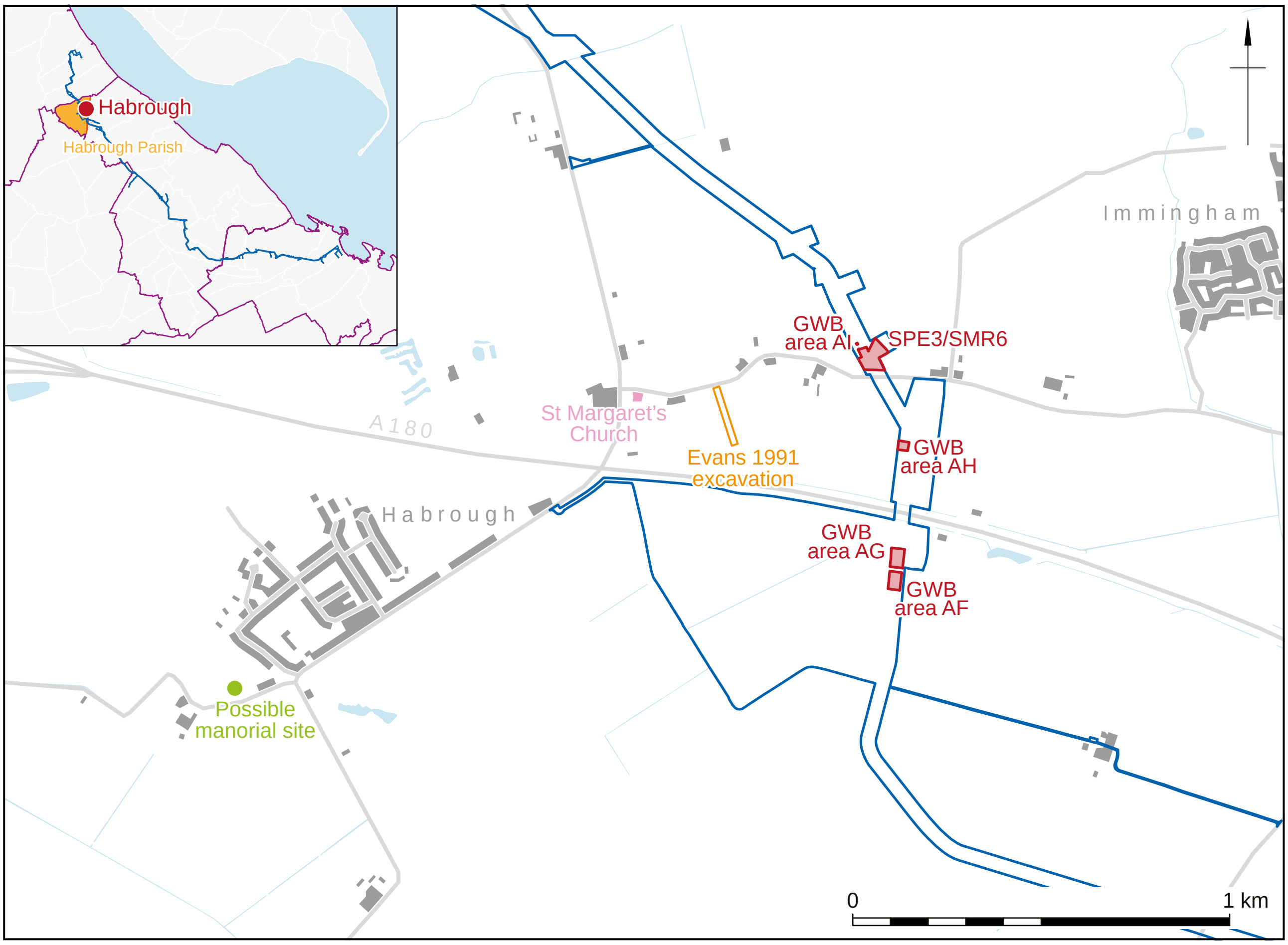


Figure 3.14 Habrough location

the Early English style that prevailed in the twelfth century'. The Habrough moated site is at 11 m OD, which even at this low level occupies an area of higher, better-drained ground in the east of the parish (Evans 1991). The Habrough moated site investigated by Hornsea Project One was located at NGR 514890 417750.

Evans (1991) had previously monitored installation of a service across a further moated site some 450 m to the west and to the south of Immingham Road (**Fig. 3.14**, NGR 515715 414232). This moat may have been 150 feet (45.72 m) by 190 feet (57.91 m), or 0.27 ha in area, and was visible in 1972 as a raised platform within a moat with an external bank (North East Lincolnshire HER entry 0340/5/0 – MNL204).

The village of Habrough has historically had two focus points. In addition to the part of the village centred on St. Margaret's and including the present site, there was a second part of the village in the west, where the modern village and railway station are now located. Following the arrival of the railway in the 1840s, the western focus gained dominance. Domesday records two manors in the vill, the larger held by William de Percy and the smaller, more valuable for including a mill, held by Alfred of Lincoln. Evans (1991) traces the decline of the smaller manor through the Lindsey Survey of c.1115–18 and a concord of 30 April 1245, arguing that it was broken up through acts of benevolence to various ecclesiastical bodies, leaving only a rump tenanted by the Berners family and owned by the Darcys (de Arcis) in the 12th to early 14th centuries. Evans uses the evidence of the geographical location of these ecclesiastical foundations, modern placenames (Habrough Grange and The Grange) and the necessary location of the mill mentioned in Domesday on a water course (the Skitter Beck or a tributary) to argue that Alfred of Lincoln's smaller manor was situated in the west of the parish, near the modern railway station. This is the location of another series of earthworks (HER MNL205).

The manor of William de Percy may then be the east manor associated with the parish church (Evans 1991), and therefore the manor covered by the Hornsea Project One excavation area. Evans uses various documents, chiefly inquisitions post-mortem, to argue that a de Saltfletby family were resident from at least 1245 until 1365. Interpretation is complicated by the existence of absentee tenants-in-chief such as William de Skipworth and Thomas Hagh. On 1 July 1365 the manor was transferred to John de Skypwyth, with the family holding possession until at least the 16th century. In the early post-medieval period, the de Skipwith family bought formerly ecclesiastical land, following the pattern seen across the Middle Marsh. Evans could not resolve the 17th-century history of the site, but by 1672 the manor was in the possession of Edward Maddison, perhaps as a result of the Civil War. By 1694–5 it had passed to John Arnopp and in the 19th century was in the hands of the Earl of Yarborough. Inclosure came in 1813 (Evans 1991). Evans identified this manor with the apparent moated site he excavated in 1991. It is possible that the Hornsea Project One Habrough site was part of this same extended manorial complex.

The Hornsea Project One moated site can be seen on aerial photographs readily available via online map applications. An aerial photograph from the 1940s supplied by the late Hugh Winfield, curator in North East Lincolnshire, contains greater detail but is not suitable for publication due to copyright and quality. Despite the quality, the photograph clearly shows the moated enclosure, a pond (also identified during excavation), and a small building in the south-west corner of the enclosure (also depicted on the 1887 Ordnance Survey map marked with the letter ‘P’, probably for ‘pump’). The east side of the moat is marked or obscured by a hedgerow. The north and west sides of the moat are visible as an earthwork, as is the south side of the smaller version of the moat (see below). A light-coloured alignment crossed the north side of the moat and may represent a trackway, possibly indicating the position of an entrance. This track lay outside the area of excavation. Faint undulations visible on the photograph north of the moat may represent ridge and furrow cultivation and are aligned roughly north to south, consistent with the excavation and geophysical survey results.

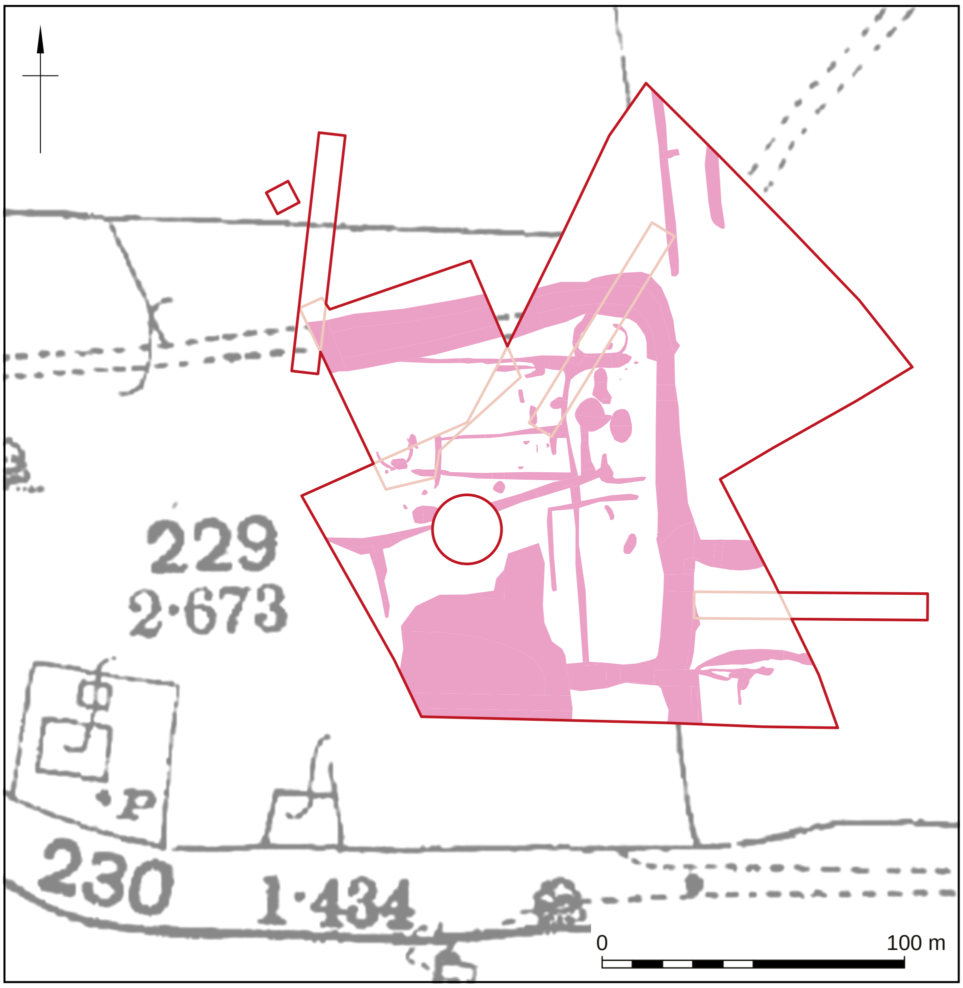
The first edition Ordnance Survey map (1888; **Fig. 3.15**) depicts a field boundary following the east side of the Hornsea Project One Habrough moat. This boundary was removed between the compilation of the 1967 and 1969 maps, perhaps between 1963 and 1966 (Loughlin and Miller 1979, 163). A track or footpath depicted on historic maps until 1956 followed the route of the north side of the moat and led north-east from it.

The geophysical survey (RPS 2013c) revealed a concentration of linear and discrete features. Fieldwalking recorded a cluster of medieval potsherds with fragments of post-medieval pottery and CBM, suggesting that activity on the site continued into the 17th/18th centuries (RPS 2013d).

The site was investigated through four campaigns of excavation. Evaluation trial trenches 79 and 80 (RPS 2013e) were later supplemented by trench 80a (Wessex Archaeology 2015a). A further trench (78; RPS 2013e) was blank and, therefore, probably lay beyond the limit of the moated complex. Set piece excavation 3 was the most substantial investigation of the Habrough site, and was expanded and supplemented as SMR6 (Fig. 3.14). The overall excavation area was irregular, constrained by the construction design of the project. A small circular area on the moat platform could not be excavated due to the presence of a monitored borehole (see **Fig. 3.15**).

Further excavation beyond the moat included GWB area AI, which recorded an undated pig burial north of the moated site. A minor collection of Iron Age and Romano-British features were identified by the general watching brief in arable fields south of the moated site. Area AH was located at NGR 516210 414184 between Immingham Road and the modern A180 dual carriageway. Areas AF and AG were situated to the south of the dual carriageway at NGR 516180 413885.

Figure 3.15 Habrough historic map: Ordnance Survey 1888



Soil Sequence and Natural Deposits

The undisturbed natural geological substrate was orange and grey clay glacial till with chalk and other stone inclusions (3000).

Modern building rubble had been used to level the south of the excavation area and comprised mid-brown sandy clay containing gravel and 20th-century material such as bricks, car tyres and metalwork (3003=3332). Another levelling layer, recorded in the south-east of the Habrough site, comprised dark brownish grey sandy clay with chalk, charcoal and sandstone inclusions (3192); this may have been of similar date to layer 3003=3332.

A recent relict-ploughsoil subsoil (3002) overlay these layers (3003=3332 and 3192) and comprised orangish or yellowish brown sand and silty clay with gravel and chalk flecks. The topsoil (3001) was grey or yellowish brown sandy clay, silty clay or loam with gravel and modern brick fragments.

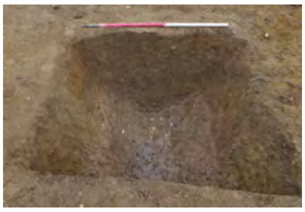


Plate 3.9 Late Iron Age ditch 953 from east

Iron Age and Romano-British

GWB area AG south of the Habrough moat (**Fig. 3.16**) contained a roughly west–east-aligned ditch (953=955), 1.6 m wide and 0.63 m deep with a 'V'-shaped profile (**Pl. 3.9**), which terminated in the east. Late Iron Age pottery was recovered from the fills of this ditch as well as residual Early Bronze Age sherds. The ditch was cut through a layer of yellow clay subsoil (951), suggesting that this subsoil was of Iron Age or earlier date, distinct from the subsoil from the main areas of excavation. An adjacent spread of black silty sand (943 and 944, area AF) instead contained modern artefacts.

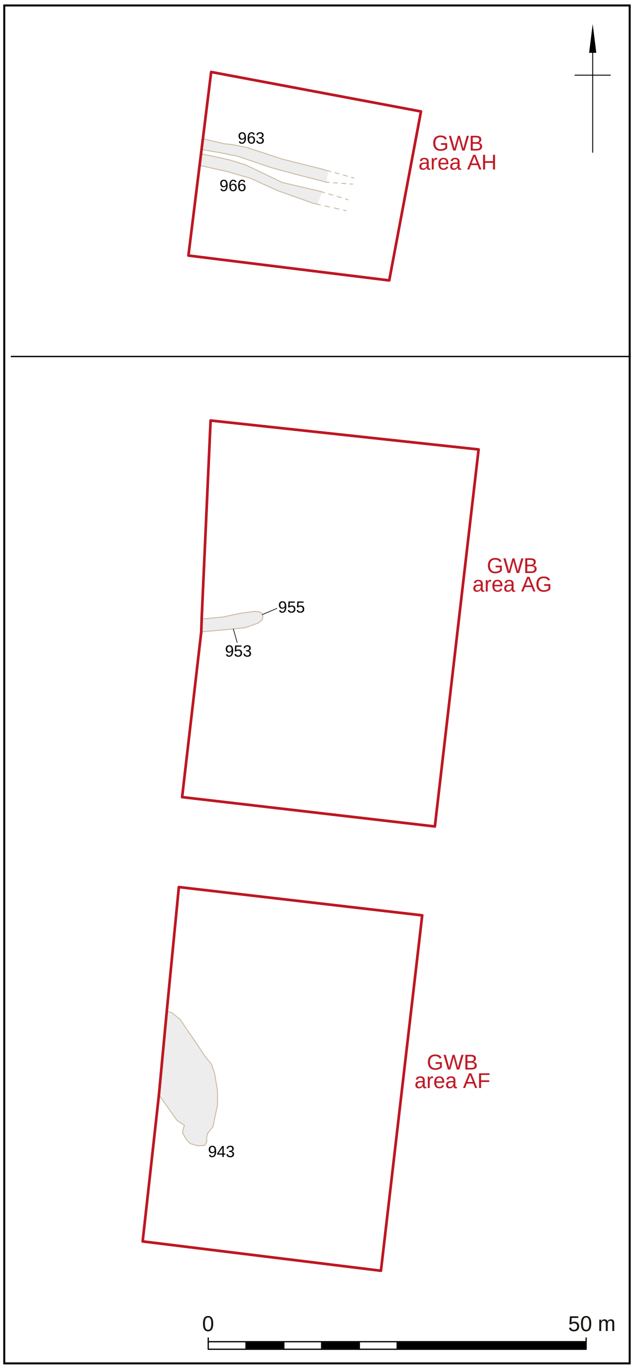


Figure 3.16 Habrough plan of GWB areas AF, AH and AG

Some 380 m to the north, a second 'V'-shaped ditch (963, 1.22 m wide and 0.7 m deep) was present in GWB area AH; this ditch contained Iron Age to early Romano-British pottery in the lower of two fills. The ditch petered out in the east. The boundary marked by ditch 963 was possibly redefined by ditch 966, 1.6 m wide and 0.48 m deep. Late 1st- to mid-2nd-century pottery was recovered from ditch 966.

Within the main excavation area, a single sherd of residual abraded Romano-British greyware was recovered from post-medieval pit 80007 in evaluation trench 80 (RPS 2013e).

Saxo-Norman

Close to the centre of the site (**Figs 3.17** and **3.18**), a plough-truncated ring-gully (3316), with an estimated diameter of 4.5 m, contained 11th-/12th-century pottery. The feature superficially resembled later penannular enclosure 3205 (see below) located elsewhere on the moat platform. The north-east terminal of ring-gully 3316 cut through a 2 m by 0.8 m oval of heat-affected natural (3303), suggesting the presence of a hearth.

In the north-east of the moat platform, evaluation trench 80 (RPS 2013e) identified a pit (80021) which did not contain dating evidence but was cut by Saxo-Norman drain 80023=3203.

Nearby was a line of three postholes with burnt fills (3126, 3132 and 3134). One (3126) contained Saxo-Norman pottery. They were aligned north-east to south-west, at odds with a roughly contemporary west–east-aligned drain terminal (3204), located immediately north-west of the postholes.

The Saxo-Norman remains were dominated by a stratigraphically early system of minor drainage ditches (3061, 3080, 3120, 3203 and 3204; **Pl. 3.10**; also evaluation contexts 80023, 80029, 80031, RPS 2013e) up to 0.8 m wide and 0.5 m deep. These all appeared to be contemporary and conformed to an irregularly spaced north–south- and west–east-orientated grid. Dateable artefacts were rare and comprised late 10th- to 12th-century Saxo-Norman pottery from a single drain (3080). Drain 3204 was unusual in having up to three adjacent cuts that probably represent maintenance of the feature over time.

Outside the moated enclosure were further parallel undated linear features (3027 and 3029) that were similar in form and orientation to the Saxo-Norman drains recorded from the moat platform. As in the case of 3204, the separate parallel cuts probably represent maintenance over time.

12th to 14th Century

A second phase of drainage features (group 3206) was imposed over the Saxo-Norman drains (**Fig. 3.19**). One element was aligned east-north-east to west-south-west on a

Plate 3.10 Drain 3203 (intervention 3073) from north

Plate 3.11 Pit 3160 from north

different orientation to the earlier drains. The later drains were also a little larger than their predecessors, up to 0.9 m wide and 0.56 m deep. Pottery dating to the mid- to late 12th century was recovered from two locations (3050 and 3090), and in one location (3042/3044) there was evidence that the drain had been recut or scoured. The drain group appeared to respect the line of the moat, terminating short of the moat cut, suggesting that the moat was already dug when this phase of drainage was established.

An 'L'-shaped slot or gully (3017 and 3025) was on a similar alignment to the drains. Each arm was around 11 m long, and the cut had vertical sides and a flat base, around 0.5 m wide and 0.25 m deep. Slot 3025 truncated Saxo-Norman drain 3023, consistent with the contemporaneity of the slots and the second phase of drainage. These slots, possibly beam slots, may be evidence of a building.

In the north-east corner of the moat platform was an irregular penannular feature (3205) with an opening to the north (also recorded in evaluation trench 80 as 80025, RPS 2013e). The penannular feature cut the edge of Saxo-Norman drain 3204 and contained mid-12th- to mid-13th-century pottery. It enclosed a small area of approximately 5.5 m by 5 m and was generally defined by a gully 0.25 m wide and 0.23 m deep, although this became larger and more irregular in the west, where it was 0.7 m wide.

Three large, irregular/sub-circular pits (3142, 3160 and 3170; **Pl. 3.11**) were located in the north-east of the moat platform. The three pits were morphologically similar and had been used for the episodic deposition of burnt waste. They were a maximum of 4.5 m in diameter and 1.3 m deep. Mid-12th- to 13th-century pottery, animal bone, fired clay and burnt stone were all recovered from the pit fills, particularly from the upper levels. Pit 3160 cut the fill of an element of drainage complex 3206 (see above) suggesting that these drains had gone out of use by the time pit 3160 was dug.

Five further small pits (3048, 3052, 3118, 3320 and 3322) scattered across the moat platform contained pottery with dates ranging from the 11th century to 14th centuries. Some of the pits may have been postholes (particularly 3320 and 3322). Pit 3318 truncated Saxo-Norman partial ring-gully 3316. A further 15 pits on the moat platform are undated; some may be contemporary with the main period of activity in the 12th/13th century. Pit 3075 cut Saxo-Norman drain 3203 (**Fig. 3.20**, section 30), consistent with such a date. The pits were morphologically and spatially diverse, probably with a variety of functions. Undated pits 3097 and 3124 contained burnt fills and may have been for waste disposal, similar to the much larger pits 3142, 3160 and 3170.

Three linear features lay north of the north-east corner of the moated enclosure, up to 6 m apart and orientated north to south. Linear feature 3209 was a maximum of 1.55 m wide and 0.39 m deep and contained mid-/late 12th- to early/mid-13th-century pottery. One of the features was identified in an evaluation trench only (RPS 2013e, context 80005), where it was seen to be cut by post-medieval moat 3202. Ditch 80005 was 0.7 m deep where it intersected the moat, but petered out towards the north, which may explain why it was not detected by subsequent excavation. These three parallel features (one not numbered) approximately correlate with a boundary shown on the

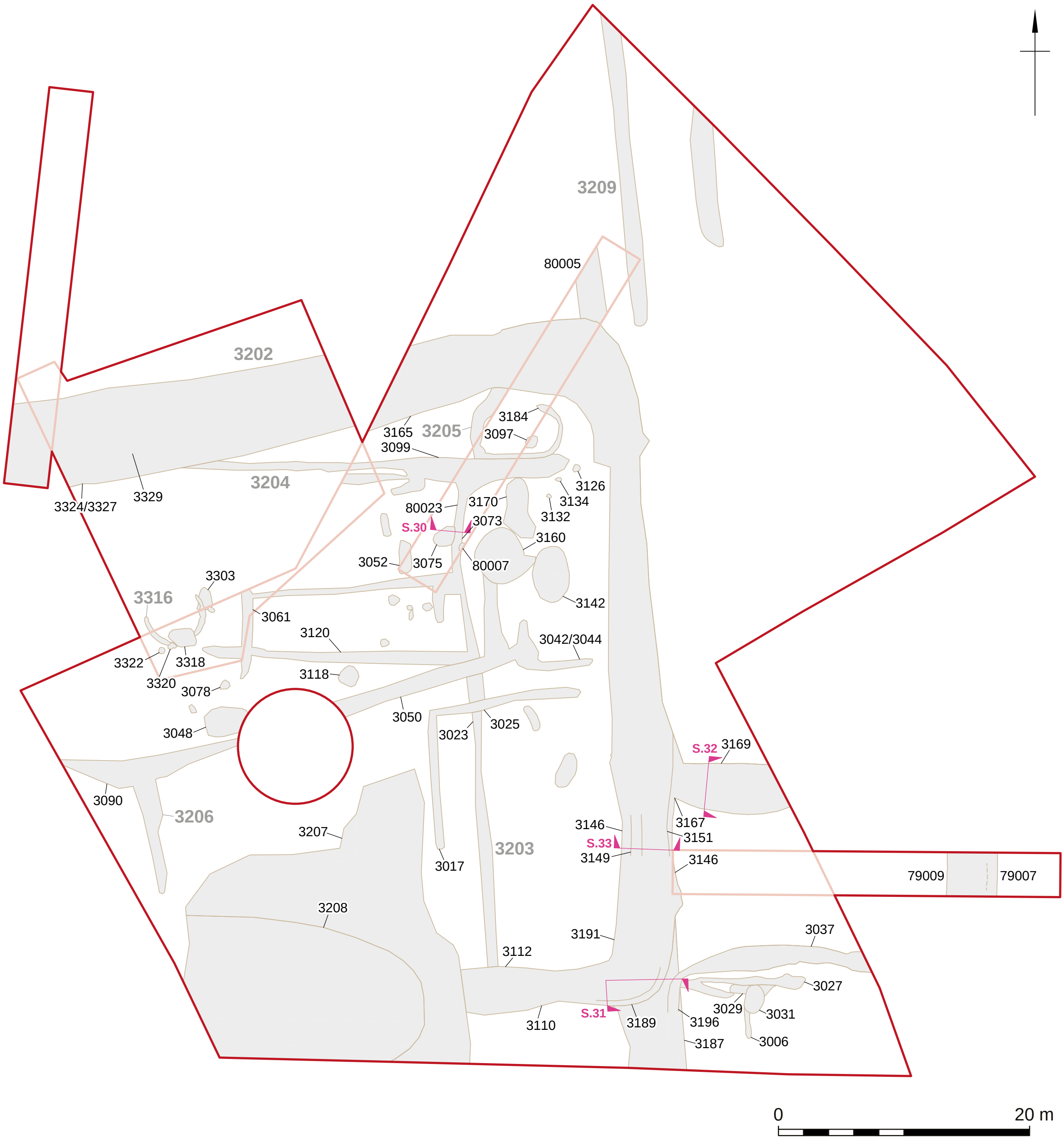


Figure 3.17 Habrough plan

1888 Ordnance Survey map. In addition, the south terminals of the eastern two features appear to respect a trackway shown on this map, possibly with an earlier origin. These features may represent parallel agricultural boundary ditches if not plough furrows.

The earliest surviving recorded iteration of the moat ditch was 3187 (**Fig. 3.20,** section 31), at 2.94 m wide and 0.94 m deep, which had been largely truncated but was preserved to the south of the south-east corner of later moat cut 3202. The ditch could not be directly dated, but it may have continued as 3167 to the north, which shared contemporary fills with ditch 3169.

Ditch 3169 (**Fig. 3.20**, section 32) ran east from the east side of the Habrough moat and may have been a large drain controlling the flow of water from the moat. It was 3.38 m wide, a similar width to the moat itself, but deeper at 1.2 m, suggesting that any water may have flowed from the moat into this feature. The bases of two mid-12th- to early 13th-century pottery vessels were recovered, one placed inside the other

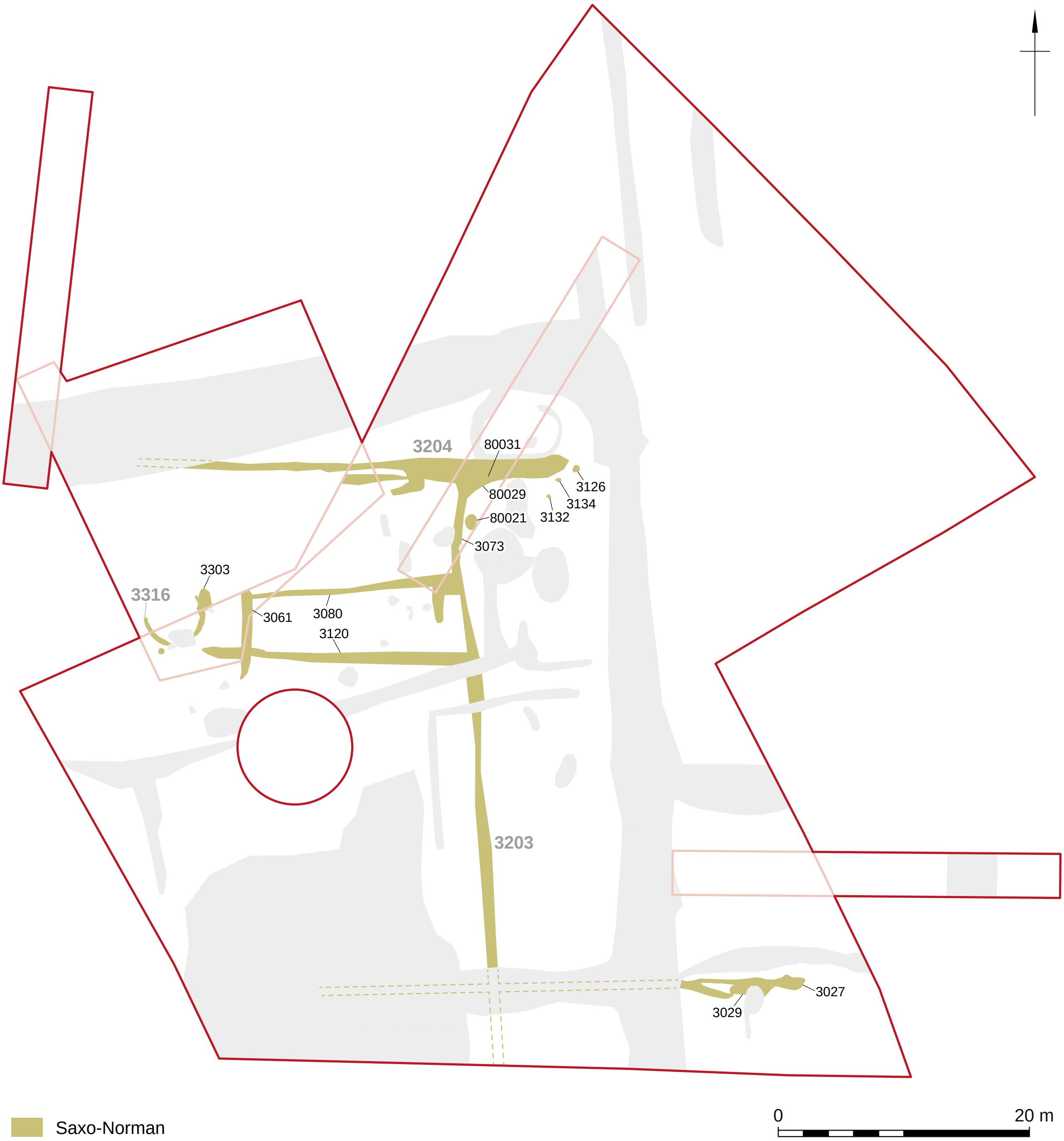


Figure 3.18 Habrough phase plan: Saxo-Norman

(**Pl. 3.12**). These may represent dating evidence contemporary with the infilling of the earliest moat at Habrough.

In the south-east of the excavation area, 'L'-shaped ditch 3037=3196 (**Fig. 3.20,** section 31) may have formed the north-west corner of a rectilinear enclosure to the south-east of the moat. It was cut following the infilling of early moat 3187, and also truncated Saxo-Norman drainage gully 3027. Ditch 3037=3196 contained two contemporary fills with conjoining mid-12th- to mid-13th-century pottery sherds. Similarly dated material was recovered from pit 3031, one of two pits (the other 3006) within the enclosure.

Evaluation trench 79 (RPS 2013e) revealed an additional north–south-aligned linear feature (79009) to the east of the main excavation area. Ditch 79009 was established by augering to be about 4 m wide and 1.56 m deep. A horseshoe and pottery are indicative of a 13th- to 15th-century date, though the feature was cut through the subsoil, suggesting a later chronology. This ditch was later recut as a smaller, undated feature (79007).

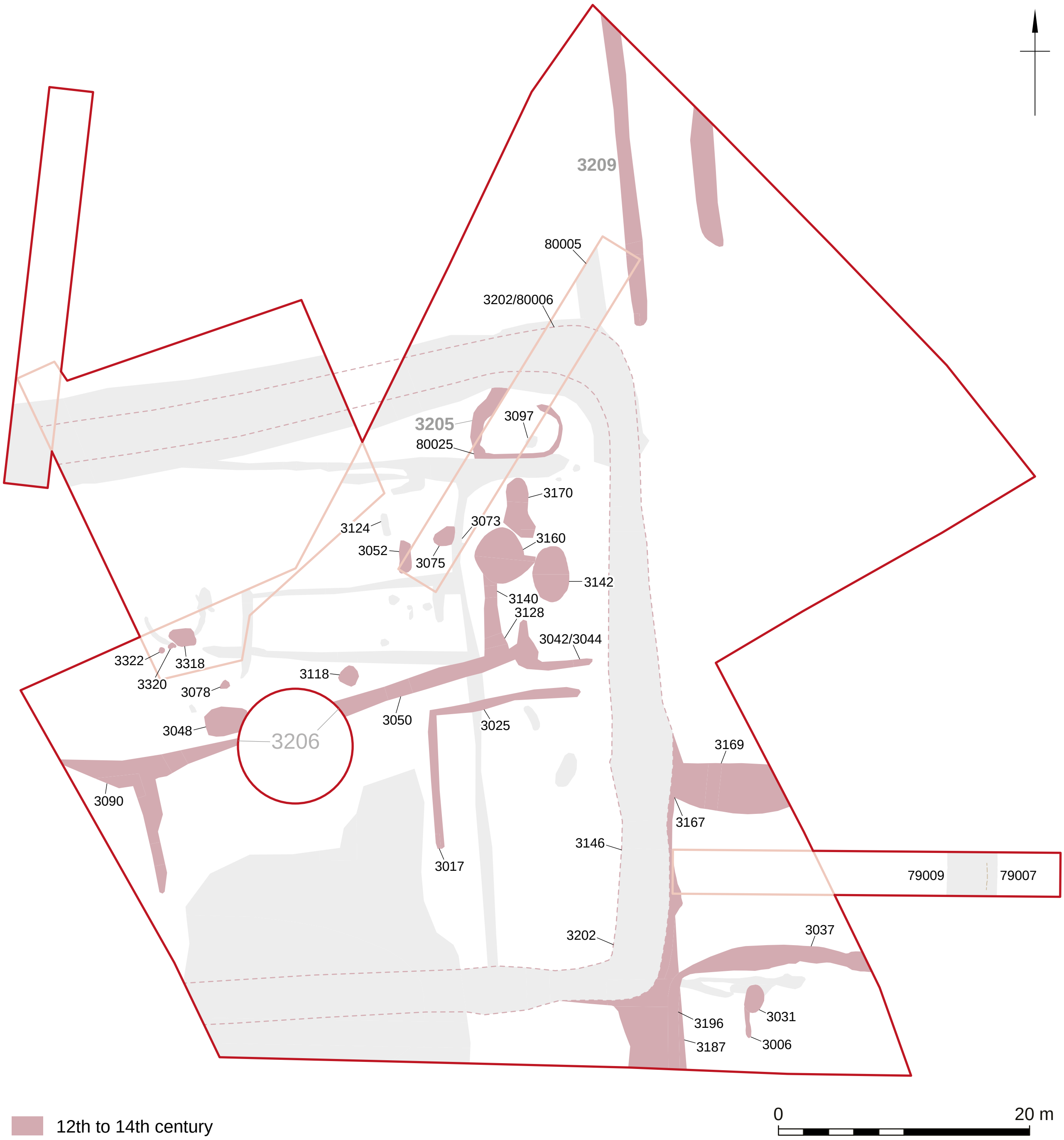


Figure 3.19 Habrough phase plan: 12th century to 14th century

Plate 3.12 Medieval vessels from ditch 3169

17th/18th-Century and Later Moat

The main surviving element of the moat ditch (3202; **Figs 3.20** and **3.21**; **Pl. 3.13**) was of post-medieval date, representing a late scouring. Moat 3202 cut Saxo-Norman drains 3203 and 3204, early moat ditches 3167 and 3187, and 12th/13th-century penannular feature 3205.

The north side of moat 3202 (intervention 3324) was very large, up to 8.4 m wide and 2.2 m deep, but contained only two clearly defined fills. The lowest fill (3325) yielded 17th/18th-century pottery and an iron fork head. A second intervention into the north side of the moat (3165) had to be halted due to the depth of excavation through the loose moat fill. The north side of the moat was also recorded in evaluation trench 80 (RPS 2013e, context 80006) and evaluation trench 80a (Wessex Archaeology 2015a, context 80005). The presence of modern glass and rope in the upper fills in the latter trench indicate relatively recent infilling.

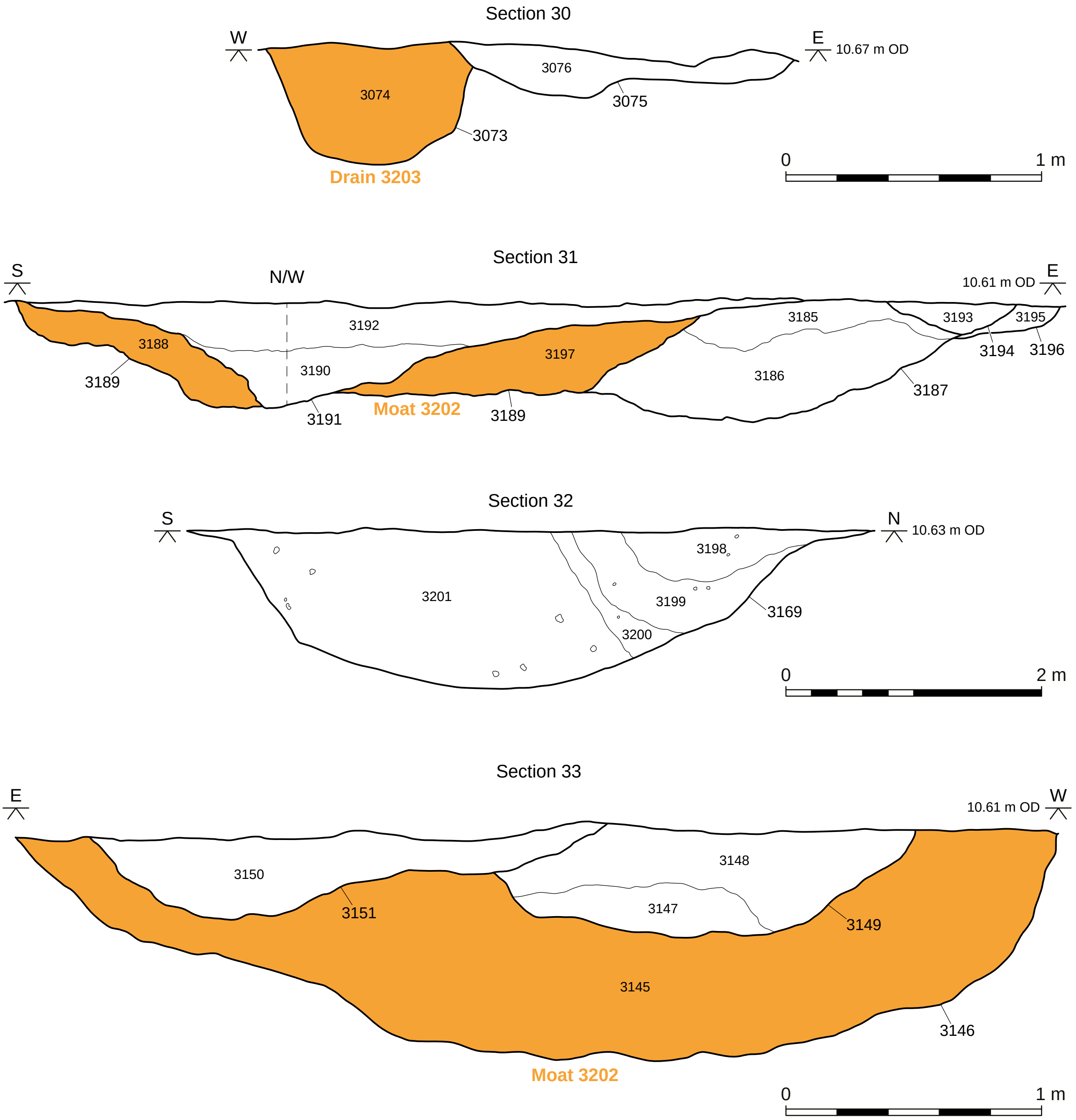


Figure 3.20 Habrough sections

Plate 3.13 Moat 3202 (intervention 3146) with post-medieval recuts 3149 and 3151

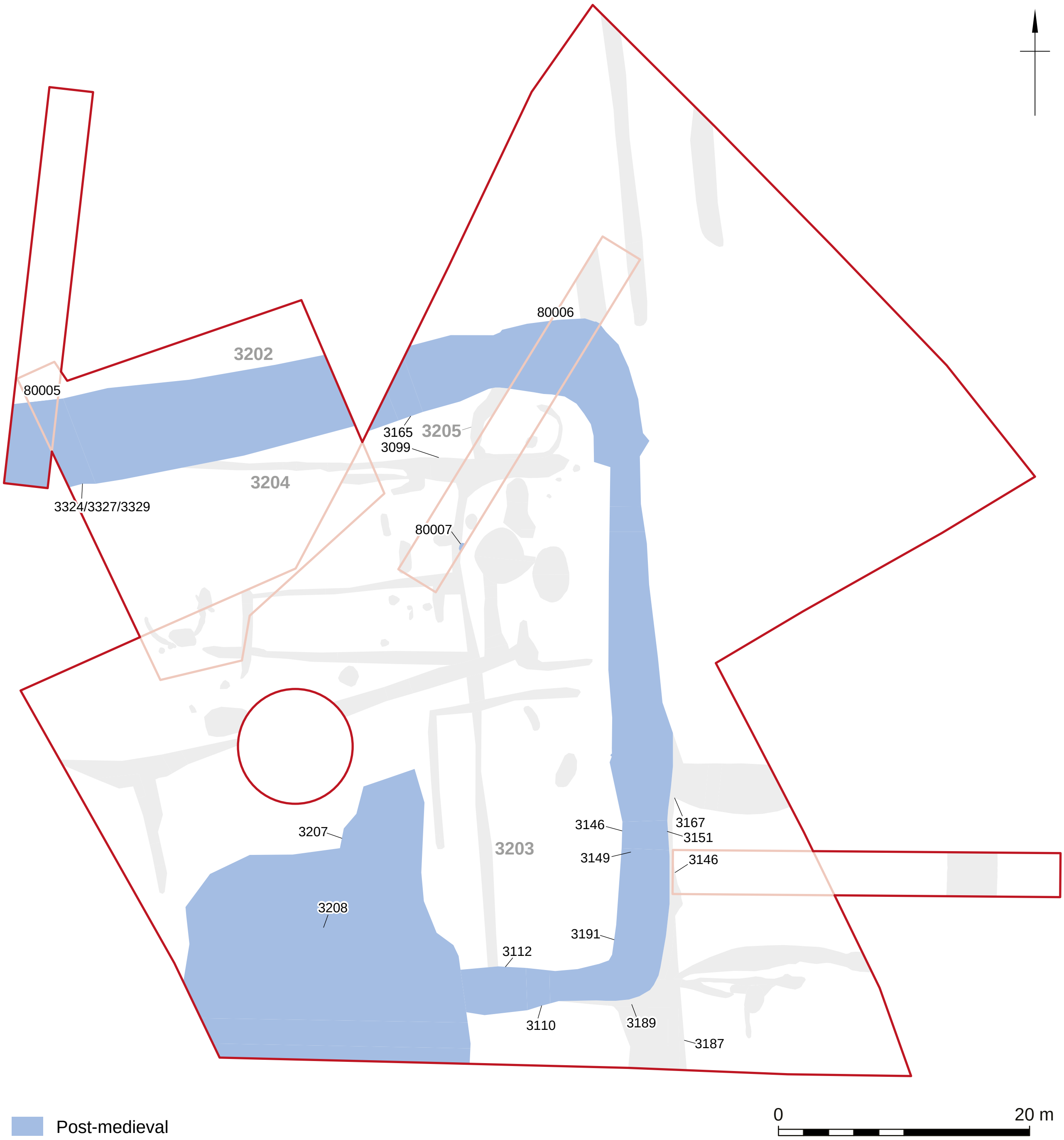


Figure 3.21 Habrough phase plan: post-medieval

The east and south sides of moat 3202 (interventions 3110, 3112, 3146 and 3189, recut as 3191; **Fig. 3.20**, section 31) were smaller than the north side at 2.75–4.2 m wide and a maximum of 1.2 m deep. There was no evidence either of a clay lining or of slumping, which might have indicated the presence of a former bank.

There were additional undated recuts of this late phase of moat. In the north, recut 3327 (8.06 m wide and 1.4 m deep) was again recut (3329, 3.42 m wide and 0.8 m deep). There was also evidence for two recuts of the east moat in intervention 3146/3149/3151 (**Fig. 3.20**, section 33).

Other Post-Medieval, Modern and Undated

A former pond (3207) truncated the south side of moat ditch 3202 (**Fig. 3.21**); it is possible that the pond was supplied with water from the vestiges of the moat. Within the area of excavation, the pond covered an area 22 m by 23 m and was 0.8 m deep. Pond 3207 contained a basal layer of organic dark brown sandy clay with stones (3004), representing silting in standing water. A layer of sub-rounded stones (3208) had been deposited on the west side and base of the pond and may have been a surface to allow access, perhaps by horses or other livestock. The pond had been backfilled in the 20th century when the south of the site was levelled with building rubble (3003).

Pit 80007 identified during the trial trench evaluation (RPS 2013e) was 2 m in diameter and 0.4 m deep. The pit contained an abraded sherd of redeposited Romano-British greyware, the only such evidence recorded from the main excavation area at Habrough. The pit itself was probably modern as it was cut through the recent subsoil.

A partially preserved articulated pig skeleton (973, not illustrated) was recorded during the general watching brief immediately north of the Habrough moated site. Instead of occupying a cut feature, the animal skeleton was identified within the base of the subsoil (971) overlying the undisturbed natural (972). The skeleton had been disturbed by ploughing. No dating evidence was recovered. The burial could be relatively modern.

Hornsea Project Two

Hornsea Project Two expanded the area of investigation, revealing more of the moat ditch as well as further drains or ditches on similar orientations to features revealed during the Hornsea Project One works. The chronology of these remains was consistent with the Hornsea Project One results (Saxo-Norman to modern). Domestic refuse of Saxo-Norman date may suggest habitation at least during this time period (Network Archaeology 2022, 121–127).

Tetney Lock Road Saltern and Kiln and Medieval Field Boundaries

Introduction

The Tetney Lock Road site is located in the parish of Tetney in the East Lindsey district of Lincolnshire, centred on NGR 533170 401815 (**Fig. 3.22**). The site lies within the Outmarsh in what is now an area of reclaimed arable land, with drainage ditches situated to the immediate south of the site and a short distance to the west and east. The drain west of the site is on the probable alignment of a sea defence of 12th-century or earlier date following Newton Marsh Lane (Owen 1984, 47), although there is no known surviving evidence for the sea defence at this location. A track (a public footpath) follows the southern drain. Tetney Lock Road itself lies around 300 m to the north of the site. The site is located at between 2.55 m and 2.25 m OD, falling to the east towards the sea.

Geophysical survey had recorded a strong, irregularly shaped anomaly which was provisionally interpreted as a saltern, investigated by evaluation trench 22 (RPS 2013e). This led to the excavation of the adjacent area as SMR2.

Evaluation trenches 23, 24, 25, 26, 27 and 28 (RPS 2013e) and 28a (Wessex Archaeology 2015a) were excavated to the west of the Tetney Lock Road site, with trenches 19, 20 and 21 (RPS 2013e) excavated to the east. Each of these investigations had a negative result, as did the subsequent GWB, suggesting that activity probably did not extend beyond the site.

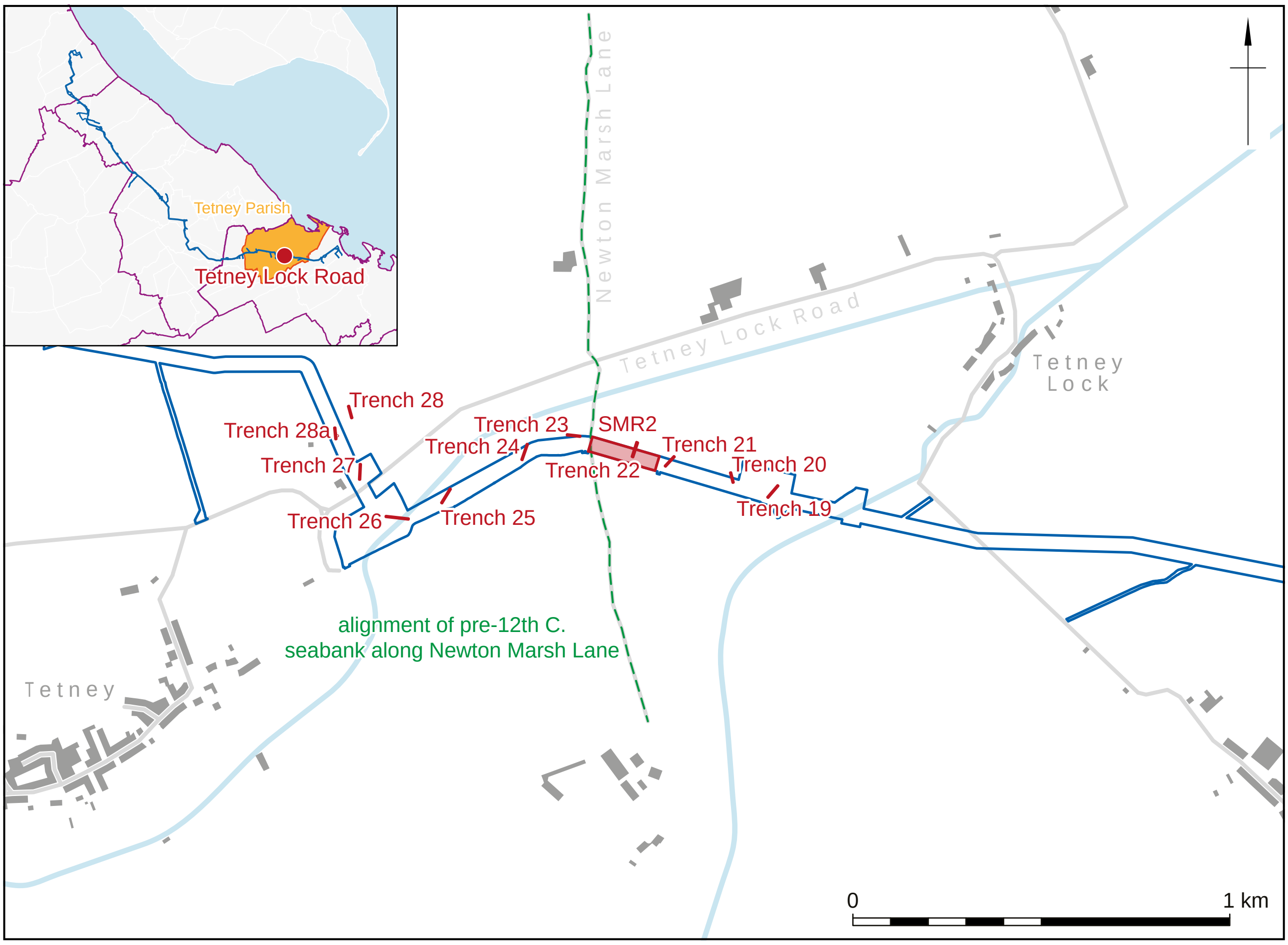


Figure 3.22 Tetney Lock Road location

Kiln

The mitigation excavation (**Fig. 3.23**) recorded a spread of burnt material (9517; **Pl. 3.14**) comprising dark grey silty clay with 80% charcoal inclusions and fired clay covering a 6.3 m by 4.2 m area 0.15 m deep. This was interpreted as debris from a hearth supplying heat to an adjacent flue (**Pl. 3.15**). The flue (9521) continued south from spread 9517 and was built in a construction cut 0.52 m wide and 0.22 m deep. It was exposed over a length of 3.1 m but continued beyond the limit of excavation. It was represented by a lining of brown red clay (9531) and had a thin layer of sooty charcoal on the inside (9522, 9540). After abandonment, the upper parts of the flue collapsed, creating deposits of red and brown silty clays derived from the flue structure (9523, 9530 and 9538). Some 34 fragments of Romano-British tile were recovered, although these were very small and may all be from a single tegula.

Plate 3.14 Kiln hearth 9517 from south-west

The postulated kiln chamber itself was not exposed and is thought to remain preserved *in situ* under a modern earthwork bank separating the excavation area from a drain immediately to the south.

Saltern Waste

Towards the northern end of evaluation trench 22 (**Fig. 3.23**; RPS 2013e) a series of tipping layers were deposited from south to north, from the area of the kiln into an area of lower ground. The earliest deposits (22026 and 22027) contained fired clay fragments and charcoal, fuel ash slag and charred peat-like material,

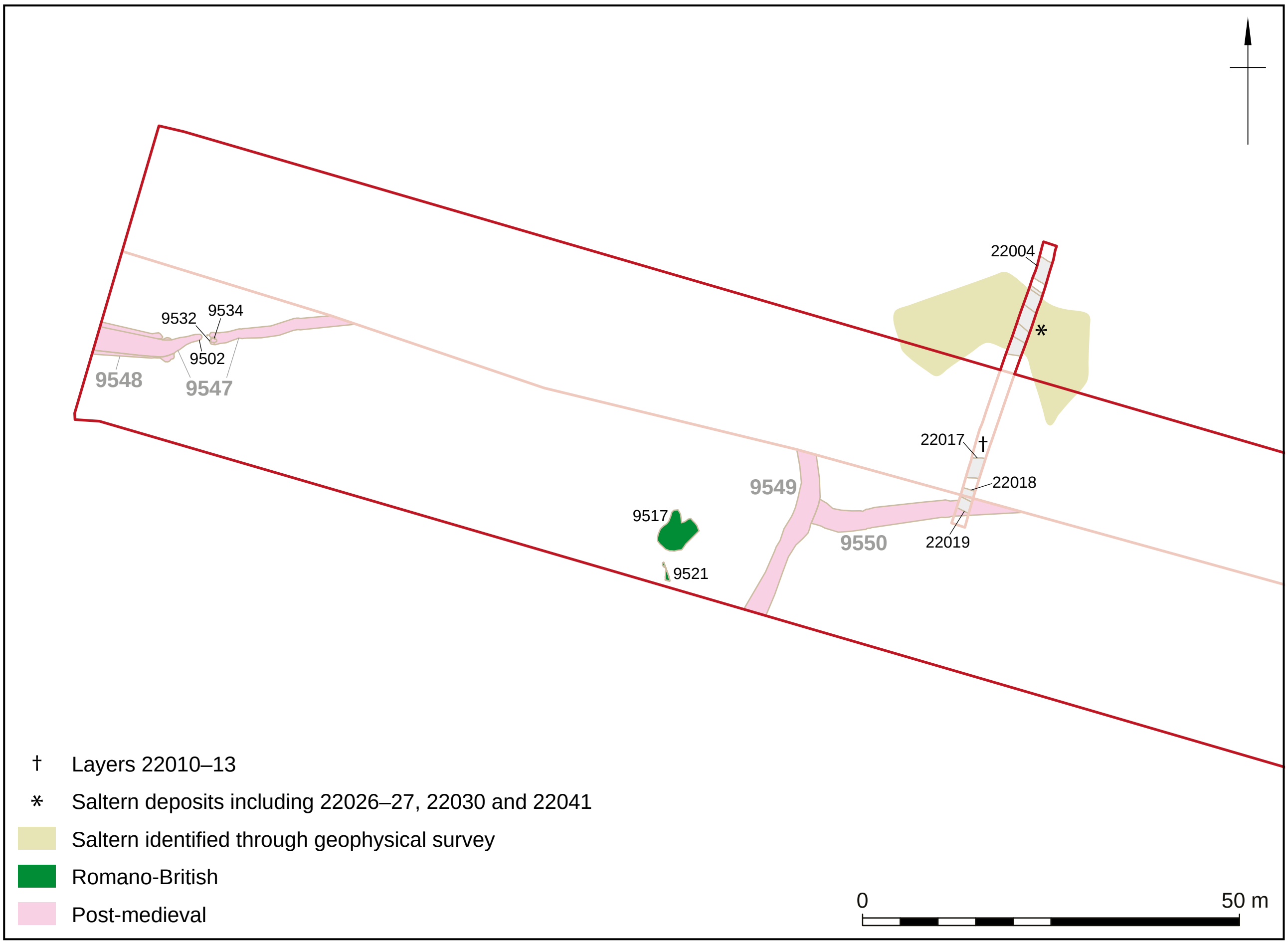


Figure 3.23 Tetney Lock Road plan

as well as burnt animal bone and an assemblage of charred plant remains, including cereal grains and the remains of a range of wetland species. A hiatus in the depositional process was indicated by a cut (22043, not illustrated) across the north end of deposits 22026 and 22027, possibly representing erosion caused by a marine incursion or by alluvial action. Subsequent deposits (seven in total) lay at a steeper angle than the earlier ones, indicating that they had been tipped from a bank. Samples from three of the tipped deposits contained fuel ash slag, fired clay, charred peat-like material, charcoal, burnt bone and the charred remnants of wetland plants. This sequence was sealed by a water-borne deposit of bluish-grey clay (22041) probably laid down following abandonment of the site.

Near the centre of the trench, the lowest three horizontal layers in a sequence of four (22010–22013) contained fired clay fragments, charcoal and fuel ash slag. The upper layer (22010) was thicker and archaeologically sterile and may represent a flood deposit associated with marine incursion following abandonment.

Pre-17th-Century Field System

Plate 3.15 Flue 9521 from east

Ditch 9550 was aligned west to east immediately east of the kiln. The west end was truncated by another ditch (9549) aligned north-north-east to south-south-west. Pottery dating from the late 16th to mid-17th century was recovered from the fills of ditch 9549. Evaluation trench 22 (RPS 2013e) recorded three ditches (22017 and 22018 recut as 22019) in the same area, although the precise correlation with the mitigation results could not be determined. A probably residual sherd of mid-12th- to mid-14th-century pottery and residual Iron Age and Romano-British pottery was recovered from the fills of ditch 22017. The evaluation also recorded a further ditch (22004) to the north.

In the west of the site, ditch 9547 (**Pl. 3.16**) ran roughly east to west on the same orientation as ditch 9550. Ditch 9547 contained a small (0.8 m wide) entrance, the west side of the entrance defined by a single terminal (9502); however, the east side had two parallel terminals (9532 and 9534), suggesting a recut. A recut was also recorded in the west, where ditch 9547 replaced an antecedent, 9548, 3 m wide and 0.3 m deep. Pottery from ditch 9547 suggests deliberate infilling in the 17th century.

Plate 3.16 Ditch 9547 from east

Hornsea Project Two

At Tetney Lock Road, Hornsea Project Two (Network Archaeology 2022, 40–42) recorded a greater range and number of features than Hornsea Project One. These included an undated rectilinear series of postholes (perhaps the foundations of a building), undated gullies, an undated palaeochannel, hearths, flues, firing chambers, pits, spreads of industrial waste and a working platform. A few fragments of pottery suggest a Saxo-Norman date for these features. This dating evidence is not particularly secure because of the small number of sherds, but it is more reliable than the single Romano-British tile recovered during Hornsea Project One. In light of these results, it is most likely that the Hornsea Project One remains at Tetney Lock Road are of Saxo-Norman date and that the Romano-British tile was reused or otherwise residual.

Brooklands Medieval Salterns

Introduction

The Brooklands site is located in the parish of North Cotes in the East Lindsey district of Lincolnshire, centred on NGR 535500 401400 (**Fig. 3.24**). It sits in open arable farmland in the reclaimed Outmarsh area, and straddles a public road, Sea Lane, which leads to North Cotes Airfield. The site occupies an area of former saltern mounds clearly visible on aerial photographs. It has previously been studied using this method by Grady (1998), Pattison and Williamson (1986), and by Rudkin and Owen (1960). The topography of the saltern mounds within the cable route was recorded during an earthwork survey (**Fig. 3.25**; Wessex Archaeology 2016b). The area is low-lying at between 1.84 m and 3.6 m OD, with the high points representing mounds of saltern waste. The Ordnance Survey records some mounds in the general area exceeding the 5 m contour in height.

The geophysical survey confirmed the presence of a potential saltern site (RPS 2013c), although the survey area was situated to the north of the eventual mitigation excavations. Fieldwalking of the same area recovered an assemblage of medieval pottery, with dates ranging from the 12th to 15th centuries (RPS 2013d). A geotechnical test pit monitored in 2015 recorded soil overlying multiple layers of 'alluvium' to a depth of 3.5 m below ground level. It is possible that these layers represented either saltern waste or natural marine deposits.

Six stages of excavation targeted the Brooklands site. Trench 16 (RPS 2013e) was situated to the south of the final cable route and recorded the most westerly archaeological remains of the Brooklands site. Trenches 7, 8, 9, 10 and 11 (RPS 2013e) recorded remains associated with medieval saltmaking. Trenches 12, 13, 13a, 13b, 14 and 15 (Wessex Archaeology 2016b) did not record any archaeological features and were situated in largely blank areas of the site (as confirmed by later mitigation excavation and watching brief). Similarly, trenches 3, 5 and 6 (RPS 2013e) were to the east of the

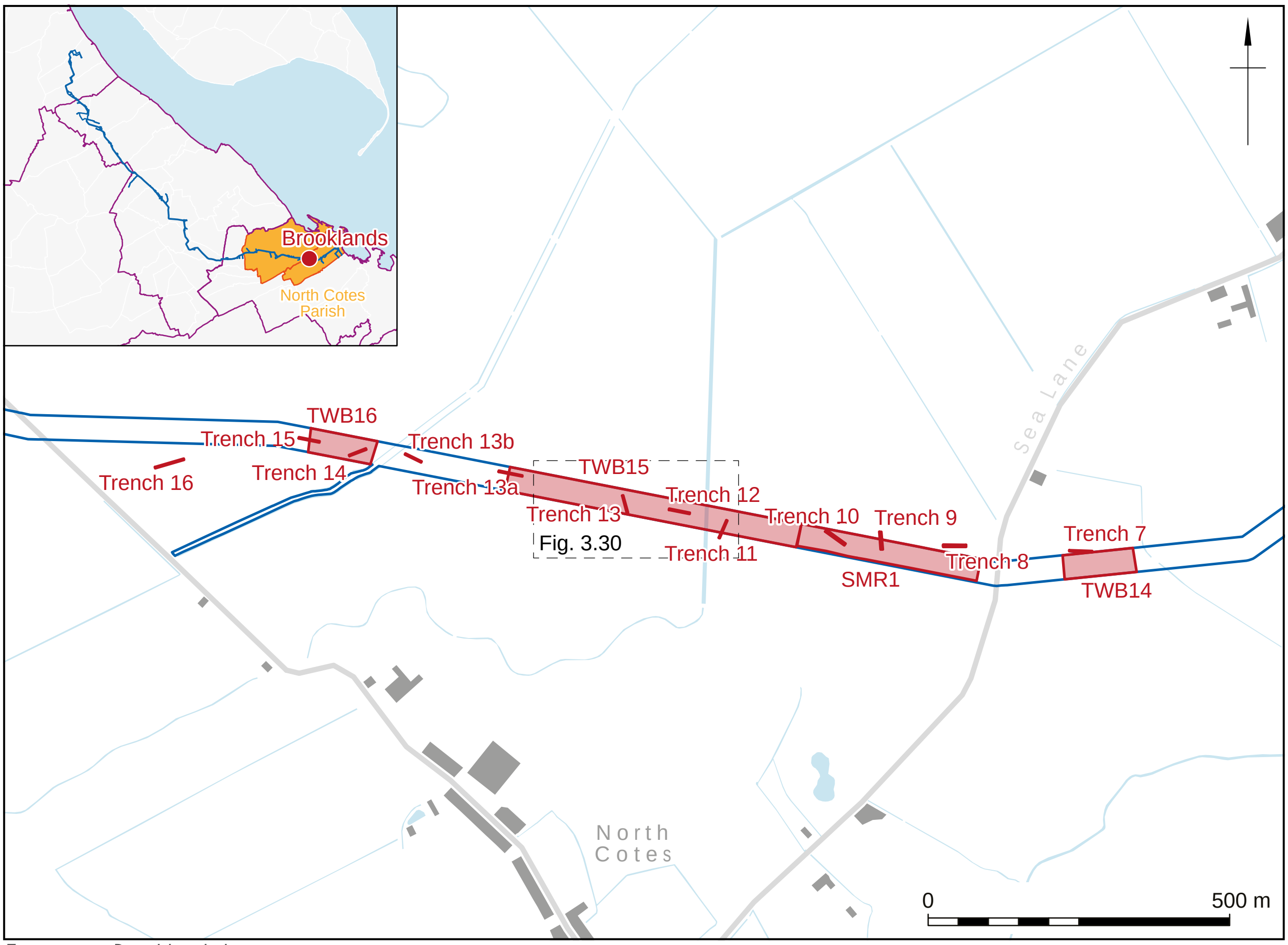


Figure 3.24 Brooklands location

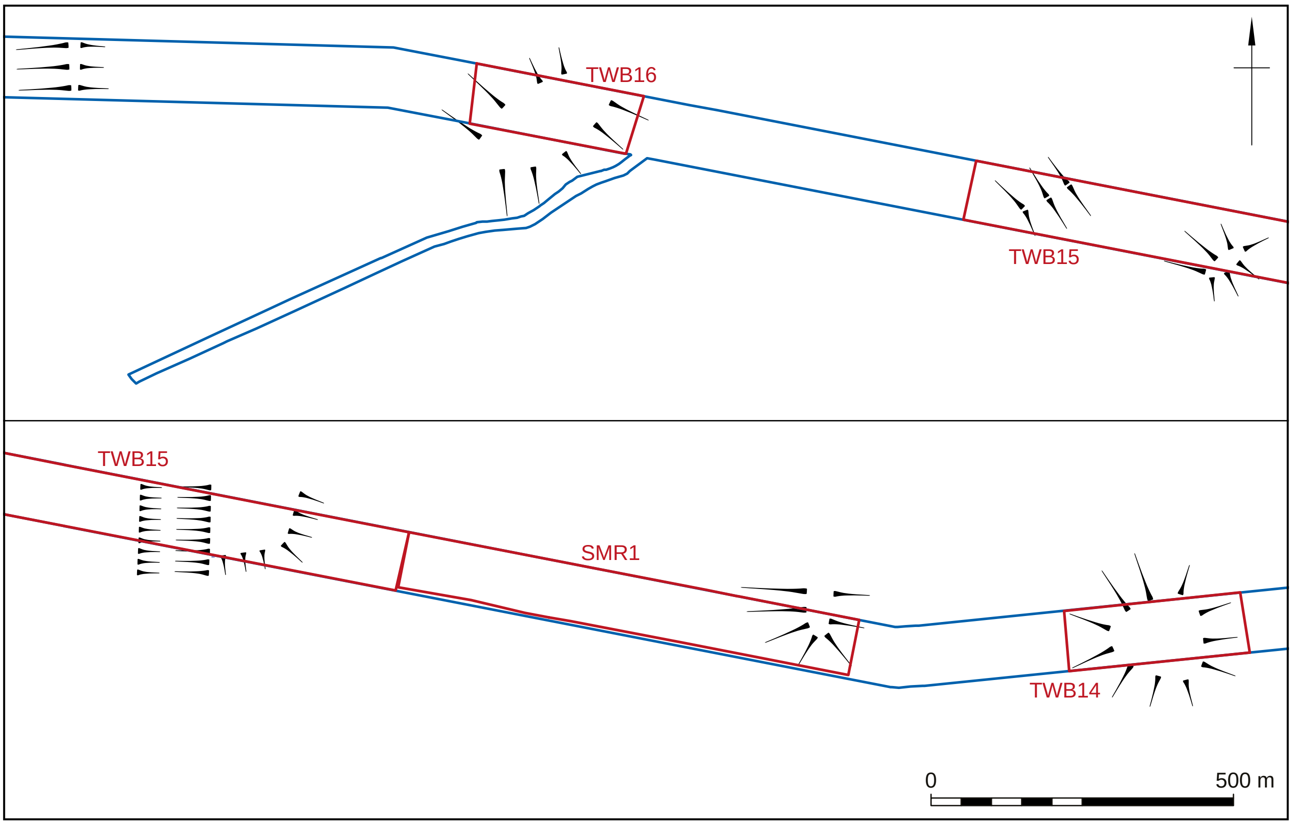


Figure 3.25 Brooklands excavation overlaid on results of earthwork survey (Wessex Archaeology 2016a)

Brooklands site and also blank. The main area of mitigation excavation was SMR1, which was expanded to the east as TWB14 and to the west as TWB15. An area further to the west was excavated as TWB16.

Soil Sequence and Natural Deposits

It is probable that the earliest deposits recorded at the Brooklands site were laid down by the sea in the medieval period. As described in the introduction to this monograph (Chapter 1), there was a major redistribution of deposits in the Outmarsh in the 13th century leading to a period of accretion in the 14th to 16th centuries (Grady 1998, 86; Robinson 1970, 11–12).

In the far west of the site (the area of TWB16), three layers of marine deposits comprised mid-red brown silty clay (160166) overlain by mid-brown loam (160167) and bluish loam (160168). The varying colour of these deposits may indicate the degree to which they had been waterlogged or developed into soils. Elsewhere, trench 11 (RPS 2013e) contained layers of sand (11003, 11004) that may have been deposited by similar processes. In one location in the centre of the site, a buried soil (9295) was reached comprising light brownish yellow silty clay and likely representing a marine deposit modified into a soil. This deposit had been preserved by the presence of a second overlying localised tidal deposit of gravel in a matrix of red orange sand (9285). It is possible that these two layers (9295 and 9285) represent the remains of a minor island within the medieval or earlier saltmarsh. Both layers were cut by brine pit 9271 (described below) indicating that they were deposited before the period of medieval salt production in this location (ie, probably before the 13th/14th centuries). Elsewhere, machine excavation generally halted at layer 9002=140152 comprising yellow brown silty clay with occasional inclusions of clinker (fuel ash slag) and charcoal. The presence of clinker and charcoal show that this deposit, although probably formed by natural tidal processes, was laid down during a period of human occupation of the site. The majority of archaeological features recorded at Brooklands were cut through this layer and its formation may have driven the movement of the saltmaking industry seawards.

A relict-ploughsoil subsoil (eg, 9001) and the ploughsoil itself (eg, 9000) contained post-medieval pottery likely derived from manuring. These soils probably originated as the ploughed mixture of natural marine deposits and the remains of former saltern waste mounds. A small number of recent archaeological features were cut from above the relict subsoil as described below.

In the far west of the site, evaluation trench 16 (see **Fig. 3.31**; Wessex Archaeology 2015a) contained a north–south-aligned natural watercourse, perhaps a tidal creek, that was at least 10 m wide and over 1.1 m deep (16024). Ten fills were recorded, with one (16026, slumped or tipped material on the west side of the feature) containing fired clay and fuel ash slag related to adjacent saltmaking activity (see below). A small, vertically sided feature (16030, possibly a posthole) had been cut into the upper fills of the channel (not illustrated).

Filtration Units

The study of *sandwashing* apparatus (eg, Grady 1998) followed McAvoy *et al.* (1994) in describing the pits used as *filtration units*. These comprise a shallower, rectangular filtration pit (or *kinch*; Historic England 2018a, 2) and a deeper, typically circular pit for collecting brine (*brine pit;* Forum on Information Standards in Heritage 2020, 55).

Plough truncation was extensive across the Brooklands site. Nearly all of the kinches had been removed, although their former presence can be inferred due to preservation of their attendant brine pits, which were by functional necessity deeper than the

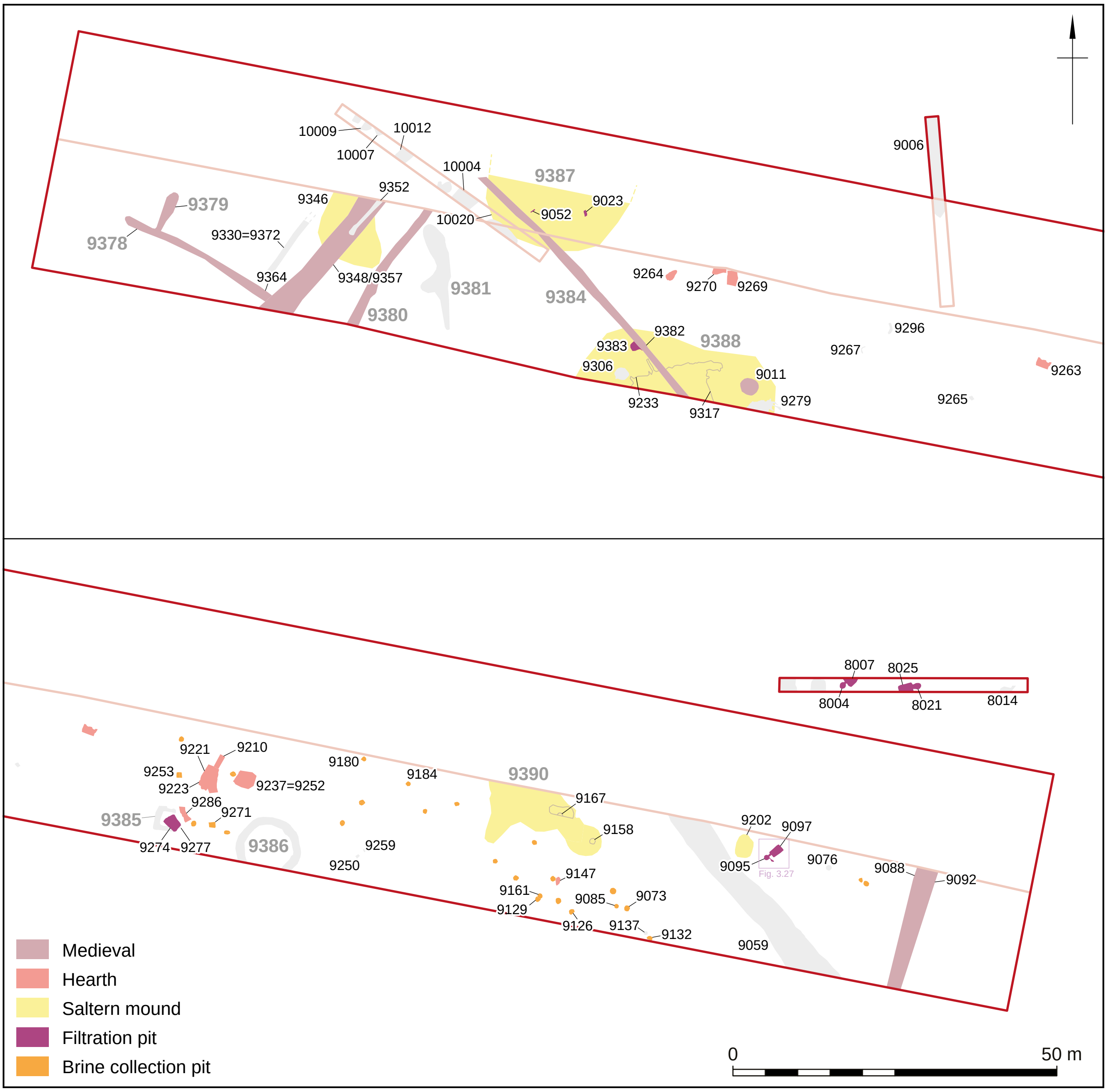


Figure 3.26 Brooklands SMR1 plan

kinches. Including those recorded during trial trench evaluation, a maximum of seven kinches survived, alongside 39 brine pits.

The best-preserved filtration unit was kinch 9097 and its attendant brine pit 9095 (**Figs 3.26** and **3.27**; **Pl. 3.17**). In contrast to previously recorded examples (eg, Bannister 1983; McAvoy *et al.* 1994), this filtration unit was accompanied by a series of stakeholes, perhaps suggesting that a superstructure had been present. Kinch 9097 was rectangular in both plan and profile, and was 1.98 m long and 1.2 m wide; however, only the bottom 0.08 m survived, the rest having been truncated by the plough. The single surviving fill of kinch 9097 comprised mid-brown clayey silt that contained roots, and likely represented degraded peat or turf used as a filter. The kinch was not lined with clay, perhaps because the silty clay deposit it was cut through was sufficiently watertight without lining. A short gully (9096) connected kinch 9097 to brine pit 9095. Gully 9096 was 0.35 m long, 0.3 m wide and 0.11 m deep and may have been lined with yellow clayey silt (9116). A stakehole (9099) was present in the centre of gully 9096 at the kinch end. The stakehole was 0.05 m in diameter and 0.15 m deep and may have been related to a mechanism used to temporarily block flow along the gully, or perhaps fix a timber or metal spout. Gully 9096 led to 9095, a sub-circular, 0.9 m diameter and

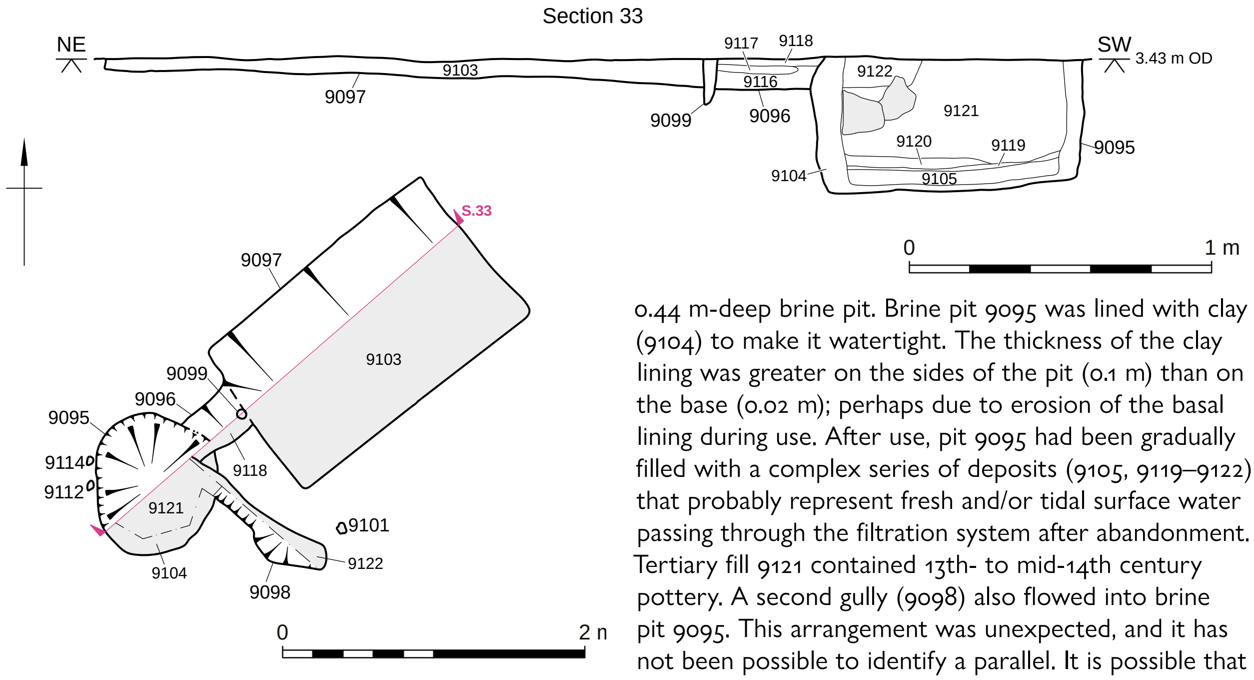


Figure 3.27 Brooklands plan and section of kinch 9097, brine-collection pit 9095 and associated features

0.44 m-deep brine pit. Brine pit 9095 was lined with clay (9104) to make it watertight. The thickness of the clay lining was greater on the sides of the pit (0.1 m) than on the base (0.02 m); perhaps due to erosion of the basal lining during use. After use, pit 9095 had been gradually filled with a complex series of deposits (9105, 9119–9122) that probably represent fresh and/or tidal surface water passing through the filtration system after abandonment. Tertiary fill 9121 contained 13th- to mid-14th century pottery. A second gully (9098) also flowed into brine pit 9095. This arrangement was unexpected, and it has not been possible to identify a parallel. It is possible that two kinches (either from the same phase of activity or from different phases) were connected to the same brine pit. Gully 9098 was 1.12 m long, around 0.07 m wide and 0.1 m deep. In addition to stakehole 9099 described above, five other stakeholes (9101, 9106, 9109, 9112 and 9114) were a maximum of 0.05 m in diameter and 0.18 m deep. Stakehole 9101 was located near the far (east) end of gully 9098. Stakeholes 9106 and 9109 (not illustrated) were situated within the brine pit. Stakeholes 9112 and 9114 were located immediately north-west of the brine pit. These stakeholes varied in diameter from 0.04 m to 0.05 m and in depth from 0.07 m to 0.18 m. The function of the stakeholes is uncertain but they suggest some form of superstructure, perhaps a cover or some structure to assist with filling and/or emptying the saltmaking apparatus. None of the other filtration units on the site were accompanied by surviving stakeholes.

A further moderately well-preserved kinch (140184; **Fig. 3.28**) was recorded in the far east of the site. This was rectangular, approximately 1 m by 0.5 m in plan, but again had been truncated by ploughing so only the bottom 0.08 m survived. It was filled with dark greyish brown loam, the remains of degraded peat or turves used as a filter.

Plate 3.17 Kinch 9097 and brine-collection pit 9095 from west (fill of pit 9095 incompletely removed)

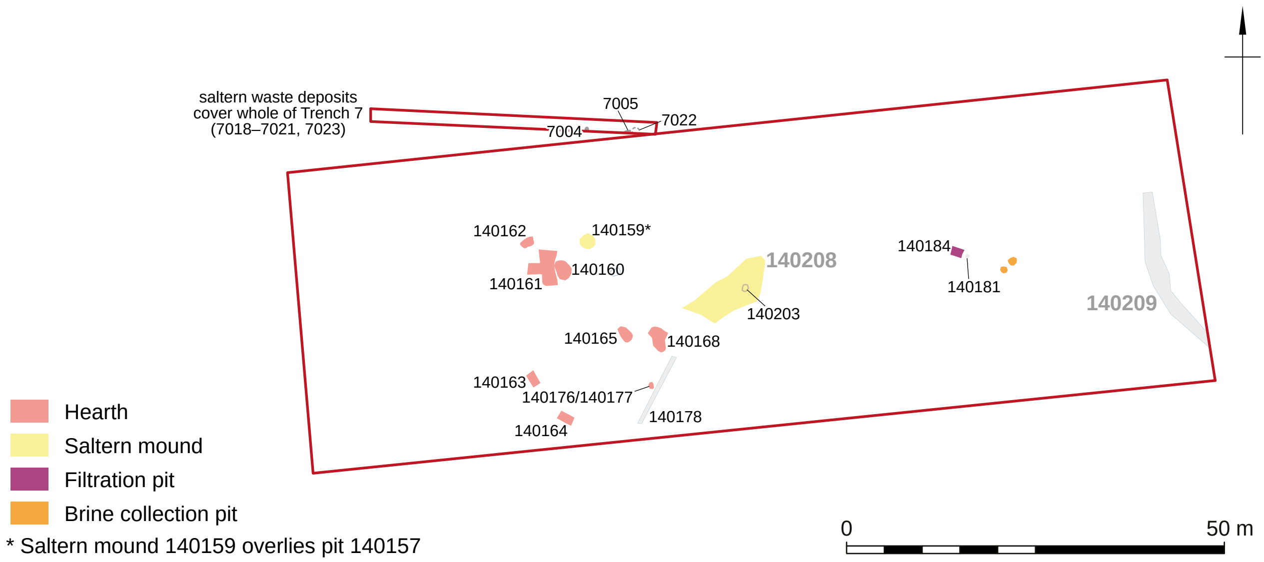


Figure 3.28 Brooklands TWB14 plan

An adjacent circular brine pit (140181) was 0.63 m in diameter and 0.73 m deep, had been lined with clay, and had an unusual profile, narrower at the top than the base.

Two further kinches (8007 and 8025; **Fig. 3.26**) with attendant brine pits (8004 and 8021) were recorded to the north of kinch 9097 in evaluation trench 8 (RPS 2013e). These features were cut through waste saltern material layers 8003 (see below), which had continued to form after these filtration units had fallen out of use.

Kinch 8007 was clay-lined and sub-rectangular but only partially exposed, and had again been truncated by the plough so that only the bottom 0.08 m was preserved. The associated circular brine pit 8004 was also clay lined and roughly 1 m in diameter. It contained traces of black sandy clay suggesting that the brine pit had been filled in and was later cleaned out for re-use. Fuel ash slag, fired clay, charcoal and charred peat-like material were identified in the backfill across both features.

Kinch 8025 was 2.30 m long and 0.32 m deep with a clay-lined sub-circular attendant brine pit (8021), roughly 1 m in diameter and, at 0.76 m deep, considerably deeper than the kinch. The clay lining had been replaced, perhaps twice. The lining of the sides comprised mid- to light-orange sandy clay (8027). The base contained two layers: mid-grey sandy clay (8025), replaced by mid-orange grey sandy clay (8024). Again, fired clay and fuel ash slag were recovered from the backfill.

Near the centre of the site, pit 9274 (**Fig. 3.26**) shared some morphological similarities with a kinch, including the sub-rectangular shape in plan, dimensions (2.1 m long, 1.76 m wide and 0.11 m deep) and basal fill of brown loamy sand representing the remains of turves or peat (9275). Although possible kinch 9274 was accompanied by a pit (9277), this did not resemble the other brine pits identified on the site and was a mere 0.25 m in diameter and only 0.06 m deep, as well as being sub-square in plan, although it was lined with clay (9278). The upper fills of possible kinch 9274 were red and orange loam containing charcoal and fuel ash slag, and may represent redeposited waste material from a hearth. The possible kinch might, therefore, instead be a waste disposal pit, though this seems less likely.

Two other features (9052 and 9383) may be kinches, based on their rectangular form and fills, although 9052 was not fully exposed and 9383 was only partially preserved. Both possible kinches were cut into layers of waste saltern material (9387 and 9388). Waste saltern material continued to accumulate, demonstrating a continuity in salt production beyond the decommission of these potential kinches. Any brine pits associated with them were not revealed. The fill of kinch 9052 comprised dark brown silty clay with roots, the remains of degraded filter turves. Kinch 9383 had

Plate 3.18 Brine pit 9169 from south

been truncated by agricultural ditch 9384. The surviving part of 9383 was 2.6 m long, 0.9 m wide and 1 m deep. It was lined with clay and contained two backfill deposits comprising mid-reddish grey sand with signs of burning and light pinkish red sandy clay. The absence of turf-derived fills in feature 9383 casts some doubt on its identification as a kinch.

A total of 39 pits have been identified as brine pits (**Pl. 3.18**). These were almost all circular or sub-circular in plan, although three were square (9253, 9271 and 9277). In profile, these brine collection pits typically had flat bases, 90° breaks of slope and vertical sides, although the sides of brine pit 140181 (**Fig. 3.28**) overhung (as noted above) and pit 9167 was concave. The brine pits ranged in diameter from 0.25 m to 1.9 m, but were typically around a mean of 0.84 m. Brine pit 160155 (**Fig. 3.29**) was the second smallest (0.5 m diameter) and was situated in the far west of the site, suggesting an early chronology. Aside from 160155 and the exceptionally small 9277 previously described, the remaining brine pits were all larger than 0.7 m diameter. The maximum depth of any brine pit was 1 m, although plough truncation has masked their true depth. All of the brine pits had been carefully lined with clay to make them watertight.

Plate 3.19 Intercutting brine pits 9129 and 9161 from west

Three brine pits (9073, 9076 and 9132; **Fig. 3.26**) contained basal fills of turf (9079, 9080 and 9133) below their clay linings, matching a description given by Grady (1998, 83). An explanation may be that they had been dug too deeply and backfilled to prevent the ingress of groundwater.

The clay lining of brine pit 9085 was unusual in two respects; it was thicker than other linings (0.4 m) and contained nine sherds of Romano-British 1st/2nd century pottery. These sherds were probably imported along with the clay.

The upper fills of the brine pits were generally unremarkable grey or brown silty clays, representing the gradual infilling of the pits after they had gone out of use. Pottery of 13th- to mid-14th-century date was recovered from the fills of brine pits 9095 and 9180. Brine pit 9184 contained seven laminar water-borne fills, suggesting that the locality of this disused pit was repeatedly inundated by fresh or sea water.

Brine pits 9129 and 9161 intercut (**Pl. 3.19**). Pit 9129 had gone out of use and had been filled in prior to the construction of pit 9161. There was, therefore, some longevity to saltmaking at Brooklands, and the same forms of filtration unit persisted across different phases of activity.

Hearths

Hearths were part of the saltmaking process as the sites of evaporation (see Chapter 8). The best evidence for hearths was present in the east of the site (**Fig. 3.28**). There were eight discrete, shallow, truncated deposits of ashy grey silty clay containing charcoal and fuel ash slag inclusions (140160–140165, 140168 and 140176/140177, the latter comprising two layers in the same location). These hearths were up to 0.33 m deep and generally between 1 m and 1.85 m in diameter; they were typically recorded as spreads, although the two deepest examples (140160 and 140165) were recorded as cut features. Hearth deposit 140166 contained some animal bone, perhaps indicating a secondary function such as food preparation.

In the centre of the site (**Fig. 3.26**), a series of five laminar layers may also represent a hearth (9286), 2.6 m long and 1.5 m wide. Each layer was thin (a maximum of 0.04 m

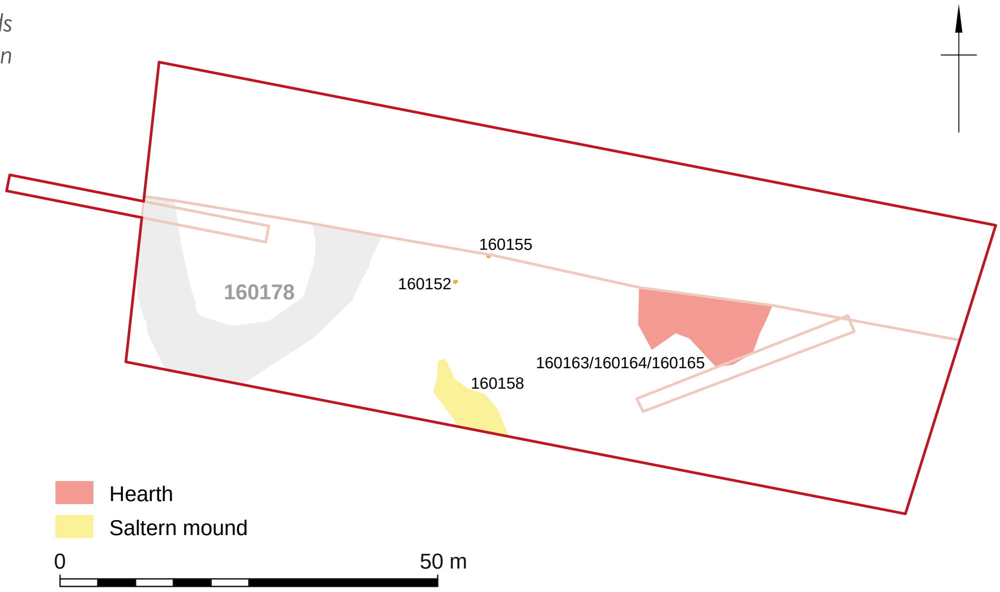


Figure 3.29 Brooklands TWB16 plan

deep) and either heat-affected or ashy. The basal layer (9288) comprised light yellowish brown clay loam and was overlain by mid-greyish brown loam (9294), mid-pinkish red loam with charcoal and gravel inclusions (9287), mid-greyish brown loam (9293) and dark pinkish red clay loam (9286). These layers might represent the truncated remains of a succession of burning events.

Evaluation trench 10 (RPS 2013e) contained four deposits (10004, 10007, 10009 and 10020), each no more than 0.01 m thick, comprising heat-transformed material with charcoal, fired clay and fuel ash slag, as well as 12th- to early 13th-century pottery from 10004. Three fragments of fired clay from 10020 were identified as part of a briquetage pedestal from a saltern hearth (see Chapters 6 and 8).

In evaluation trench 11 (**Fig. 3.30**; RPS 2013e), a 0.01 m-thick spread of probable *in situ* burning contained fired clay, charcoal, fuel ash slag, a single charred grain of cereal and other indeterminate charred material, alongside fragments of bone and marine shell (part of 11007).

A single feature was recorded in evaluation trench 9 (**Fig. 3.26**; RPS 2013e): burnt deposit 9006, more than 5 m long and 2 m wide, but no more than 0.01 m deep, probably representing an area of *in situ* burning. It was rectangular, perhaps reflecting the shape of the evaporation pans.

Plate 3.20 Heat-transformed natural 9263 probably indicating a hearth from south

Elsewhere, plough truncation may have generally removed hearths, although evidence for them survived in the form of underlying heat-affected natural deposits. Ten such areas were identified (**Pl. 3.20**; 9147, 9210, 9221, 9223, 9263, 9264, 9269, 9270, 9237=9252 and 160163/160164/160165). These heat-affected areas were up to 3.7 m long and 1.3 m wide (the mean was 2.03 m by 0.89 m) and up to 0.6 m deep.

Saltern waste 9387 (intervention 9020, described below) also contained three layers of burnt red clay (9023, 9024 and 9028) that may indicate the position of truncated hearths, or redeposited hearth material.

Saltern Waste

Earthwork survey (**Fig. 3.25**; Wessex Archaeology 2016b) appeared to reveal the presence of saltern mounds in TWB14 and TWB16, and the east end of SMR1. Saltern waste was recorded during excavation in these areas, although the extent (and quantity) of the waste recorded by excavation was much more limited than the impression given by the topography recorded in 2016.

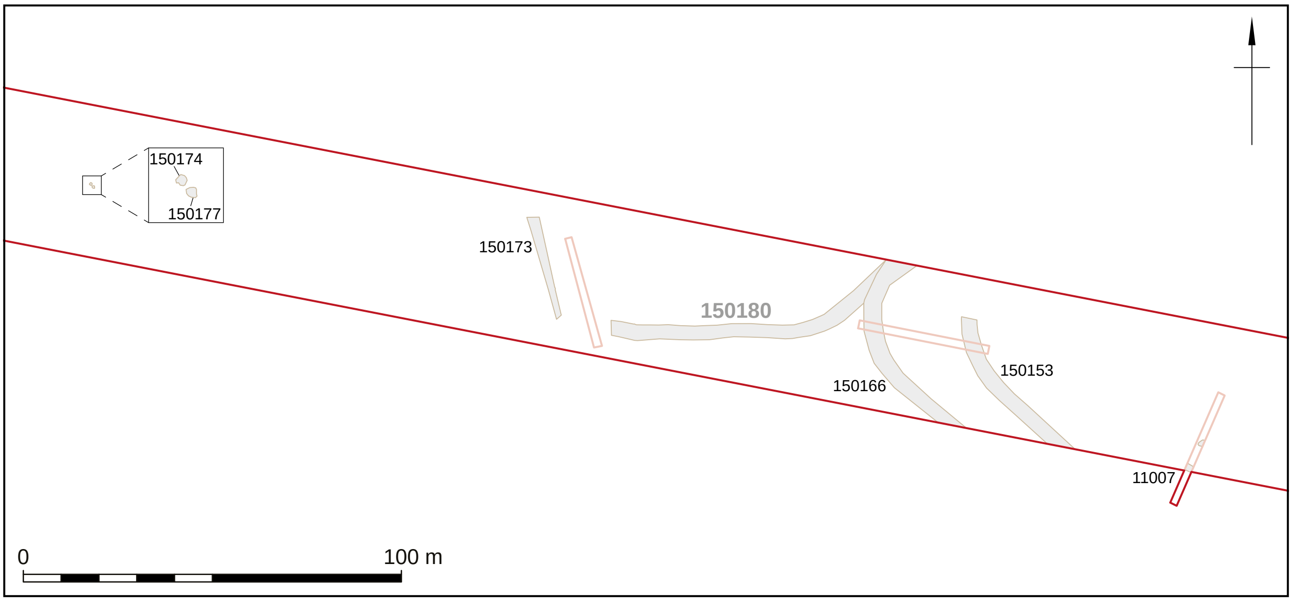


Figure 3.30 Brooklands TWB15 plan

Including the results of the trial trench evaluation (RPS 2013e), saltern waste was identified in 10 locations. This waste was produced by the saltmaking process and primarily consists of the formerly salt-bearing deposits (*mould*) that had been washed in kinches and emptied out. At Brooklands, a wide variety of deposit textures were recorded, not just the 'sand' often used as a shorthand (eg, McAvoy *et al*. 1994) and suggested by the name of the process (sandwashing). The deposits were generally brown, grey or yellow although some were dark red (eg, 9324), and covered the whole range of clay, silt and sand textures. Fuel ash slag inclusions were common, suggesting that the ash from evaporation hearths was dumped alongside the waste deposits from kinches. Burnt clay was also sometimes encountered (eg, layers 9038, 9226). The burnt clay was derived from heat-transformed deposits associated with hearths and was not briquetage. Stones, animal bone and marine shell were also sometimes present.

Saltern mound 160158 (**Fig. 3.29**), measuring at least 10 m by 5 m, was located in the west and may, therefore, represent the earliest activity within the limits of the Brooklands site. The material had been substantially ploughed-out and only the four basal layers survived (160159–160162). Two brine pits situated to the north (160152 and 160155) probably represent the focus of activity that was the origin of this waste material.

A cluster of three areas of saltern waste (9346, 9387 and 9388; **Fig. 3.26**) were located at the west end of the main SMR1 excavation. These three areas became visible upon removal of the topsoil (prior to the removal of the subsoil present across the rest of the site), indicating that they had been impacted by recent ploughing. However, as they were also each cut by medieval agricultural boundaries (9348 and 9384, described below), the waste material had either been truncated during the medieval period or had never been very high. Apart from the features cut into the waste material, there was a general absence of preserved saltmaking remains in the immediate vicinity.

Saltern mound 9346, measuring at least 12 m by 5 m, comprised a single layer and contained mid-13th- to mid-14th-century pottery. It had been disturbed by a channel (9372) aligned north-east to south-west. The fills of the channel contained 12th/13th-century and 13th- to mid-14th-century pottery, perhaps disturbed from the saltern waste.

Three interventions (9019, 9020 and 9021, not illustrated), excavated to a maximum safe depth of 1.2 m below ground level, investigated saltern mound 9387 (**Pl. 3.21**). The base of the mound, measuring 20 m by at least 10 m, was not reached. Early in the sequence, a pit (9039, not illustrated) was encountered, 0.32 m deep, and the second layer from the top (9051) was cut by possible kinch 9052 (described above).

Plate 3.21 Saltern mound 9387 (intervention 9020) from north-west

Plate 3.22 Unfired clay 'bricks' (discarded imported clay) 9355 from south-west

Saltern mound 9388, measuring 60 m by more than 8 m, comprised a small number of layers that were inconsistent from one intervention to another. An irregular hollow (9279) in the east may have been caused by burrowing or root disturbance and had been filled with saltern waste. Several features (described above and below) were cut into the waste: pit 9003, pit 9011, possible well 9306, kinch 9383 and agricultural boundary 9384. Brick-shaped lumps of raw clay (**Pl. 3.22**) were recorded in intervention 9317 (inclusions within layers 9341, 9366, 9367 and 9368) and intervention 9018=9323 (layer 9355). These clay bricks had not been fired and it is likely that they represented unused raw materials, perhaps intended to be used for the lining of brine pits. Pit 9306 (differing morphologically from the brine pits, see below) had also been lined with this material, supporting this theory. Deposit 9341, forming part of saltern mound 9388, contained 12th-century pottery.

To the east was another cluster of two areas of saltern waste (9202 and 9390) identified following the removal of the subsoil. Saltern 9390 (**Pl. 3.23**) contained pottery that was primarily of 13th- to early/mid-14th-century date. Brine pits 9158 and 9167 were cut from above the latest surviving layers of saltern waste 9390, the waste probably originating from saltmaking activity located to the west and south. Nearby, a small (around 2.5 m diameter) concentration of saltern waste (9202) was located next to kinch 9097. It is possible that this represents an incipient saltern mound comprising waste material from the kinch. Another interpretation, that cannot be further substantiated, is that deposit 9202 represents the unprocessed *mould* (salt-bearing deposits) ready for use in the filtration unit (see Chapter 8).

Two further small areas of saltern waste (140159 and 140208; **Fig. 3.28**) were recorded in the far east of the site in the area of TWB14. Saltmaking remains were recorded both to the west and to the east.

A tiny possible incipient saltern mound (140159) completely sealed pit 140157. Deposit 140159 comprised a single layer 4 m in diameter and only 0.05 m thick.

Saltern mound 140208 was irregular in plan, measuring 11 m by 5.8 m. It was noted that some of the layers were loose (eg, 140180) and some were compact (eg, 140196). A 1 m-diameter, 0.17 m-deep pit (140203) was cut through the upper surviving layer of waste and contained mid-12th- to 14th-century pottery. A lump of ironworking slag, a 'run' of melted lead and a rough limestone disc of unknown purpose were recovered from mound 140208.

Excavation of evaluation trench 7 (RPS 2013e) halted at a series of layers that probably comprise saltern waste (7018–21 and 7023), suggesting that the whole trench was contained within the remains of a saltern mound. A 0.4 m-deep sondage did not reach the base and no dating evidence was found. Two irregular pits (7005 and 7022) cut through these layers contained fuel ash slag, fired clay, charred heather twigs and other charred peat-like material. Both pits were sealed by further layers of probable saltern waste and a clay-lined brine pit (7004) was cut from the top of this sequence.

Similarly, saltern waste was the earliest layer (8003) reached in evaluation trench 8 (**Fig. 3.26**; RPS 2013e). This layer was excavated to a depth of 1 m without reaching the

Plate 3.23 Saltern mound 9390 (intervention 9224) containing brine-collection pit 9167 from south-east

base, and it was overlain by 8013 in the west and by layers including 8011 in the east. Both layers 8011 and 8013 contained 13th- to mid-14th-century pottery. Filtration units 8004/8007 and 8021/8028 described above were also incorporated within this development of saltern layers.

Trench 11 (**Fig. 3.30**; RPS 2013e) contained a 0.03 m-thick spread of mixed brownish red and brownish yellow loam (11007) with fuel ash slag, charcoal and other charred material which was interpreted as remains of saltern waste. No features were recorded in the area of trench 11 during subsequent excavations. Trench 11 lay at about 250 m distance from the nearest recorded saltmaking features (brine pits 150174 and 150177) and the identification of layer 11007 as saltern waste now appears doubtful.

Other Features

Evaluation trench 16 (**Fig. 3.31**; RPS 2013e) in the far west of the Brooklands site contained several undated features, including a north-east–south-west-aligned gully (16032) with a clay lining. Gully 16032 had a deeper and narrower recut as gully 16009 (not illustrated), which may also have been lined. Near the south-west terminal, gully 16032 was cut by a possible posthole (16033), 0.42 m in diameter and 0.12 m deep. Gully 16032 was also truncated by clay-lined pit 16031, recut as pit 16004, which was also clay-lined. As was common across the site, fired clay, fuel ash slag and charred peat-like material were recovered from the fills of these pits. Their interpretation is uncertain; it is possible that some may have been brine pits. They were less regular than other examples and their location at the west end of the site may indicate that they were chronologically early, perhaps from a time when the form of these saltmaking features was less well developed. The evaluation report (RPS 2013e) suggests that the gullies may have acted as filtration pits (Palmer-Brown made a similar suggestion for the much earlier site at Tetney Sewage Works; 1994, 7).

Towards the east end of trench 16, two undated narrow, shallow parallel linear features (16011 and 16013) were sealed by a layer of dark sandy silt with fuel ash slag, charcoal and charred peat-like material (16003). Gully 16013 comprised three very small parallel channels, and contained small amounts of fired clay, charcoal and charred peat. Both 16013 and 16011 contained fuel ash slag.

Near the centre of the site was a concentration of features including two very small enclosures (9385 and 9386; **Fig. 3.26**; **Pl. 3.24**). Rectilinear enclosure 9385 was only

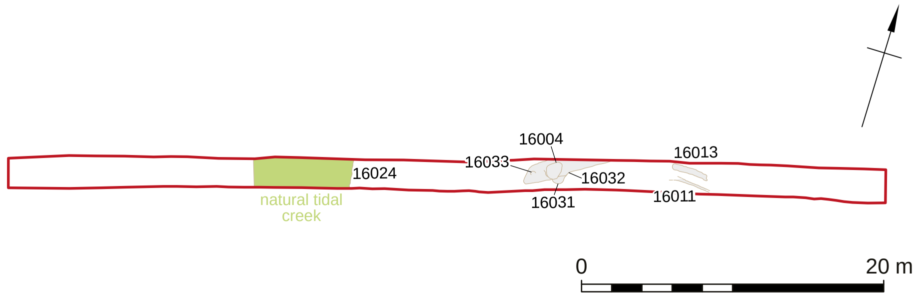


Figure 3.31 Brooklands trench 16 plan

2.2 m across; the ditch was 0.68 m wide and a maximum of 0.35 m deep. Three sides of the enclosure survived, the east side partially truncated by possible kinch 9274, the remainder perhaps removed by the plough.

A short distance to the east was circular enclosure 9386, 7.2 m in diameter. The enclosure appeared to be circular, though it continued south beyond the limit of excavation and it is possible that there was a break or entrance. The enclosure ditch was up to 1.4 m wide and 0.52 m deep, containing mid-13th- to mid-14th-century pottery.

East of enclosure 9386 were two adjacent sub-rectangular postholes (9250 and 9259) up to 0.6 m wide and 0.2 m deep. Each posthole contained a rectangular postpipe, 9256 and 9261 respectively, up to 0.16 m across and 0.23 m deep. The fills comprised brown sandy silt or silty sand, distinguishing them from the clay-lined brine pits.

A large, irregular pit (9381; **Fig. 3.26**), lay towards the west of the site. This elongated pit was aligned roughly north to south, with two branching southern terminals, and was around 18 m long, up to 3 m wide and 0.1 m to 0.7 m deep; it contained an unusually hued purple red or reddish brown sandy clay that may have been saltern waste. The pit could perhaps have been a quarry for mould, perhaps exploited early in the development of the saltmaking activity at Brooklands.

Plate 3.24 Excerpt from UAV survey showing enclosures 9385 and 9386. North at top

Elsewhere, irregular pit 9003 (not illustrated) was cut into saltern mound 9388 (**Fig. 3.26**) and was 1.76 m long, 0.7 m wide and 0.78 m deep. A 'turf wall' (9005) had been constructed on a bed of blue clay (9022), perhaps intended to stabilise the side of the mound or an animal burrow within the mound. Turf walls were commonly recorded at Wainfleet St Mary (McAvoy 1994).

Pit 9306 (**Pl. 3.25**) was also cut into saltern mound 9388 and was lined with clay, but was irregular in profile. It measured up to 1.96 m in diameter and 0.81 m deep, its size differentiating it from brine pits. The lining (9336) had been made up from 'bricks' of raw clay, and the pit had evidently been intended to hold water, perhaps as a storage tank. The fills of pit 9306 comprised layers of heat-affected material likely comprising hearth waste, suggesting that there may have been a hearth associated with the pit.

Nearby, circular pit 9011 cut through further layers of saltern waste, in this case 9388. Pit 9011 was 2.4 m in diameter and 0.46 m deep with a fill of greyish brown or greyish red silty clay with burnt clay, fuel ash slag and charcoal (9055). A layer of clean dark grey clay (9056) below this may have been a lining. The main fill (9057) comprised saltern waste. The function of the feature is uncertain although it could have been a storage tank similar to pit 9306.

East of saltern mound 9388 were two unusual small arc-shaped pits (9267 and 9296; **Fig. 3.26, Pl. 3.26**). The largest (9296) was 1.91 m long, 0.46 m wide and 0.18 m deep, but their purpose is unknown.

Plate 3.25 Pit 9306 from south

To the east of these pits was a sheep burial (9265), perhaps recent, and contained in a sub-square pit (0.8 m by 0.5 m in plan and 0.17 m deep). This feature superficially resembled a brine pit, although it was not lined.

A small charcoal dump (9137) was located adjacent to brine pit 9132, with charcoal also recovered from the fills of the pit, suggesting that the charcoal was deposited after the brine pit went out of use.

Other features included, in the east of the site, pit 140157, which was 1.3 m in diameter and 0.3 m deep. Its function is unknown, but it was sealed by saltern material 140159 (**Fig. 3.28**). An undated gully (140178) in the same general area, 0.8 m wide and 0.32 m deep, was possibly a drain and petered out both to the north-east and south-west. Finally, the south-east limit of the Brooklands site was defined by an undated curvilinear ditch, 140209, 1.8 m wide and 0.76 m deep. This ditch may have been a later agricultural boundary or may have served to enclose or bound the saltmaking area, perhaps acting as a minor sea defence.

Agricultural Redevelopment

A second, perhaps late medieval/early post-medieval phase of activity at Brooklands was imposed over the saltmaking remains and comprised a system of field boundaries representing the adoption of reclaimed land for farming. Some of the ditches (eg, 9352; **Fig. 3.26**) correlated closely with the results of geophysical survey (RPS 2013c).

Plate 3.26 Unusual arc-shaped discrete feature 9267 from east

A system of six or seven shallow ditches (9348/9357 recut as 9352, 9088 recut as 9092, 9378, 9379, 9380, 9384 and possibly 9330 (**Fig. 3.26**; **Pl. 3.27**) were hard to define. They cut saltern mounds 9346, 9387 and 9388 and possible kinch 9383, and exhibited some chronological stratification: ditch 9379 was cut by ditch 9378, and ditch 9352 probably cut ditch 9378. Ditch 9348/9357 was recut as 9352, and a modern land drain also followed the same alignment; the ditch may have been visible in the landscape until relatively recently. The maximum dimensions of these ditches were generally 2 m wide and 0.4 m deep, although ditch 9348/9357 was substantially larger at 3.7 m wide and 1.05 m deep, and 9088 was 3.3 m wide and over 1.2 m deep (not bottomed). Mid-12th- to mid-13th-century pottery was recovered from ditch 9380, and 13th- to 15th-century pottery came from ditch 9384. The pottery may represent either residual material derived from the saltern waste through which the ditches cut, and/or material contemporary with the infilling of the ditches.

In the west of the site (**Fig. 3.29**), a large curvilinear ditch (160178), up to 6.3 m wide and up to 1.1 m deep, petered out because of plough truncation in the north and curved around to the south-east. Pottery recovered from ditch 160178 dated to the 14th- to mid-16th centuries.

Modern Boundaries

Four ditches (150153, 150166, 150173 and 150180; **Fig. 3.30**) were present near the centre of the site in an area without saltmaking remains. These ditches correlated with curvilinear geophysical responses. Two (150173 and 150180) contained large concrete drains, one (150153) contained a disused cable and the other (150166) was empty but was similar in character to the other three. A ditch recorded adjacent to this area during the Hornsea Project Two works was interpreted as the remains of the historic Tuttle Drain (Network Archaeology 2022, 33) and it is possible that these features are a more recent development of this drain.

A further large ditch (9059), 5 m wide and deeper than 1.2 m (**Fig. 3.26**) aligned north-west to south-east, had previously been recorded in evaluation trench 10 (RPS 2013e, context 10012), where it was seen to cut the subsoil. The ditch had been detected by geophysical survey and correlates with a boundary depicted on the 1888 Ordnance Survey map. The fill contained a variety of modern rubbish including plastic, pottery and concrete.

Hornsea Project Two

Plate 3.27 Ditch 9384 from south-east

Hornsea Project Two recorded the continuation of the eastern part of the Brooklands site to the north (Allen Archaeology 2018c, 2022; Network Archaeology 2022). An area adjacent to Hornsea Project One's TWB14 was recorded by Allen Archaeology as SPE8. Evidence for saltmaking continued into the area of both Network and Allen Archaeology's parallel excavations and was of the same general character as the results from the Hornsea Project One investigations.

Ridge and Furrow, Post-Medieval and Modern Features, Other Undated Features and Negative Results

Furrows from medieval or post-medieval ridge and furrow cultivation were intermittently present throughout the Middle Marsh, representing agricultural activity in a range of parishes (**Table 3.1**). Furrows were notably absent from the Outmarsh, although the total area investigated here was smaller than in the Middle Marsh.

In addition to modern features described alongside earlier remains above, the trial trench evaluations and watching briefs also recorded scattered modern field boundaries, drains and spreads as outlined in **Table 3.2**, while undated features not referenced above are summarised in **Table 3.3**.

A watching brief undertaken on works at the site of the onshore sub-station at the north-west end of the cable route recovered only pottery of 19th/20th-century date that was present in the topsoil, probably as a result of manuring.

A watching brief was also maintained during works below the high-tide line at Horse Shoe Point to investigate a geophysical anomaly, but again with negative result (Wessex Archaeology 2018b).

Monitoring of two out of three geotechnical test pits excavated ahead of the main works produced a similarly negative result. A third test pit recorded part of ditch 8265 at Westfield Farm that was later exposed during SPE4 (see Chapter 2). The two negative test pits were located one at NGR 515275 415244 and one on the Brooklands site.

A total of 79 evaluation trenches contained no features, deposits or artefacts of archaeological significance: trenches 3, 5, 19–21, 23–28, 35, 39, 42, 46, 49, 50, 56–68, 61, 63, 72–76, 85, 88, 93, 94, 100 and 101 (RPS 2013e); and trenches 12, 13, 13a, 13b, 14, 15, 16a, 18, 28a, 29, 30, 33, 53, 54, 58, 62, 64, 86, 87, 91a, 92, 99b, 104a, 104b, 104c, and 106–117 (Wessex Archaeology 2015a).

Targeted watching briefs 1, 2, 10, 11 (Station Road), 5 (Wells Road) and 13 (Humberston Road) all had negative results. TWB1 was located away from other excavation areas and revealed modern features detailed in **Table 3.2**. Each of the other areas was associated with a nearby excavation and are described as part of the main site narratives in Chapters 2 and 3.

Targeted watching brief 18 (Keelby Road) was not subject to investigation because of a change in methodology to directional drilling in this location.

Table 3.1 Summary of furrows recorded across project

NGR	*Site name*	*Excavation area*	*Orientation*	*Distance between centres (m)*	*Features*	*Comments*
TA 31700 02150	Humberston Road	SPE7	NW-SE, turning to the W in the NW	6–9	7004, 7012, 7014, 7032, 7044, 7058, 7314, 7338, 7340, 7342, 7395, 7419	Contained residual Romano-British pottery
TA 29379 01780	Station Road	SMR4	NW-SE	10	N/A	Also (?later) plough scars 10639 and 10694=10696 on same alignment
TA 25864 02254		GWB area E	NE-SW	9	198, 201	-
TA 24854 02468		GWB area G	NE–SW	5	233, 235	-
TA 22269 07026	Laceby Parish	TWB17	NW–SE	10–15, typically 11.5	390, 392, 397, 399, 401, 403, 405, 407, 409, 411, 425, 429, 455	Contained 15th–18th-century pottery
TA 21547 07802		GWB area Z	NE–SW	8	443, 445	-
TA 19028 10105		GWB	N–S	Unmeasurable	200185	-
TA 19136 09916		GWB	W–E	15	200189, 201812, 201814, 201816	-
TA 18130 11450	Keelby Road	SPE2	NW–SE	7–9	900, 902, 904, 2209	900 contained fragments of residual human bone
TA 15500 15050		Trench 81	N–S	Unmeasurable	81004	-
TA 15500 15050		Trench 82	N–S	Unmeasurable	82004	-
TA 14961 15433		GWB area AS	NE–SW	10.2	20213, 20215	Excavation of two trenches in the same field by the present author during an unrelated project (Wessex Archaeology 2015b) revealed furrows on same alignment at 9 m centres
TA 14366 16208		GWB	W–E	Unmeasurable	200233, 200235	-
TA 14376 16179		GWB	Possibly NE–SW	Possibly 33	200237	-
TA 14386 16146		GWB	Possibly ENE–WSW	Possibly 33	200239	-
TA 14400 16300		Trench 91	NE–SW	Unmeasurable	91004=91006	-
TA 14823 16849	Westfield Farm	TWB7	ENE–WSW	7–11, typically 8.5	20103, 20105, 20107, 20109	Post-medieval pottery

NGR	Site name	Excavation area	Orientation	Distance between centres (m)	Features	Comments
TA 14850 16780	Westfield Farm	SPE4	NW–SE, turning to the W in the NW	Not recorded	N/A	Ridges visible prior to excavation and later reinstated but not identified as below-ground features
TA 14867 17808	East Field Road	SPE5, TWB8	NNW–SSE	9.5–10.5	5153, 5150	Furrow fed by west–east-aligned drainage gully 20185 (0.92 m wide and 0.18 m deep). Contained residual early Romano-British pottery
TA 14714 18317	Chase Hill Road	TWB9	NE–SW	16	20163, 20165, 20167	-
TA 14691 18788		TWB19	NW–SE	7–9	20140, 20142, 20144, 20146, 20148	-
TA 14674 18985		TWB20	NE–SW	9–12	20125, 20127, 20129, 20131, 20133, 20135	Contained 17th–20th-century pottery
TA 14627 19174		Trench 112	Not recorded	Unmeasurable	112003	-
TA 14686 19259		Trench 105	N–S	Unmeasurable	105002	-

Table 3.2 Summary of modern features recorded outside main sites

NGR	Excavation area	Orientation	Feature	Maximum width/ diameter (m)	Depth (m)	Dating evidence	Comments
TA 31026 02236	TWB1	NE–SW	100158	1.3	0.27	Contained 19th-century pottery and glass	
TA 31026 02236	TWB1	Discrete	100152	0.33	0.28	Association with 100158	
TA 31026 02236	Trench 34	Discrete	34005	0.37	0.11	Association with 100158	
TA 31026 02236	Trench 34	NW–SE	34006	1.5	0.42	Association with 100158	
TA 31026 02236	Trench 34	Discrete	34009	0.2	0.23	Association with 100158	Posthole in base of ditch 34006
TA 31026 02236	Trench 34	Discrete	34010	0.64	0.23	Association with 100158	
TA 31026 02236	Trench 34	Discrete	34014	0.5	0.16	Association with 100158	
TA 30537 02027	GWB	NW–SE	200061	1	0.6	Depicted on 1st edition Ordnance Survey map	
TA 27118 01413	GWB area B	NE–SW	165	1.1	0.22	Depicted on 1st edition Ordnance Survey map	Hedgerow; heavily disturbed by roots
TA 26684 01489	GWB area C	Curvilinear	173	1.3	0.15	Contained clay tobacco pipe fragment; depicted on 1st edition Ordnance Survey map	Hedgerow
TA 26282 01810	GWB	N–S	200107	2	1	Depicted on 1st edition Ordnance Survey map	
TA 26282 01810	GWB	W–E	200091	3	0.7	Depicted on 1st edition Ordnance Survey map	

NGR	Excavation area	Orientation	Feature	Maximum width/ diameter (m)	Depth (m)	Dating evidence	Comments
TA 25843 02284	GWB area E	W–E	200101	2	0.8	Depicted on 1st edition Ordnance Survey map	
TA 25877 02245	GWB area E	N–S	194, re-recorded as 200103	2.2	0.75	Contained modern and residual medieval pottery	
TA 25676 02442	GWB area F	N–S	222	2	0.35	Contained late 18th- to mid-19th-century pottery	Hedgerow
TA 24852 02467	GWB area G	NE–SW	238	0.88	0.62	Truncated furrow 235; appeared to be machine-cut; depicted on a variety of historic maps	
TA 24716 02728	GWB area H	W–E	252=254	1.5	0.51	Parallel to extant trackway	
TA 24519 04662	GWB	W–E	200121	2	1	Depicted on 1st edition Ordnance Survey map	
TA 22268 07032	TWB17	W–E	433	1.68	0.42	Association with 435	
TA 22268 07032	TWB17	W–E	435	1.8	0.32	Depicted on 1st edition Ordnance Survey map	
TA 21162 08141	GWB area Z	NE–SW	200163	14.8	Not recorded	Depicted on 1st edition Ordnance Survey map	
TA 20474 08725	GWB area AC	Discrete	523	0.66	0.07	Association with 527	Spread of ex-situ burnt material
TA 20492 08708	GWB area AC	Discrete	524	0.54	0.04	Association with 527	Spread of ex-situ burnt material
TA 20490 08712	GWB area AC	NW–SE	525	1.1	0.2	Association with 527	
TA 20475 08723	GWB area AC	NE–SW	527	0.37	0.24	Construction materials	Handmade red brick and lime mortar drain
TA 19053 10071	GWB	Discrete	200187	52.5	Not recorded	Depicted on 1st edition Ordnance Survey map	Spread used to consolidate ground near gateway(s)
TA 18390 10951	GWB	NE–SW	200191	Unmeasurable	0.35	Continuation of extant boundary	
TA 17954 11716	GWB	NE–SW	200195	3.4	Not recorded	Abandoned parts of extant system of open drains	
TA 17954 11716	GWB	NE–SW	200196	5.6	Not recorded	Abandoned parts of extant system of open drains	
TA 17651 12131	GWB	Layer	200193	Unmeasurable	Not recorded	Perhaps a layer of warp?	
TA 17584 12439	GWB area AD	NE–SW	923	0.85	0.4	Extant boundary	Hedgerow
TA 16534 13042	GWB area AE	NE–SW	933, re-recorded as 200211	0.95	0.55	Depicted on 1st edition Ordnance Survey map	Contained sherd of possibly residual medieval pottery. Close to Roxton DMV
TA 16534 13042	GWB area AE	NE–SW	200212	Not recorded	0.4	Depicted on 1st edition Ordnance Survey map	Drainage gully parallel to boundary 933=200211

NGR	Excavation area	Orientation	Feature	Maximum width/ diameter (m)	Depth (m)	Dating evidence	Comments
TA 16765 12975	GWB area AE	NE–SW	200201	Not recorded	0.5	Extant boundary depicted on 1st edition Ordnance Survey map	
TA 15501 15030	GWB area AJ	N–S	200223	1.8	Not recorded	Depicted on 1st edition Ordnance Survey map	Close to ditch 202311
TA 15721 14857	GWB area AJ	N–S	983=987, re-cut as 985 and re-recorded as 200225	1.8	0.53	Contained basal plastic shopping bag	
TA 14869 15502	GWB	NE–SW	202311	2	Not recorded	Depicted on 1st edition Ordnance Survey map	Parallel to furrows 20213 and 20215. Close to ditch 200223
TA 14344 16261	GWB	NE–SW	200231	1.6	Not recorded	Depicted on 1st edition Ordnance Survey map	Hedgerow
TA 14834 17224	GWB area AN	N–S	20203	1.1	0.28	Depicted on 1st edition Ordnance Survey map	
TA 14677 18756	TWB19	N–S	20150	1.28	0.15	Contained modern CBM	Hedgerow
TA 14679 18968	TWB20	NE–SW	20123	0.63	0.3	Continuation of extant boundary	Hedgerow, parallel to furrows

Table 3.3 Summary of undated features recorded outside main sites

NGR	Excavation area	Orientation	Feature	Maximum width/ diameter (m)	Depth (m)	Comments
TA 24613 04195	Trench 43	N–S	43005	1	0.16	
TA 24613 04195	Trench 43	Discrete	43007	0.42	0.14	'V'-shaped profile
TA 24537 04736	Trench 44	Discrete	44005	0.34	0.04	Irregular
TA 24537 04736	Trench 44	Discrete	44006	Unmeasurable	0.19	Fill included heat-affected stones
TA 23216 04953	GWB area N	Discrete	263	0.36	0.08	Fill rich in burnt bone
TA 23243 05094	Trench 45	NW–SE	45004	0.59	0.16	
TA 23113 06049	TWB3	W–E	387	1.3	58	Palaeochannel or ditch?
TA 23168 06056	Trench 47	Curvilinear	47006	0.83	0.24	Re-cut of 47004
TA 23168 06056	Trench 47	Curvilinear	47004	Unmeasurable	Unmeasurable	Antecedent to 47006
TA 23168 06056	Trench 47	Discrete	47008	0.62	0.11	Sub-square in plan
TA 23168 06056	Trench 47	Unknown	47010	0.68	0.16	Partially exposed
TA 22333 06939	Trench 51	NE–SW	51012	1.3	0.3	Features to the north are modern
TA 21550 07799	GWB area Z	NE–SW	200161	1.4	Not recorded	Possibly modern as parallel to Aylesby Road

NGR	*Excavation area*	*Orientation*	*Feature*	*Maximum width/ diameter (m)*	*Depth (m)*	*Comments*
TA 21550 07799	GWB area Z	NE–SW	200162	1.5	Not recorded	Possibly modern as parallel to Aylesby Road
TA 20442 08777	GWB	Uncertain	201728	1.5	Not recorded	Possibly geological or perhaps associated with nearby post-medieval features
TA 19093 09993	GWB	N–S	201810	1.87	Not recorded	
TA 18854 10318	GWB	W–E	200180	2.7	Not recorded	
TA 18715 10506	GWB	W–E	200181	1.9	0.6	Located immediately SE of Stallingborough Grange Farm
TA 15489 15041	GWB	NE–SW	200221	1.9	Not recorded	
TA 15550 15850	Trench 90	Discrete	90005	0.8	0.18	
TA 14414 16514	GWB area AK	W–E	993=995	1.52	0.23	Potentially associated with windmill mound (HER 25944 – MLS25944)

Chapter 4
Iron Age and Romano-British Pottery and Organic Residue Analysis

Iron Age and Romano-British Pottery

I M Rowlandson and H G Fiske

Introduction

A **total of 8058** Iron Age and Romano-British sherds (185.51 kg, 123.80 rim equivalents; RE) were recovered across the route (**Table 4.1**). The pottery assemblage is similar to other local assemblages from the Able UK and A160/A180 Port of Immingham schemes (Beeby with Precious 2010; Rowlandson and Fiske 2016; 2019a; Rowlandson *et al.* 2017).

The assemblage showed the transition from the Late Iron Age to the early Romano-British period. Sites representing this transitional period have been commonly encountered during the upsurge of archaeological work in this part of the Lincolnshire coast and, with the increasing number of sites, it appears that a similar suite of wares were in use amongst the inhabitants of many of these scattered rural sites, broadly moving from handmade rock-gritted wares towards fossil shell-gritted wares in the Late Iron Age, including decorated and fine-walled vessels. With the Roman conquest, these settlements still largely depended upon coarse transitional wares gritted with varying quantities of fossil shell, grog and quartz sand that developed from their Iron Age predecessors. In the early Romano-British period these were augmented by small quantities of wheel-made grey wares along with smaller quantities of samian and flagons. Later into the 2nd century AD, locally produced grey wares became the most common pottery in use, with a broader more diverse range of table wares and mortaria present in small quantities.

Fewer groups of later Romano-British pottery were recorded and the patterns of pottery use appeared similar to those outlined for the region by Leary (2013). Dales ware fabric types became common in the 3rd century AD, replacing the coarse gritted native tradition wares in the assemblage, although locally produced grey wares remained the most common pottery until the end of the Romano-British period. Very few colour-coated table wares or other specialist table wares were present, with forms mostly acquired from local grey ware producers; a few rare locally produced oxidised vessels were also present.

Methodology

An archive has been produced to comply with the requirements of the Study Group for Roman Pottery (Darling 2004) using the codes and system developed by the City of Lincoln Archaeological Unit (Darling and Precious 2014) and the fabric series developed by this author for Northern Lincolnshire (Rowlandson 2012a; 2012c; 2014a; 2014b; 2015; forthcoming; Rowlandson and Fiske 2016; 2019a; 2019b; 2020a; 2020b; 2020c; in prep; Rowlandson with Gray 2010; 2011; Rowlandson with Hartley 2013; Rowlandson *et al.* 2015b; 2017). These alpha-numeric fabric and form codes have been used in the text and are expanded in the fabric appendix available in the archive (North Lincolnshire Museum NKHB). Iron Age vessel attributes have been assigned to the pottery from the excavation following the types established by Knight for the East Midlands (1998). Pottery has been bagged by fabric within each context to conform to the requirements of the *Lincolnshire Handbook* (Jennings 2019). Significant vessels suitable for illustration and further study at the analysis stage have been extracted and attributed a 'D*' number marked on their bag and in the archive. A tabulated summary by context and a sherd archive are presented in the archive. Material recorded by the authors from the relevant evaluation trenches have also been concorded with the phase scheme and included in this report (Rowlandson 2012a; 2015) along with the results of the original assessment (Rowlandson and Fiske 2019a). Vessel illustrations have been presented in order by site and phase, and catalogue entries have been included within the text.

Extra material was retrieved after completion of the main text of the report that has not been included in the statistical analysis. This material has been recorded in the archive and does not significantly impact the dating information incorporated in this report. Two contexts from Westfield Farm (8131 and 8177) not already represented in the dating archive each yielded a single shell-gritted possible Romano-British sherd. A rim fragment from a white ware ring-necked flagon dated AD 70–120 was retrieved from Humberston Road (120167). These additional spot dates are consistent with the stratigraphic account given in Chapter 2.

Table 4.1 Quantification and dating summary by site

Site	*Sherds*	*Weight (kg)*	*Total RE%*	*Iron Age*	*Late Iron Age*	*Early Romano-British*	*Mid-Romano-British*	*Late Romano-British*	*Very late Romano-British late 4th C+*
Chase Hill Road	466	6.489	2.39	X	X	-	-	-	-
East Field Road	234	3.894	1.95	-	X	X	-	-	-
Humberston Road	2299	58.668	37.70	-	X	X	X	X	-
Keelby Road	1060	26.424	18.45	-	X	X	X	X	-
Station Road	2012	46.590	32.90	X	X	X	X	X	X
Westfield Farm	1797	40.219	27.28	X	X	X	X	X	?
Blow Field	93	1.606	1.3		X	X	-	-	-
Wells Road	5	0.163	0.59	X	X	X	-	-	-
Laceby Beck	30	0.311	0.42	X	X	X	-	-	-
Tetney Lock	9	0.073	0.1	X	-	X	-	-	-
Brooklands	9	0.238	0	-	-	X	-	-	-
Habrough	44	0.844	0.79	X	X	X	-	-	-
Totals	8058	185.519	123.87						

The Pottery by Fabric

Iron Age rock-gritted wares

ETW/ETW2: Handmade rock-gritted wares (eg, **Fig. 4.2**, 3). Quartz and non-soluble rock-gritted sherds most probably manufactured using fractured erratic rocks or pebbles from Boulder Clay deposits (see Ixer and Vince 2009). The term 'Erratic Temper Ware' used by Rigby (2004) and Darling (2006; 2008) has been preserved in the fabric group 'ETW' but, although unlikely in this case, it is possible that some of the rock-gritted sherds may have been made using rock taken from igneous outcrops (eg, Knight *et al.* 2003). Subdivisions of the coarseness have been developed from recording material from Weelsby Avenue, Grimsby (Rowlandson and Fiske in prep.; Sills and Kinsley 1978). Rock-gritted wares of this type are common from the Late Bronze Age until the Iron Age period in north-eastern Lincolnshire (Knight 1994; Rowlandson 2012c; Rowlandson and Fiske 2016; Rowlandson *et al.* 2017). ETW: 74 sherds were recorded from plots 30, 33, 85, 104, 111, 112, 118 and 120 during the evaluation. ETW2: 84 sherds were recorded, from Chase Hill Road (24 sherds), East Field Road (15 sherds), Westfield Farm (35 sherds), Keelby Road (1 sherd), Station Road (6 sherds), Humberston Road

(1 sherd plus 1 sherd from the evaluation) and Laceby Beck (1 sherd). ETW2 sherds from the evaluation were recorded as ETW. Vessels in this group were most typically globular or ovoid jars with everted rims. Two examples of 'barrel' jars with in-turned rims (Challis and Harding 1975) were also recorded from the Chase Hill Road site. Examples of both plain and pinched out bases were noted.

ETW2C: As ETW2 but with coarser abundant rock fragments. Seven sherds were recovered, from East Field Road (1 Scored ware sherd), Westfield Farm (5 sherds) and Station Road (1 sherd). Forms included a rare Scored ware sherd and a bowl (**Fig. 4.9**, 82).

ETW4/ ETWF: A finer version of ETW2 with rare to sparse small rock fragments (eg, **Fig. 4.9,** 83, 87 and 88). Some 66 sherds were recovered from a maximum of 29 vessels, from Chase Hill Road (19 sherds), East Field Road (23 sherds), Westfield Farm (8 sherds), Humberston Road (2 sherds plus 10 sherds from the evaluation) and Laceby Beck (4 sherds). Vessels in this fabric group were often smaller and more neatly formed than the vessels in the ETW2 group. ETW4 forms included a jar with an everted rim from Humberston Road and a vessel with a plain direct rim from Chase Hill Road. Bases included plain and pinched out types. Small vessels in this fabric from Westfield Farm were considered but rejected as possible crucibles (P Andrews pers. comm.), though may perhaps be examples of small handmade open vessels, similar to those from Weelsby Avenue, Grimsby (Elsdon 1996a, C6 and C6a).

ETW7: As ETW2 but with large flakes of gold mica. Two sherds were recovered, from Humberston Road (context 7403).

ETWSH: Sparsely rock-gritted with poorly sorted fossil shell. Examples of this fabric have been recorded by Darling (2006, 2008) from North Killingholme, where it may represent an attempt by local potters at incorporating fossil shell into their more typical sandy rock-gritted potting fabric. Three sherds were recovered during the evaluation: one from East Field Road, one from Westfield Farm and one elsewhere.

Relatively low levels of rock-gritted sherds were present: 248 sherds forming 3% of the assemblage by sherd count, 2.2% by weight. This material mostly appears to date to the Iron Age and much of the material can be paralleled with assemblages from North Killingholme (Darling 2006, 2008) and Weelsby Avenue, Grimsby (Elsdon 1996a; Rowlandson and Fiske in prep.; Sills and Kinsley 1978). In this part of Lincolnshire, the Scored ware surface treatment, ubiquitous in some other parts of the East Midlands, is seldom found (Knight 2002). A single sherd with Scored ware-type surface treatment was recorded from the East Field Road site. Other decorated sherds included two vessels from Chase Hill Road with a slashed flattened rim (as Darling 2006, no. 9) and a vessel with scored lines and a flattened direct rim from East Field Road. This low level of decoration or surface treatment was typical of the rock-gritted wares from this part of the county.

Rock-gritted wares of this type are common from the Late Bronze Age into the Iron Age in north-eastern Lincolnshire (Knight 1994; Rowlandson 2012c; Rowlandson and Fiske 2016; 2019b; Rowlandson *et al.* 2017). The rock-gritted tradition is mostly encountered on the coastal area of north-eastern Lincolnshire on sites situated on or near to boulder clay deposits, presumably the parent material for clay and rock fragments found within the vessels. A limited number of vessels from this area have been subjected to scientific dating: examples from Barton upon Humber were dated to the 4th or 5th century BC on the basis of material removed from carbonised cooking residues adhering to the vessels (Rowlandson 2012c, vessel numbers 3 and 4). A pit containing a rock-gritted vessel from the Nettleton–Rothwell excavation yielded a radiocarbon date of around 500–400 BC (Willis 2013, 127–8, 168–9 vessel 1). The type-site for these wares, Weelsby Avenue, Grimsby, has been recorded and awaits more detailed analysis to look at the sequence and dating of these wares (Rowlandson and Fiske in prep., Sills and Kinsley 1978). Pottery of Middle Iron Age style found to the west of the Wolds on Jurassic strata was more typically manufactured with fossil shell grits, and examples of these can be seen from sites as close by as Barnetby Le Wold (Darling 2003, nos 1–9, cf. also Darling 2000; 2002), a vessel recovered by S. Beasley from Sheepdyke Lane, Bonby, and earlier material recovered from the type-site at Fiskerton near Lincoln (Elsdon and Knight 2003). With the exception of a few rare vessels such as vessel 1 from the Nettleton–Rothwell site (Willis 2013), non-soluble rock-gritted wares do not appear to have commonly reached west of the Lincolnshire Wolds. This would fit a pattern discussed by Didsbury from the northern bank of the Humber where the fabrics used mostly appear to relate to locally available geological resources, with a greater level, diversity in fabrics, exchange and technological development in the Late Iron Age with the development of Late La Tène II/III 'Dragonby type' wares (Didsbury and Vince 2011).

The handmade rock-gritted potting tradition appears to decline in this area during the 1st century AD when shell-gritted wares and subsequently Romano-British grey wares became common. Examples of handmade non-soluble rock-gritted sherds are typically rare on late Romano-British sites, with fresh sherds from only two vessels, the most notable finds on the almost exclusively late Romano-British Old Fleet Drain site, Stallingborough (Rowlandson 2011). This contrasts with assemblages from York and eastern Yorkshire where the handmade tradition continued throughout the Romano-British period, particularly in rural areas (eg, Monaghan 1997; Rowlandson 2012b). Given that similar rock-gritted wares were made using boulder clay deposits in eastern Yorkshire, it might not be possible to ascertain on which side of the River Humber they were made, and closely dating the pottery in this tradition has proven to be challenging (Cumberpatch 2016) especially in the absence of any feature sherds.

Recent analysis of the distribution of rock-gritted wares from the A180 Immingham project and the Able UK scheme (Rowlandson and Fiske 2016; 2019b; Rowlandson *et al.* 2017) has shown that they typically decreased as a proportion of the assemblage to a few stray sherds by mid- to late Romano-British phases. On sites founded *de novo* in the later 1st or 2nd century AD, with the exception of the Stallingborough site, vessels in these fabrics were typically rare (and in small fragments) or absent. Examples like this can be seen at the ALP4 and AMEP2 Able UK sites (Rowlandson *et al.* 2017), New Waltham Scouts Lane (Rowlandson 2014a), the Goxhill Feeder 9 scheme (Rowlandson and Fiske 2020b) and Hatcliffe Top (Rowlandson and Fiske 2020c). The examples from Stallingborough most probably represent vessels transported to the site during the Romano-British period. With the development of more refined potting styles in the late La Tène II/III it would appear that rock-gritted wares fell out of favour, with the development of better-prepared quartz sand-gritted or grog-gritted wares that may have been produced more locally being favoured for shaping more refined vessel types (see below). The return to favour of non-soluble rock as filler for handmade vessels appears to re-occur in the early Saxon period (Young, this volume; Willis 2020).

Iron Age quartz sand-gritted wares

IASA: Miscellaneous Iron Age sandy wares, handmade or wheel-finished. Six sherds were recovered, from Chase Hill Road (1 sherd), East Field Road (1 sherd from the evaluation), Station Road (1 sherd), and elsewhere on the evaluation (3 sherds).

IASA1: Abundant quartz poorly sorted 0.3–1 mm including some glassy sub-rounded grains around 1 mm; sparse ferruginous grains up to 0.8 mm, handmade or wheel-finished (eg, **Fig. 4.7**, 60 and 61). A total of 27 sherds were recovered, from Chase Hill Road (2 sherds), East Field Road (8 sherds), Westfield Farm (2 sherds plus 1 from the evaluation), Keelby Road (6 sherds), Station Road (6 sherds), Humberston Road (2 sherds).

IASA2: Fine fabric, moderate quartz 0.3–0.6 mm; mostly thin-walled Late La Tène III type vessels (eg, **Figs 4.8**, 70 and **4.9**, 84). As IASH5 but without shell inclusions. Handmade or wheel-finished. There are 44 sherds, from Chase Hill Road (11 sherds), East Field Road (10 sherds), Westfield Farm (9 sherds), Keelby Road (9 sherds), Station

Road (2 sherds), Laceby Beck (1 sherd) and Habrough (2 sherds from general watching brief area AG; GWB area AG).

QUCF: Common fine quartz, possible earlier prehistoric sherds. Two handmade sherds were recovered from Laceby Beck, likely to be residual (and were passed to the prehistoric pottery specialist).

Vessels in the coarser sandy Iron Age fabric (IASA1) included native tradition cooking pots (**Fig. 4.7**, 60 and 61) and jars with everted rims. A small number of vessels in a Late La Tène II or III fine sand-gritted ware were also present (IASA2, **Figs 4.8**, 70 and **4.9**, 84), these included a necked bowl from Station Road (**Fig. 4.8**, 70; Darling and Jones 1988, fig. 5.9) and an unusual globular jar with a footring base from Westfield Farm (**Fig. 4.9**, 84; as Elsdon 1996b, fig. 19.27.143). Examples of similar fine wares are known from conquest period deposits at Lincoln (Darling and Precious 2014, IASAF) and from northern Lincolnshire (Elsdon 1996b).

Iron Age grog-gritted wares

IAGROG: Miscellaneous Iron Age grog-tempered wares. Five sherds were recovered, from Westfield Farm (1 sherd), Keelby Road (3 sherds) and Station Road (1 sherd).

IAGROG1: Coarser grog-gritted fabric. Some 10 sherds were recovered, from Chase Hill Road (3 sherds), East Field Road (1 sherd), Keelby Road (2 sherds), Station Road (2 sherds) and Humberston Road (2 sherds).

IAGROG2: Fine grog-gritted fabric, as IASH3 without fossil shell. Four sherds were recovered, from Westfield Farm (1 sherd) and East Field Road (3 sherds).

A smaller range of grog-gritted Iron Age pottery was present in Middle to Late Iron Age forms in a coarse variant (IAGROG1) and a finer variant (IAGROG2), which was often used to produce Late Iron Age bead rimmed and necked jar forms and platters, in a similar fabric to some examples handled by this author from Kirmington (NLM site code KMAA; Elsdon 1996a). Sherds from this project could not be attributed to a form type.

Iron Age fossil shell-gritted wares

IASH: Miscellaneous Iron Age shell-gritted coarse wares. A total of nine sherds were recovered, from Tetney Lock Road (6 sherds), Keelby Road (1 sherd), Westfield Farm (1 sherd) and Station Road (1 sherd).

IASH1: Iron Age shell-gritted coarse ware with variable firing colours (eg, **Figs 4.6**, 48 and **4.7**, 62). Common coarse shell including echinoid spines with sparse sub-angular quartz 0.8 mm and sparse rounded ferruginous-rich inclusions up to 1 mm. Rare clay cognates were present in some sherds. A total of 503 sherds were recovered from a maximum of 288 vessels, from Chase Hill Road (140 sherds from maximum 115 vessels), East Field Road (51 sherds), Westfield Farm (86 sherds from maximum of 40 vessels), Keelby Road (22 sherds), Station Road (38 sherds), Humberston Road (40 sherds plus 5 sherds from the evaluation), Habrough (GWB areas AG and AH; 15 sherds) and Brooklands (1 sherd from evaluation); a further 105 sherds came from a maximum of 44 vessels recovered during the evaluation from Chase Hill Road, East Field Road, Westfield Farm and Keelby Road.

IASH2: Fine Iron Age shell-gritted, mostly reduced, ware (eg, **Figs 4.1**, 1; **4.7**, 63 and **4.9**, 89). Common coarse fossil shell in a smooth silty clay matrix; some vessels have smoothed or burnished surfaces. Clay cognates present in some sherds. There are 152 sherds from a maximum of 76 vessels, from Chase Hill Road (95 sherds from maximum 41 vessels), East Field Road (7 sherds), Westfield Farm (10 sherds), Keelby Road (3 sherds), Station Road (7 sherds), Humberston Road (13 sherds plus 8 from the evaluation), Habrough (GWB area AG; 3 sherds) and a further 6 sherds recovered during the evaluation from Chase Hill Road, Westfield Farm and Keelby Road.

IASH3: Fine Iron Age shell-gritted, mostly reduced, ware (eg, **Fig. 4.3**, 13). Common medium shell including echinoid spines, sparse angular ferruginous inclusions up to 1 mm and some fine silver mica. Thin-walled vessels with smoothed or burnished external surfaces. Some 35 sherds were recovered, from Chase Hill Road (5 sherds), East Field Road (2 sherds), Westfield Farm (1 sherd), Keelby Road (4 sherds), Station Road (1 sherd), Humberston Road (9 sherds) and a further 13 sherds recovered during the evaluation from Chase Hill Road, Westfield Farm and Keelby Road.

IASH4: Iron Age shell-gritted, mostly reduced, coarse ware. Handmade, mostly reduced smooth fabric. Moderate to sparse fine to medium shell with ferruginous inclusions. A total of 14 sherds were recovered, mostly during the evaluation, from Chase Hill Road, Westfield Farm and Keelby Road.

IASH5: Fine Iron Age shell-gritted mostly reduced firing (eg, **Figs 4.3**, 5 and **4.9**, 85). Moderate to sparse fine to medium shell with ferrous inclusions. There are 46 sherds, from Chase Hill Road (2 sherds), East Field Road (4 sherds), Westfield Farm (20 sherds), Keelby Road (5 sherds), Station Road (1 sherd), Humberston Road (7 sherds) and a further 7 sherds recovered during the evaluation from Chase Hill Road and Keelby Road.

IASH6: Finer Iron Age shell-gritted coarse ware. As IASH2 with fine to medium grog or clay pellets and a low proportion of quartz inclusions. Five sherds were recovered, from Habrough (GWB areas AG and AH).

IASH7: Iron Age shell-gritted coarse ware. Coarser variant of IASH6 with coarser shell and grog/clay pellet grits with low quantities of quartz inclusions. Some 142 sherds were recovered, from Chase Hill Road (42 sherds), East Field Road (12 sherds), Westfield Farm (66 sherds), Keelby Road (6 sherds), Station Road (11 sherds), Humberston Road (3 sherds) and Habrough (GWB area AH; 2 sherds).

The most common Iron Age fabrics present were the shell (IASH1–IASH5, 763 sherds, 10.583 kg, RE 5.57) and shell and grog-gritted variants (IASH6–IASH7, 147 sherds, 3.012 kg, 0.69 RE). A proportion of the pottery in the IASH1 and IASH7 fabrics could be considered as broadly in the Middle to Late Iron Age tradition; however, the majority of the vessels present in this fabric were probably produced in the Late Iron Age, with large jars and bowls similar to Dragonby Iron Age type 20 most common in the coarser fabrics amongst the assemblage (Elsdon 1996b). The range of forms present appeared similar to that in use at Dragonby (Elsdon 1996b), with coarser fabrics used for producing the larger jars and bowls (eg, **Figs 4.6**, 47 and **4.7**, 61) and the fine variants used for manufacturing necked jars and bowls mostly in the Late La Tène II/III style (fabrics IASH2, 3, 4, 5 and 6, **Figs 4.1**, 1; **4.3**, 5 and 13; **4.7**, 63; and **4.9**, 85 and 89).

The prevalence of fossil shell-gritted fabrics on the east Lincolnshire coast in the Late Iron Age is interesting as it is unlikely that the fossil shell would be found naturally occurring in the glacial or marine deposits along the coast. Fossil shell-rich deposits are typically found in Jurassic strata which only outcrop to the west of the Cretaceous Lincolnshire Wolds scarp. If this is the case, then the pottery of this type and this period, gritted with fossil shell (and also by extension the Romano-British period), would have been made to the west of the Lincolnshire Wolds, near Barnetby le Wold (eg, Darling 2003) or perhaps the tempering material itself was transported to the production site to be mixed with the local clays. Either option would require a well-established system of trade or exchange to be in existence in the Late Iron Age (perhaps via more significant nodal settlements such as Kirmington or South Ferriby). This would also fit the pattern recognised by Didsbury at contemporary sites on the north bank of the River Humber where developed La Tène II/III type wares may also have been traded or redistributed from north-western Lincolnshire (Didsbury and Vince 2011, 196–7).

The presence of small quantities of pottery containing both non-soluble rock and fossil shell with a fine sandy fabric similar to the other ETW fabrics (ETWSH) from Immingham, Healing, the Able UK AMEP1 site and the North Killingholme Vehicle redistribution facility raises the possibility of some of the shell-gritted pottery being produced more locally (Darling 2006; 2008; Rowlandson 2014b; Rowlandson *et al.* 2010; 2017).

Samian

J M Mills

A small collection of 55 sherds of samian with a total weight of 769 g (1.167 rim estimated vessel equivalent; EVE) was recovered from 39 contexts from four sites. The quantities are small, and insufficient to allow for any statistical or functional analyses. The presence of sherds of these quantities of samian can be seen as evidence of the low level of samian consumption commensurate with a rural settlement predominantly based on an agrarian economy (Willis 2005, section 8.2.6).

The samian was recorded on an Excel spreadsheet. The fabric of each sherd was examined on a fresh break under a binocular microscope. The record for each sherd or group of sherds from the same vessel includes context number, fabric code, form code, sherd type, sherd count, weight, rim diameter and rim EVE where >5% survives, condition, and date range. The presence of decoration, potters' stamps, graffiti and evidence for use-wear, repair and sherd alteration was also systematically recorded. In addition, a catalogue of the stamped samian was compiled.

Examples of samian from the three main production areas in South, Central and East Gaul were identified and are quantified in **Table 4.2**.

Only two sherds from La Graufesenque in South Gaul (SAMLG) were recorded. Although hard to date closely from such small samples, the fabrics suggest a Flavian date. The single Trajanic sherd from Les-Martres-de-Veyre (SAMMV) in Central Gaul is also an early sherd for this group. The limited amounts of 1st- and early 2nd-century samian may suggest that early Romano-British activity, or access to samian, was limited at this time. Most of the samian recorded from the project came from the major 2nd-century producers of Lezoux (SAMCG) in Central Gaul, supplemented with a few late 2nd- to early or mid-3rd-century vessels from Rheinzabern (SAMRZ) and Trier (SAMTR), the two main kiln sites in East Gaul.

The mean sherd weight across the assemblage of 14 g, coupled with the good condition of most of the sherds, indicates that the material had not been heavily abraded, and the deposits had not been continually reworked; additionally only two sherds show signs of post-depositional burning.

Repair and alteration of broken vessels in order to repurpose them is often taken as evidence of limited access to samian, whether due to supply, economic or social reasons. Repaired samian is known from all site types, no doubt because it was a costly acquisition, but the rate of repair is often highest on rural sites. The evidence for vessel repair is limited to one example from Keelby Road, a possible sawn slot on

Table 4.2 Samian: quantification by fabric for each site

Site	*SAMLG*				*SAMMV*				*SAMCG*				*SAMRZ*				*SAMTR*			
	No	*Wt (g)*	*EVE*	*MNV*	*No*	*Wt (g)*	*EVE*	*MNV*	*No*	*Wt (g)*	*EVE*	*MNV*	*No*	*Wt (g)*	*EVE*	*MNV*	*No*	*Wt (g)*	*EVE*	*MNV*
Keelby Road	-	-	-	-	-	-	-	-	1	7	-	1	2	13	-	1	-	-	-	-
Westfield Farm	-	-	-	-	1	32	0.13	1	6	70	-	4	1	2	-	-	1	10		1
Station Road	1	1	-	-	-	-	-	-	2	20	-	-	-	-	-	-	-	-	-	-
Humberston Road	1	5	0.06	1	-	-	-	-	35	372	0.69	23	3	170	0.28	3	1	57	-	1
Total	2	6	0.06	1	1	32	0.13	1	44	469	0.69	25	6	185	0.28	5	2	67	-	2

a dish/bowl sherd from Lezoux (context 2010). Repair rates, even on rural sites where samian supply may have been poor, is usually observed at somewhere between 1% and 5% (Willis 2005, 11.5), so to encounter just one repaired vessel in a small group such as this fits the expected repair rate. Evidence for the re-use of vessels is limited to neat chipping off of the walls on three of the stamped vessels from Humberston Road. All are form 31 dishes from Central Gaul; two (7166, 7305) also exhibit wear on the undersides which suggests these bases were used inverted as small dishes or palettes (Marsh 1981, 229), while the third example (7399) was chipped around the edge but lacks evidence of subsequent use. A Trier Dr 31 body sherd (4873), also from Humberston Road, has a patch of wear on the wall internally; the only other evidence of prolonged use was in the form of worn footrings, although none were excessively worn.

The range of vessel forms recorded is quite limited as might be expected from a small sample (**Table 4.3**). The collection is dominated by plain dish and bowl forms. Only three sherds with moulded decoration were recorded, representing a low proportion of decorated vessels, again to be expected for a rural site. However, the small size of this group may result in an unrepresentative range of vessels.

Westfield Farm

A small group of nine sherds weighing 124 g were recovered from the fills of nine different features. The earliest sherd, the only pottery from ditch 4941 (feature not illustrated), was a comparatively large rim sherd with only the ovolo surviving from a Trajanic Les-Martres-de-Veyre Dr 37 (fill 4942). The ovolo indicates the work of Drusus i (Rogers 1974, B28). Only two early Romano-British features yielded samian, both body sherds from 2nd-century Lezoux vessels: a Dr 27 cup (4825) and a second decorated

Table 4.3 Samian: maximum vessel numbers (MVN) by form and fabric

Vessel functional class	*Vessel form*	*MVN by fabric (production centre)*				
		SAMLG	*SAMMV*	*SAMCG*	*SAMRZ*	*SAMTR*
Jar/beaker	closed	-	-	1	-	-
Cup	27	-	-	2	-	-
	33	-	-	4	-	-
	Wa 80	-	-	1	-	-
	cup	-	-	2	-	-
Dish	18R	1	-	-	-	-
	18/31	-	-	2	-	-
	18/31R	-	-	2	-	-
	31	-	-	5	1	1
	32	-	-	-	1	-
	Cu 23	-	-	4	-	-
Dec bowl	37	-	1	2	-	-
Plain bowl	31R	-	-	2	1	1
	Lud Sb	-	-	-	1	-
	bowl	-	-	1	-	-
Dish or bowl (indeterminate sherds)	18/31 series	-	-	4	-	-
	dish or bowl	-	-	1	-	-
Project total MVN by fabric	1	1	33	4	2	

Vessel forms are Dragendorff (Dr) forms unless otherwise specified (Lud = Ludowici; Cu =Curle; Wa = Walters) bowl (4111). The ovolo and the arm of horseman O.245 are all that survive but are enough to suggest this was a product of the Cinnamus ii factory (Rogers 1974, B74). Both pieces fall in the late Hadrianic–early Antonine period, no later than AD 160/170.

The remaining sherds were likely to have been deposited residually in later layers, including two small scraps from Central Gaul (4681, 8170), a tiny rim chip from a Rheinzabern vessel (4544) and three larger sherds, two Dr 31 sherds from Central Gaul (4786 and 20006) and a body sherd from a Dr 31R from Trier (4873). The Central Gaulish sherds belong to the second half of the 2nd century and those from East Gaul (Rheinzabern and Trier) from the late 2nd/early 3rd century. The date range for the vessels from East Gaul extends into the 3rd century; however, none are characteristic of manufacture in the 3rd century and are probably not contemporary with the deposits they were found in.

Keelby Road

Just two sherds were recovered, from 3rd/4th-century ditch fills: a 2nd-century Lezoux (SAMCG) dish/bowl rim probably from a plain vessel (2010), and a body sherd, probably from a Dr 31R of late 2nd–early 3rd-century date (2067) from Rheinzabern (SAMRZ). The rim sherd has abraded edges but appears to be broken across a sawn repair slot.

Station Road

A single (1 g) chip of East Gaulish (SAMLG) samian of late 2nd–early 3rd-century date was recovered from ditch 10015 (fill 10019). Single sherds were recovered from the fills of two cut features of 3rd/4th century date. All are residual from 2nd-century Lezoux vessels (SAMCG): a Dr18/31R body sherd (1271) and a body sherd from a closed vessel (1188). A presence of a closed form vessel is perhaps the most intriguing of these, as closed forms are not common finds on rural sites, comprising around 1% of the average rural assemblage (Willis 2005, chart 17).

Humberston Road

By far the largest assemblage of samian came from Humberston Road and comprised 40 sherds weighing 604 g (1.03 rim EVEs). Nearly all are single sherd finds; only ditch groups 7623, 7625 and 7630 yielded multiple sherds of samian, suggesting that the samian is quite widely dispersed, possibly a remnant of an overall background scatter of settlement debris. Ditch group 7625 illustrates the wide range of samian dates and includes examples of Dr 27, 33, 31 and Cu 23 from Central Gaul, with a Dr 31/31R base sherd from Trier. The earliest vessel, a Dr 18 (7020) from La Graufesenque in South Gaul, is represented by a single rim sherd and is probably Flavian in date rather than earlier. Most of the samian is from Central Gaul (Lezoux), 35 sherds weighing 372 g. With the exception of a tiny, decorated body sherd (7311), the samian is a simple selection of plain bowls/dishes and cups. Four stamped vessels were recovered from this site, and include vessels stamped by Aventinus ii (AD 150–70), Cintusmus i (AD 150–180), Genitor ii (AD 160–200) and Macrinus ii (AD 120–150). Although there are sherds dating from throughout the period that Lezoux vessels were current in Britain, c. AD 120–200, the bulk probably fall in the middle of this range, the early to mid-Antonine period. The latest sherds are from East Gaul, three from Rheinzabern (170 g) and one from Trier (57 g). These are late 2nd to early/mid-3rd century in date. Interestingly, the three largest sherds from the collection, all weighing more than 50 g, are in this group; the largest of all (7202) is a rim section from a big Dr 32 dish around 250 mm diameter (Oswald and Pryce 1920, LXIII, 9).

The trends shown by this small assemblage of samian in terms of date, kiln sources and vessel forms are all characteristic of a rural economy. Samian dating from the 1st to 3rd centuries AD was recorded, with an emphasis on 2nd-century plain ware forms from Central Gaul. Previous excavations in north-eastern Lincolnshire yielding small assemblages have shown similar samian profiles, albeit with the exception of the quantity of East Gaulish wares; both North Killingholme (Monteil 2017) and Immingham (Monteil 2016), for example, had greater proportions of samian from East Gaul, as is often seen in eastern Britain. The low level here is likely a function of the sample size rather than site dating or limited access to samian supply.

Samian potters' stamps
Potter's names and die numbers for the stamps are taken from NoTS Volumes 1–9 *Names on Terra Sigillata* (Hartley and Dickinson 2008a; 2008b; 2009a; 2009b).

Each entry gives: potters name (i, ii, etc., where homonyms are involved), die, production centre (fabric code), form (form code), READING Comment, date range (context number).

SS1 Aventinus ii, 1a, Lezoux, Dr 31. [AVENTI]NI·M There are elongated serifs on the M and the Ns on this die that are distinctive. Edge chipped, possibly for re-use, but no wear on underside associated with re-use. (Hartley and Dickinson 2008a, 362–4), AD 150–170 (7399)

SS2 Cintusmus i, 1a, Lezoux, Dr 31. [CINTVS]MIX The centre of the stamp is worn away, and the centre of the underside is a heavily worn pit. Neat chips around the edge of the base suggest the base has been altered (after breakage of the dish) for re-use as a small dish or palette. (Hartley and Dickinson 2008b, 38–43), AD 150–180 (7116)

SS3 Genitor ii, 5b, Lezoux, Dr 31. [G]ENITORF This stamp is quite worn but clear to read. The edges of the surviving base are chipped neatly around so that the base of the vessel could be repurposed for use as a small dish or palette. There are distinctive wear marks with heavy wear in the centre of the underside and a narrow ring of wear at the base of the foot. (Hartley and Dickinson 2009a, 175–7) AD 160–200

SS4 Macrinus ii, 4a, Lezoux, Dr 18/31. [MΛC]RIΛV Worn footring. (Hartley and Dickinson 2009b, 190–3) AD 120–150 (7245)

Catalogue of decorated samian sherds

DS1 Dr 37 (4942). Les-Martres-de-Veyre (SAMMV). Rim sherd with only ovolo surviving. The ovolo (Rogers 1974 B28) indicates the work of Drusus i. AD 100–125
DS2 Dr 37 (5111). Lezoux (SAMCG). Body sherd with ovolo (Rogers 1974, B74) with bead row below and the arm and cloak of horseman O.245 are all that survive. Both were used by the Cinnamus ii factory. AD 135–170
DS3 Dr 37 (7311). Lezoux (SAMCG). Small body sherd with ovolo scrap too incomplete to identify. Antonine.

Amphorae

H G Fiske and David Williams

Eleven amphora sherds were retrieved, from Dressel 20, Italian Dressel 2–4 and Gaulish vessel forms.

DR20: Dressel 20 Amphorae. Produced in the Spanish province of Baetica from the 1st to 3rd centuries AD and exported in very large numbers around the western Mediterranean and across the north-west provinces (Tomber and Dore 1998, BAT AM1 and finer BAT AM2). Two sherds recovered, from Station Road (evaluation context 37035) and Westfield Farm (20008).

GAU: Undifferentiated Gaulish amphorae. Seven sherds recovered in total, from Station Road (1003) and Humberston Road (7391 and 7393). The material from 1003 comprises four light-coloured and slightly micaceous sherds that almost certainly come from a flat-bottomed Gaulish wine amphora. It is difficult to be certain which Gaulish form is represented here; it is perhaps likely to be the most common form, Gauloise 4 (Laubenheimer 1985; 2003; Laubenheimer and Schmitt 2009). Dating for this type in Britain stretches from the later 1st century AD to the 4th century AD. A small splinter of a fairly fine-grained, lime-rich, light reddish fabric from 7391 might belong to a Gaulish amphora, but as the sherd is so small and the fabric undistinguished it is difficult to be confident. A large sharply bent broad ribbed handle with two deep furrows and a small plain body sherd. The fabric is light red in colour and lime-rich. This handle most probably represents a flat-bottomed Gaulish wine amphora, though it is difficult to be certain of the exact form – perhaps Gauloise 1 (Laubenheimer and Schmitt 2009, fig. 2) or Gauloise 12 (Laubenheimer 2003, fig. 14). Both forms have a range of production from the 1st to the 3rd centuries AD (Laubenheimer and Schmitt 2009).

Plate 4.1 Italian amphora sherd (2173) showing characteristic 'black sand' inclusions

IT24: Italian Dressel 2–4 (as Tomber and Dore 1998, CAM AM1). Two joining oval-shaped sherds of a long amphora handle were recovered from Keelby Road (2173). These are in the characteristic black sand fabric of the Bay of Naples region of Campania (Peacock 1977; see also Williams and Peacock 2005) (**Pl. 4.1**). The handle has a thin median groove on both the front and back which, at first glance, suggests that it belongs to the Dressel 2–4 form (Williams and Keay 2006). However, a closer look shows that the handle cannot really be described as bifid and, given the 3rd/4th century context it was recovered from, it seems perhaps more likely that it is instead a slight variant of the later almond-rimmed type which, like Dressel 2–4, probably carried wine (Arthur and Williams 1992; Williams and Keay 2006). In Roman Britain, this form is found in a thin scatter and generally, but not exclusively, is associated with military sites. On the basis of finds from military sites in the north of Britain, the almond-rimmed type seems to be dated from around the mid-3rd century AD to the mid-4th century AD (Williams 1994; 1997). Both the earlier Dressel 2–4 and the later almond-rimmed form are well represented at York, some 70 km to the north-west of the Keelby Road site (Williams 1990; 1997).

Given the rural location of the scheme, the relative scarcity of amphora sherds is not unexpected. Iron Age and Roman pottery assemblages from this part of Lincolnshire typically have few amphorae or other continental imports. Other assemblages from the region have small quantities of amphorae but sherds often show signs of having been re-used as tools (Precious and Vince 2005; Rowlandson and Fiske 2016; 2019b; Rowlandson *et al.* 2017; Peňa 2007). This would suggest a limited use of amphora-borne goods and it is possible that exotica were instead imported in barrels or other containers from marketplaces local to the source of their contents. The Italian amphora was an unusual occurrence for a rural site in northern Lincolnshire.

Mortaria
H G Fiske

MOCO: Colchester; soft cream coloured fabric (Tomber and Dore 1998, COL WH). A single sherd was recovered from Westfield Farm (context 20008, **Fig. 4.9**, 98; broadly as Hull 1958, CAM 498-501).

MOLIN: Lincoln undifferentiated light-fired (Tomber and Dore 1998, SOC WH & LTC WH). Three sherds recovered from two vessels, from Humberston Road (7356). Both vessels have been illustrated (**Fig. 4.3**, 14 and 15). Illustrated vessel 14 is a burnt and broken mortarium in a Lincoln type fabric and shows a fragment of a name stamp; examination of the stamp border shows a similarity to the Die 1 stamp of BISO/IBISO (**Pl. 4.2**), one of whose products was found at the Lincoln Technical College site, where he is likely to have had a workshop. The vessel shows a pattern of burning/sooting (**Pl. 4.3**) which suggests it was used as a cooking pot lid after breakage.

MOMH: Mancetter/Hartshill, undifferentiated mortaria (Tomber and Dore 1998, MAH WH). A single sherd from Station Road (evaluation context 37031).

MOMH2: Mancetter/Hartshill; fine white 'pipeclay' fabric with fired clay/meta-sediment trituration grits (Pollard 1999, 1994; Leicester fabric MO4). One sherd from Westfield Farm (4544) and three from Humberston Road (7051, 7122 and 7136).

MOMH3: Mancetter/Hartshill; sandy white ware fabric with 'fired clay'/meta-sediment trituration grits (Pollard 1999, 1994; Leicester fabric MO19). There are 14 sherds from Station Road (1013), and another from Keelby Road (2016; **Fig. 4.8**, 81).

Illustrated vessel 81 is a deep, hook-rimmed mortarium in a hard, creamy white fabric with poorly sorted inclusions which range in size from near sand-sized to small. These were mainly of quartz but with some orange brown and less frequent black inclusions. The trituration grit is mostly hard, angular red-brown grit with surfaces fired to a black or near-black colour (**Pl. 4.4**). The fabric is entirely characteristic of the products of the pottery industry at Mancetter/Hartshill in Warwickshire (Tomber and Dore 1998, 189).

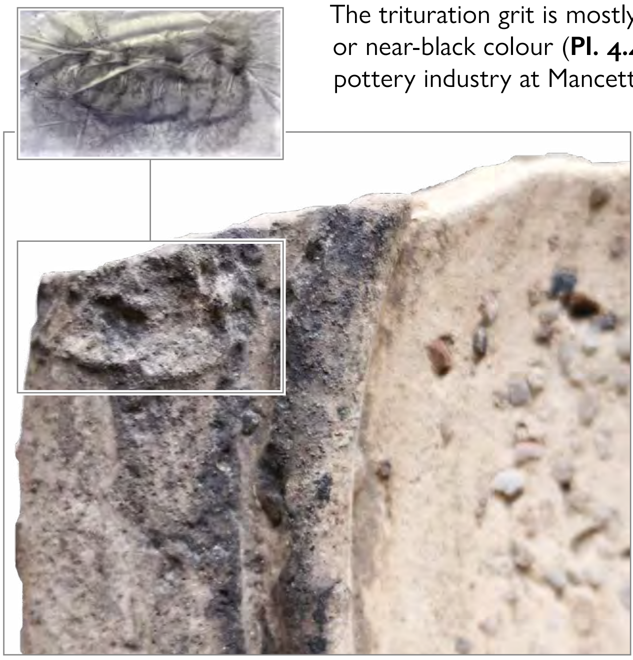


Plate 4.2 Lincoln mortarium, partial stamp and rubbing (rubbing scale 1:1)

Plate 4.3 Lincoln mortarium showing burning/sooting pattern

The single makers' stamp is an incompletely impressed example of one of the seven known dies of the potter Minomelus; he is known to have had a workshop at Hartshill and a kiln of his has been excavated there. There is further evidence that he was active in the pottery making area outside *Manduessedum*, also in Warwickshire (Rowlandson *et al.* 2015b). His mortaria have been found throughout the Midlands and Northern Britain as well as Scotland, where they are more common on Antonine sites than on Hadrian's Wall; his optimum date is AD 130+ to 160. His work has been recorded from Dragonby and Kirmington. The full stamp reads MINOMELVS, with a lambda L and small V followed by a retrograde S (**Pl. 4.5**).

MONV: Nene Valley; light fabric, slag trituration grits (broadly as Tomber and Dore 1998, LNV WH). One sherd from Westfield Farm (evaluation context 99005).

MORT: Undifferentiated mortaria (eg, **Fig. 4.5**, 43). Three sherds: one from Westfield Farm (4530, feature not illustrated), one from Station Road (evaluation context 37009) and one from Humberston Road (evaluation context 31010).

MOSPT: Swanpool type; white-slipped with slag trituration grits (eg, **Fig. 4.6**, 52 and 53; broadly as Tomber and Dore 1998, SWN WS). Ten sherds recovered from maximum of eight vessels, from Westfield Farm (1 sherd from evaluation), Keelby Road (6 sherds) and Station Road (3 sherds).

Most numerous in the assemblage were products of the prolific Mancetter/Hartshill industry in modern Warwickshire. The dates for these are 2nd to 4th century AD and their distribution was widespread throughout the Midlands and northern Britain. This bias towards Mancetter/Hartshill products has also been noted from Dragonby (Parminter and Hartley 1996). Mortaria from the 1st- and 2nd-century AD Lincoln industries occurred in smaller quantities. The Colchester-type collared rim mortarium sherd (**Fig. 4.9**, 98) is an unusual find in this region and possibly represents a coastally traded vessel or personal possession.

Next most common were the so-called Swanpool-type mortaria (MOSPT) dating to the late 3rd to 4th century

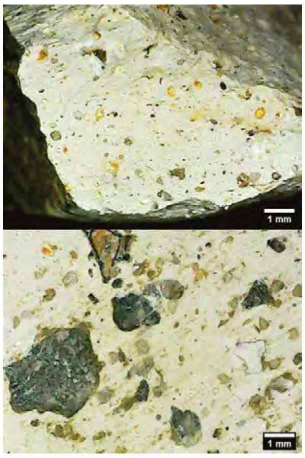


Plate 4.4 Microscope images of fabric break and trituration grits of vessel 81

AD and traditionally assumed to have been produced in Swanpool, with a broadly similar, white-slipped fabric produced at Cantley, South Yorkshire creating some similar material. Recent excavations at Kirmington Airport have, however, yielded a range of burnt or misfired mortaria including vessels of 'Swanpool-type' (Rowlandson *et al.* 2015b) and also at the Linwood Warren kiln site (Samuels 1983). Interestingly, the typical light-fired Lincoln mortaria of the 2nd century AD were not particularly well represented, with just two vessels recorded.

Fine wares

CC: Miscellaneous colour-coated wares. Three sherds, two from Station Road (1681 and evaluation context 37007) and one from Humberston Road (7206).

CC1/NVCC1: Colour-coated ware with a light-fired core (eg, **Figs 4.6**, 49 and **4.8**, 71; Tomber and Dore 1998, LNV CC and SOC CC). A total of 52 sherds, from Westfield Farm (9 sherds), Keelby Road (12 sherds), Station Road (7 sherds) and Humberston Road (19 sherds) and a further five sherds recovered during the evaluation from Keelby Road and Station Road. All recorded as NVCC1 during evaluation.

CC2: Colour-coated ware with an oxidised, red core and a dark colour-coat (eg, **Fig. 4.9**, 90). Some 28 sherds in total from three vessels, from Westfield Farm (8176, 25 sherds), Keelby Road (2032, 1 sherd) and Station Road (1594, 2 sherds).

CC3: Colour-coated ware with a pale orange fabric. Two sherds recovered from Station Road (contexts 1367 and 1608).

GFIN: Miscellaneous fine grey ware (eg, **Fig. 4.4**, 16; as Darling and Precious 2014, 27–8). A total of 55 sherds were recovered from a maximum of 36 vessels, from Westfield Farm (5 sherds), Station Road (6 sherds), Humberston Road (22 sherds plus 4 sherds from the evaluation) and a further 18 sherds recovered during the evaluation from Westfield Farm and Station Road.

ROXPART: Fine Parisian-type ware in north-west Lincolnshire fabric (as Rigby and Stead 1976). One sherd recovered from Humberston Road (7151; **Fig. 4.4**, 17).

Other than samian there were no imported fine ware sherds present. Low levels of fine ware, particularly imports, are typical of the majority of the rural sites in this part of northern Lincolnshire. Fine grey ware vessels were well represented amongst the assemblage (GFIN, ROXPART), perhaps due to the bias towards early to mid-Romano-British activity on many of the sites. Much of the pottery recorded in the GFIN category was probably manufactured locally at sites in the Market Rasen area. Only one of the fine grey ware Parisian-type vessels appeared likely to be from another source, probably Dragonby or Roxby (**Fig. 4.4**, 17), where such wares were also produced.

Plate 4.5 Stamp of potter Minomelus (rubbing scale 1:1)

Colour-coated wares (CC1–3) were the most common fine wares among the assemblage by sherd count and weight. The majority of sherds in this group were in the light-fired core fabric variant CC1. Pottery of this class has traditionally been seen as a product of the Nene Valley area, but light-fired clays were exploited at Lincoln and colour-coated wares were made both at South Carlton and within the boundaries of the modern-day city of Lincoln (Rowlandson *et al.* 2015a; Webster 1944; Fiske and Rowlandson in prep; Rowlandson and Hartley in prep.). As such, it is difficult to be certain at which production centre these sherds were made. An analysis project is underway that will enable identification of these products 'in the hand' without chemical analysis, but it is possible that discerning different production sources under x20 magnification may not be replicable with certainty. Regardless of this, the majority of colour-coated pottery from the current sites were manufactured utilising light-fired clays probably brought from the Nene Valley or near Lincoln, as there is at present no evidence that such wares could be made using the resources available in the Market Rasen area. This assemblage was heavily biased towards beakers, including funnel-necked, bag-shaped, folded (**Fig. 4.6**, 49), scaled, and cornice and plain rimmed types. Other forms in this fabric were scarce but included an unusually small example of a Castor box (**Fig. 4.8**, 71). Beakers are typically the most common colour-coated form found on rural sites in this area. The bias towards beakers is also probably due to there being few groups dating to the 4th century AD when open forms were more common. Fragments from beakers in the red/orange cored CC2 fabric included a paint-decorated funnel-necked type (**Fig. 4.9**, 90). The light-orange core variant CC3, similar to examples made at the Lincoln Newport kiln and those recorded from Brough on Humber by Darling (2005), was scarce with only two beaker sherds present. Examples of Swanpool oxidised wares are discussed with the oxidised wares below, following the groupings used in the Lincoln pottery corpus (Darling and Precious 2014); the majority of vessels in this fabric were table-ware forms and probably fulfilled a similar function to the colour-coated wares (see grouping by Leary 2013, 233).

Oxidised wares

CR: Romano-British cream ware, undifferentiated (eg, **Figs 4.7**, 64 and **4.9**, 91). Some 33 sherds in total recovered from Westfield Farm (8 sherds plus 1 from the evaluation), Keelby Road (2 sherds), Station Road (19 sherds), Humberston Road (1 sherd plus 1 sherd from the evaluation) and Habrough (GWB area AH; 1 sherd).

KMOX: Kirmington 'Swanpool-type' self-slipped ware (**Figs 4.6**, 54 and **4.8**, 72, as Rowlandson *et al.* 2015b). There were three sherds recovered, from Keelby Road (2 sherds) and Station Road (1 sherd).

MICA: Miscellaneous mica-dusted wares. One sherd recovered from Westfield Farm (4322).

OX: Miscellaneous oxidised wares. A total of 27 sherds, from Westfield Farm (2 sherds), Keelby Road (6 sherds), Station Road (2 sherds), Humberston Road (10 sherds plus 3 sherds from the evaluation) and a further four sherds recovered during the evaluation from Westfield Farm and Station Road.

OX1: Oxidised mid-orange fabric with inclusions as GREY1 (eg, **Figs 4.4**, 18; **4.5**, 32; **4.6**, 55; and **4.9**, 92 and 99). There were 61 sherds recovered in total, from East Field Road (6 sherds), Westfield Farm (7 sherds), Keelby Road (16 sherds plus 5 from the evaluation), Station Road (12 sherds) and Humberston Road (15 sherds).

OXFIN: Fine oxidised fabric. Two sherds recovered, from Station Road (1593) and Humberston Road (7315).

OXWS: Oxidised fabric with white slip. One sherd recovered from Humberston Road (7043).

PARC: Parchment ware, undifferentiated. One sherd recovered from Station Road (1030).

SPOXT: Late Romano-British Swanpool-type oxidised wares, copying SPOX (cf. Tomber and Dore 1998, Swanpool Fabrics) but with atypical sand temper. A number of other industries in north Lincolnshire including Messingham and kilns in the Market Rasen area made similar wares. One sherd recovered from Station Road (1183).

The oxidised wares recovered were predominantly light-fired wares (CR) from flagons, most probably from Lincoln/South Carlton or Mancetter/Hartshill to judge by the source of the mortaria. As is typical for this part of Lincolnshire there were a small number of oxidised ware sherds, with many of them in table ware forms (OX, OX1). Unlike other sites in the region, the levels of Swanpool and Swanpool-type wares were very low. The low level of oxidised wares in the Swanpool tradition probably reflects the small number of sites encountered with significant groups of pottery dating to the 4th century AD.

Reduced wares

BB1: Black Burnished ware 1 (Tomber and Dore 1998, DOR BB1). A total of 44 sherds were recovered from a maximum of five vessels, from Westfield Farm (3 sherds), Station Road (context 1378, 8 sherds) and Humberston Road (contexts 7268 and 7609, 33 sherds).

BB2: Black Burnished ware 2 (cf. Darling and Precious 2014, 115–6). Some six possible BB2 sherds were recovered, from Keelby Road (1 sherd) and Westfield Farm (5 sherds).

CRGR: Crambeck grey ware (Tomber and Dore 1998, CRA RE). One small sherd was recovered from Laceby Beck (context 826, sample 511).

GREY: Miscellaneous grey ware (eg, **Fig. 4.6**, 50). This group probably includes a range of material from the kilns in the Market Rasen area and also possibly Barnetby Top (Bryant 1977; Samuels 1979; 1983). Where possible the group has been subdivided according to the working fabric scheme for northern Lincolnshire (GREY1–8 below) but some examples could not be attributed with certainty. Examples considered to be possibly from further afield were rare and have been noted in the archive. Some 128 sherds could not be further attributed and were recorded as GREY; they were recovered from East Field Road (1 sherd), Westfield Farm (28 sherds), Keelby Road (27 sherds), Station Road (34 sherds), Humberston Road (27 sherds plus 8 sherds from the evaluation), Laceby Beck (1 sherd) and Habrough (GWB area AH; 2 sherds).

Northern Lincolnshire GREY1: Wheel-thrown (eg, **Figs 4.4**, 19–26; **4.5**, 33–35 and 41–42; **4.6**, 56; **4.7**, 66; **4.8**, 73 and 74; and **4.9**, 86, 93, 94 and 100). Mid-green grey occasionally with dark grey core, wheel-made. Quartz moderate to common sub-rounded with some glassy grains, 0.2–0.8 mm. Ferrous inclusions sparse, sub-rounded, 0.25–0.5 mm. Some sherds have rare, angular grey flint up to 2.5 mm. No mica evident. The range of forms present is typical of the late Romano-British kilns at Barnetby Top (Samuels 1979), where some of the vessels have occasional flint inclusions, and other Romano-British kilns in the Market Rasen area (Bryant 1977; Samuels 1983). A range from the 2nd to 4th century appears likely upon current evidence. It is unclear where the sherds in this assemblage were produced although the range of forms suggests a local Lincolnshire source. A total of 2495 sherds were recovered, as follows: East Field Road (3 sherds, 2 vessels), Westfield Farm (380 sherds, maximum 302 vessels), Keelby Road (340 sherds, maximum 219 vessels), Wells Road (1 sherd), Station Road (561 sherds, maximum 427 vessels), Humberston Road (812 sherds, maximum 651 vessels), Laceby Beck (5 sherds), Habrough (GWB area AH; 3 sherds), and a further 390 sherds (maximum 314 vessels) from the evaluation.

Northern Lincolnshire GREY2: As GREY1 with calcareous inclusions 0.25–1.2 mm (eg, **Fig. 4.9**, 101). Forms include jars and a fragment from a colander (Rowlandson 2012a). Probably from a similar source to GREY1. There were 33 sherds, from Westfield Farm (7 sherds), Keelby Road (1 sherd), Station Road (6 sherds) and Humberston Road (6 sherds) and a further 13 sherds recovered during the evaluation.

Northern Lincolnshire GREY3: Mid- to dark grey surfaces often with oxidised (orange) margins (eg, **Figs 4.4**, 27 and 28; **4.5**, 36; **4.6**, 51 and 57; and **4.8** 75–78). Common to abundant sub-rounded and angular quartz 0.2–0.5 mm, common red or black angular or sub-rounded ferrous-rich grains 0.2–0.8 mm, with no mica evident. Probably from a local source? Most of the vessels in this group are later 1st- to 2nd-century AD types. This may be the same fabric erroneously attributed to SFGR from Stallingborough (Rowlandson 2011). It is possible that GREY3 represents a 'black surfaced' low oxygen/black firing of similar clays to GREY1 and was merely a result of a style of kiln firing that predominantly occurred in the early Romano-British period. Some 414 sherds were recovered, from East Field Road (2 sherds), Westfield Farm (63 sherds, maximum 33 vessels), Keelby Road (14 sherds), Station Road (136 sherds, maximum 117 vessels), Humberston Road (137 sherds, maximum 100 vessels, plus 2 sherds from the evaluation), Laceby Beck (1 sherd) and a further 59 sherds (maximum 30 vessels) recovered during the evaluation from Westfield Farm, Keelby Road, Station Road and Humberston Road.

Northern Lincolnshire GREY4: Wheel-thrown (eg, **Fig. 4.5**, 37). Commonly light grey surfaces with dark grey core although some examples are fired to a dark grey throughout. This fabric is superficially very similar to the fabrics produced at Market Rasen and a number of the kilns in the vicinity such as Legsby. However, this is probably merely a feature of firing conditions, and it is likely that the material from this group originated from a similar source to GREY1. A total of 229 sherds were recovered, from Westfield Farm (61 sherds), Keelby Road (39 sherds), Station Road (39 sherds) and Humberston Road (39 sherds plus 1 sherd from evaluation), and Brooklands (50 sherds).

Northern Lincolnshire GREY1–4 are broadly similar fabrics with moderate to common quartz, sub-rounded, 0.25–0.5 mm including some glassy grains. GREY1, 3 and 4 probably represent differing firing conditions of essentially the same fabric, but GREY2 included small quantities of calcareous shell or chalk inclusions. Vessels in the GREY3 group were typically of later 1st- to 2nd-century AD types, while vessels in the GREY4 group had a range of forms more typical of the mid-2nd to 4th century AD.

Northern Lincolnshire GREY5: Late Romano-British grey ware, wheel-thrown with dark surfaces. Dark grey/black fabric with abundant quartz, 0.3–1 mm, sub-rounded or sub-angular some with low sphericity. A late 4th-century to early 5th-century AD date appears likely; this fabric was probably made in Lincolnshire. Two sherds were recovered, from Station Road (contexts 1047 and 1593).

Northern Lincolnshire GREY8: Mid-grey fabric with sparse to moderate quartz inclusions, rare fine black inclusions and smooth surfaces sometimes with traces of burnishing. The range of forms appears similar to the GREYB fabric, and it is possible that GREY8 represents a finer, late Romano-British variant of the GREY1 fabric. It is possible that this category may contain some material from the Throlam area grey ware kilns in East Yorkshire. A total of 18 sherds were recovered, from Westfield Farm (8 sherds) and Station Road (10 sherds).

GREYB: Local East Midlands burnished grey ware type. Mid-grey, hard, high fired, wheel-made, burnished externally and internally on open vessels. Quartz moderate sub-rounded with some glassy grains, 0.1–0.8 mm. Sparse ferruginous inclusions, sub-rounded, 0.25–0.5 mm. A total of 120 sherds recovered from a maximum of 98 vessels, from Westfield Farm (48 sherds), Keelby Road (3 sherds), Station Road (59 sherds), Humberston Road (1 sherd), Laceby Beck (2 sherds) and a further seven sherds recovered during the evaluation from Westfield Farm and Station Road.

GREYC: Miscellaneous coarse grey wares that could not be attributed to any of the existing fabric groups. A total of seven sherds were recovered, from Station Road (5 sherds) and Humberston Road (2 sherds).

GROG: Miscellaneous grog-gritted wares. There were two or three sherds recovered, from the evaluation at Station Road (2 sherds) and Keelby Road (1 possible sherd).

GRRO: Coarse grey ware with unspecified matrix and quartz tempering but with the addition of rare to sparse polished Greensand quartz: eight sherds were recovered, all from the evaluation (Westfield Farm and Station Road).

GYMS: Early Romano-British grey ware, wheel-made with minimal fine shell. One sherd was recovered from the evaluation at Westfield Farm.

LCQU: Coarse quartz-gritted, as GRRO with moderate to common rounded quartz. Forms typically included Huntcliff and double lid-seated jars suggesting a late Romano-

British *floruit* for this fabric. There were three sherds, from Westfield Farm (2 sherds) and Station Road (1 sherd).

NELGR1: North East Lincolnshire early Romano-British wheel-made native tradition ware 1. A pale grey reduced fabric including grog, which has been recognised in assemblages from Grimsby and Immingham (Rowlandson with Gray 2010; 2011 and pers. obs. Immingham Museum collections). A source in north-eastern Lincolnshire for these sherds is presumed and a Flavian to 2nd-century date range is proposed largely on the basis of jars with wedge-shaped rims and examples with rusticated surface treatment. A total of 15 sherds were recovered, from East Field Road (1 misfired sherd), Station Road (10 sherds), and a further four sherds recovered during the evaluation from Westfield Farm and Keelby Road.

NWLGR: Gregory's 'Blue-burnished greyware' (1996). Dark grey to mid-grey core with a slightly hackly fracture. Hard fired and commonly burnished, this fabric was produced at Dragonby. The ferrous inclusions are soft and probably degraded ironstone naturally occurring in the parent clay. Analysis was conducted by Vince on samples of this fabric (see Precious *et al.* 2011 and associated references). Most forms from this site appear to be of late-1st to 2nd-century AD date but it is possible that a similar fabric continued to be produced for some time into the 3rd century. A total of 13 sherds were recovered, from Station Road (4 sherds) and Humberston Road (9 sherds).

ROXGR: Roxby grey ware (eg, **Fig. 4.5**, 44). Mostly produced in the 2nd century AD with a similar suite of inclusions to NWLGR including mica and larger ironstone or mudstone inclusions (Rigby's 'brown-coloured occlusions', Rigby and Stead 1976, 139) and mica. Analysis was conducted by Vince on samples of this fabric (see Precious *et al.* 2011 and associated references). There were 20 sherds recovered, from Westfield Farm (2 sherds), Keelby Road (1 sherd), and Humberston Road (17 sherds from maximum of 3 vessels).

SFGR: South Ferriby grey ware (eg, **Figs 4.5**, 38 and **4.8**, 79). Pale grey core with mid grey surfaces, slightly conchoidal break, pitted surfaces with voids, surfaces have noticeable white mica. This fabric has been recognised from the museum collections of the pottery production site recorded from South Ferriby (Dudley 1949; Firth *et al.* 2010). Some coarser variants have surviving flecks of what appears to be red chalk. The makeup of the fabric suggests the potters may have utilised deposits from the Hunstanton Series although further research is needed on the material from the pottery from the production site and analysis of fabric samples. The range of forms suggests that the main *floruit* of production lay between AD 70 and AD 230. Some 77 sherds were recovered from a maximum of 45 vessels, from Westfield Farm (15 sherds), Keelby Road (17 sherds plus 2 from the evaluation), Station Road (10 sherds) and Humberston Road (33 sherds).

Limited quantities of imported Black Burnished ware 1 and 2 products have been recovered from Immingham and the Able UK Marine Energy Park scheme (Rowlandson and Fiske 2016; 2019b; Rowlandson *et al.* 2017). Amongst the late Romano-British AMEP2 assemblage from the Able UK site, BB1 made up only 0.19% by sherd count and BB2 just 0.02%. BB1 was most common at Immingham at 0.45% by sherd count. The assemblage from the Hornsea Project One scheme falls within a similar bracket, with about 0.5% of the assemblage being BB1 or BB2. Comparison with amounts from Lincoln (Darling and Precious 2014, fig. 86) or Castleford (Rush 2000) suggests that the inhabitants of the coastal areas were not receiving significant quantities of coarse ware pottery from passing coastal traders.

The distinctive early and mid-Romano-British fabrics NELGR1, NWLGR, ROXGR and SFGR were present in quantities that are statistically significant but amount to less than 2% of the assemblage in total. This is not surprising as, with the probable exception of NELGR1, the other wares were produced to the west of the Lincolnshire Wolds. Forms present included a misfired bowl in NELGR1 fabric along with other bowls and jars; bowls, a jar or beaker and a cheese press in NWLGR; jars and bowls, including a necked carinated bowl, in ROXGR (**Fig. 4.5**, 44); and a variety of bowls, dishes and jars in SFGR, amongst which are a small flagon (**Fig. 4.5**, 38) and a D452 dish variant with an in-turned rim (**Fig. 4.8**, 79).

In addition to the more distinctive early Romano-British fabrics there was an abundance of local grey wares. The assemblage was dominated by the North Lincolnshire GREY1, with two or three times as many sherds as the other Romano-British grey wares combined (2495 sherds: 31% of the total assemblage by sherd count, 29% by weight). GREY1 forms present comprised bowls in many varieties including carinated, necked (**Figs 4.4**, 22 and 23; and **4.6**, 56), wide-mouthed (**Fig. 4.4**, 20, 21 and 24) and reeded rim (**Figs 4.5**, 41; and **4.8**, 74), beakers (**Fig. 4.5**, 33), a cheese press (**Fig. 4.9**, 94), native tradition wedge-rimmed type jars (**Fig. 4.8**, 73), dishes (**Fig. 4.9**, 86), jars including Dales-type (**Fig. 4.5**, 34) and necked types (**Figs 4.5**, 42 and **4.9**, 93), and lids and strainers. GREY2 forms were mostly jars including narrow-necked examples (eg, **Fig. 4.9**, 101), while GREY3 and GREY4 forms were a similar range of jars and bowls to those in fabric GREY1. The late Romano-British burnished grey ware GREYB fabric was also present, including typical straight-sided bead and flanged bowls (BFB), triangular rimmed bowls (BTR), wide-mouthed bowls (BWM3), plain rimmed dishes (DPR), jars with everted rims and large jars. This fabric is an 'East Midlands Burnished ware' (Todd 1968) or 'Swanpool'-type fabric, although a more local production source is likely for most of the vessels. A small quantity of the coarse, quartz-gritted GRRO fabric, including jars and bowls of late Romano-British date, and sherds of the LCQU Late Romano-British coarse quartz-gritted fabric were also present. It should be noted that many of the grey ware forms given a broadly late Romano-British date, such as the straight-sided bead and flanged bowls, wide-mouthed bowls with under-cut rims (BWM3) and plain rimmed dishes, probably continued to be made until the very end of Romano-British pottery production.

Transitional wares

IAGR: Miscellaneous native tradition gritty wares (Darling and Precious 2014) totalling 60 sherds, from East Field Road (2 sherds), Westfield Farm (4 sherds), Keelby Road (6 sherds), Station Road (12 sherds), Humberston Road (9 sherds plus 2 sherds from the evaluation), Laceby Beck (1 sherd) and a further 24 sherds recovered during the evaluation from Westfield Farm, Keelby Road, Station Road and Tetney Lock Road.

Northern Lincolnshire IAGR1: Native tradition grog/clay pellet-gritted ware (eg, **Figs 4.3**, 6 and **4.6**, 45). Most vessels were handmade with some wheel finishing of rims. Mostly dark brown or dark grey surfaces, some vessels have a patchy firing and also have mid-brown patches. Common dark grey grog or mudrock up to 3 mm, quartz moderate to common sub-rounded with some glassy grains, 0.2–0.8 mm. Ferruginous inclusions sparse, sub-rounded, 0.25–0.5 mm. Rare voids up to 3 mm are perhaps leached-out calcareous inclusions. There were 143 sherds from a maximum of 81 vessels, from East Field Road (1 sherd), Westfield Farm (13 sherds), Keelby Road (23 sherds), Station Road (36 sherds), Humberston Road (68 sherds plus 1 from the evaluation), and Brooklands (1 sherd).

Northern Lincolnshire IAGR2/SHGR: Native tradition shell-gritted ware with some quartz and grog/clay pellets. Mostly fired to dark surface colours and appear wheel-finished or wheel-made with some handmade. The fabric has a clay matrix with varying quantities of fossil shell, quartz and grog/clay pellets. Shell, sparse to moderate poorly sorted 0.3–0.5 mm. Grey grog or clay pellets, sparse, sub angular, 0.5–1.5 mm. Quartz, sparse–moderate, poorly sorted, sub-rounded to sub-angular, 0.3–1 mm. Large quartz, rare, poorly sorted, 1.2–15 mm. Some sherds have rare, angular grey flint up to 2.5 mm. No mica evident. A total of 871 sherds were recovered from a maximum of 508 vessels, from East Field Road (29 sherds), Westfield Farm (182 sherds from maximum of 111 vessels), Keelby Road (114 sherds from maximum of 40 vessels), Station Road (247 sherds from maximum of 168 vessels), Humberston Road (272 sherds from maximum of

150 vessels plus 16 sherds from the evaluation), Habrough (GWB area AH; 6 sherds) and Brooklands (5 sherds), and further 16 sherds recovered during evaluation at Westfield Road and Keelby Road are included in the totals above.

Northern Lincolnshire IAGR3: Native tradition coarse quartz-gritted. Mostly appear wheel-finished with some handmade. Mid-green-grey occasionally with dark grey core. Common large quartz glassy/translucent sub-rounded with low sphericity 1–3 mm. Further quartz moderate to common sub-rounded with some glassy grains, 0.2–0.8 mm. Some vessels have sparse grey angular grog or mudrock up to 3 mm. Ferruginous inclusions sparse, sub-rounded, 0.25–0.5 mm, moderate to sparse calcareous inclusions (probably fossil shell) up to 3 mm. Some sherds have rare, angular grey flint up to 2.5 mm. No mica evident. Examples of Roxby type A jars (Rigby and Stead 1976) and other lid-seated jars were often made in this fabric and it should perhaps be seen as a coarse gritted ware more common in the 2nd century AD. There were 71 sherds, from Westfield Farm (18 sherds), Keelby Road (1 sherd), Station Road (22 sherds) and Humberston Road (30 sherds).

Northern Lincolnshire IAGR4: Native tradition grog/clay pellet-gritted ware (eg, **Figs 4.3**, 9–12; **4.5**, 30 and 31 and **4.7**, 59 and 67). Mid- to dark grey surfaces often with oxidised orange margins. Common to abundant sub-rounded and angular quartz 0.2–0.5 mm, moderate to common grog/clay pellets 0.5–1 mm, no mica evident. The range of forms in this fabric are typically wedge-shaped rim, native tradition large bowl or jars, and jars with hooked everted rims. Some 448 sherds were recovered from a maximum of 256 vessels, from East Field Road (1 sherd), Westfield Farm (85 sherds), Keelby Road (9 sherds), Wells Road (4 sherds), Station Road (91 sherds), Humberston Road (253 sherds from a maximum of 139 vessels), Laceby Beck (1 sherd) and Habrough (GWB area AH; 4 sherds).

Northern Lincolnshire IAGR5: A handmade or wheel-made smooth fabric with fossil shell and grog/clay pellets and only limited quartz inclusions. There were five sherds, from Westfield Farm (1 sherd), Humberston Road (3 sherds) and Laceby Beck (1 sherd).

Vessels in gritty native tradition fabrics (IAGR, IAGR1, etc.) appeared in the 1st century AD and continued to be produced in Lincolnshire into the 2nd century AD. Whilst such wares appear to have fallen out of favour in the City of Lincoln during the middle of the 2nd century AD (Darling and Precious 2014; see also Leary 2013), in more rural areas it is possible that some of the fabric groups within this ware type continued to be produced throughout the 2nd century prior to the development of the shell-gritted Dales ware industry. The range of forms included jars and large bowls with wedge-shaped rims (CPN and BNAT; **Figs 4.6**, 46 and **4.4**, 28 respectively) and jars with everted rims or hooked everted rims (broadly as Rigby and Stead 1976, fig 64.4; **Figs 4.3**; 9; **4.5**, 44 and **4.6**, 45), and lid-seated jars (eg, **Fig. 4.5**, 29) including Roxby 'A' type vessels (Rigby and Stead 1976, J105, fig. 65. 1–6, eg, **Fig. 4.6**, 57). Excavations in this area have shown that these wares are typically the most common types present amongst early Romano-British deposits (Rowlandson and Fiske 2019b; Rowlandson *et al.* 2017; see also Leary 2013). Evidence from organic residue analysis (ORA) at other sites has shown that these vessels were often used for cooking purposes (Dunne and Evershed 2018a; 2018b) with some of the larger examples probably used for storage. It was noticeable that dairy lipids (see below) were retrieved from one of the larger native tradition bowls with wedge-shaped rims (**Fig. 4.4**, 28), perhaps suggesting that some of the wider-mouthed bowls and jars may have had a function in dairy processing. A general observation about the CPN/BNAT type forms in the IAGR wares would be that the carbonised residues are almost exclusively found on the narrower necked, wedge-shaped jar rim examples (CPN, diameter typically less than 250 mm, eg, **Fig. 4.7**, 61 and **4.8**, 73), whilst the larger more open wide-mouthed bowl types (BNAT, eg, **Fig. 4.5**, 29) typically have no carbonised residues. If the smaller vessels may have been favoured for processing carcass products it is possible that one of the functions of the wider-rimmed BNAT vessels may have been for dairy processing (see also the grey ware vessels **Figs 4.4**, 20 and 21 from the same site). Further examples would need to be tested to establish whether residue analysis produces similar results for vessels from other sites. During the 3rd century AD such wares appear to have been replaced by the prolific output of the shell-gritted Dales ware industries and grey ware wide-mouthed bowls.

Calcareous gritted wares

CALGS: Calcite-gritted with recognisable sparry mineral calcite (eg, **Figs 4.8**, 80 and **4.9**, 95). Probably produced in north-eastern Yorkshire and were of the Huntcliff or 'proto-Huntcliff' tradition. There were 21 sherds, from Westfield Farm (13 sherds) and Station Road (8 sherds).

DWNEL: Manufacturing style is the same as the shell-gritted Dales ware from north-western Lincolnshire, with a similar range of hand-built wheel-finished jars and dish forms but with a distinctively more sandy fabric (eg, **Fig. 4.7**, 65). Firing colours vary from dark grey brown to irregularly fired examples with light orange brown surfaces. Moderate sub-rounded clear quartz around 0.5 mm; sparse fine silver mica 0.1–0.25 mm visible on the surfaces. Shell, moderate poorly sorted 0.3–5 mm, mostly leached. Rare clay pellets around 1–3 mm. Although the shell grits probably derive from Jurassic deposits to the west of the Wolds, it is possible that the filler was transported for inclusion in the pottery. There is some similarity between the DWNEL and SHGR fabrics in the shell and sand that they both contain. A total of eight sherds were recovered from the evaluation at Keelby Road (4 sherds) and from Station Road (4 sherds).

DWSHT/DWSH: Dales ware has been extensively discussed as it is one of the key dating indicators in Lincolnshire and the north (see Darling and Precious 2014; Leary 2013; Darling 2009; Swan 2002). Lid-seated jars were the main forms (JDW1 and JDW2) with nearly all of the rims of the standard JDW1 type (Gillam 1970, type 157; **Fig. 4.9,** 96). Two dishes were recorded from this project; although rarely exported outside of Lincolnshire they are often seen amongst assemblages from northern Lincolnshire (Rigby and Stead 1976; Gregory 1996; Darling 2009). There were 982 sherds from a maximum of 506 vessels, from Westfield Farm (398 sherds from maximum of 158 vessels), Keelby Road (226 sherds from maximum of 128 vessels), Station Road (102 sherds from maximum of 50 vessels), Humberston Road (156 sherds from maximum of 85–92 vessels plus a further 17 sherds from the evaluation), Laceby Beck (2 sherds) and a further 81 sherds (maximum 70 vessels) from the evaluation at Westfield Farm, Keelby Road and Station Road.

SHEL: Other shell-gritted wares (eg, **Fig. 4.9**, 96 and 97). This code has been used here to include all the late Romano-British wheel-made shell-gritted wares. Examples of fully wheel-made pottery including double lid-seated jars and bowls and dishes appear in assemblages from Lincoln towards the end of the 4th century AD and largely replaced the Dales ware tradition shell-gritted lid-seated jars. Whilst it is possible that these vessels may have been made by potters using Jurassic deposits to the west of the Yorkshire Wolds, production in north-western Lincolnshire would be more likely. None of the diagnostic forms of the final Romano-British period were retrieved from this assemblage and it is likely that the material attributed to the SHEL code from this project was manufactured before the middle of the 4th century AD. Many of the sherds were small scraps that could not be securely attributed to one of the other shell-gritted categories. There were 77 sherds in total, from East Field Road (1 sherd), Westfield Farm (23 sherds), Keelby Road (7 sherds), Station Road (11 sherds) and Humberston Road (11 sherds plus 2 from the evaluation), and a further 22 sherds from the evaluation at Keelby Road and Station Road.

VESIC: Vesicular fabric, probably originally shell-gritted but subject to the leaching out of the fossil shell, leaving behind voids. There were two sherds, one from Keelby Road the other recovered during evaluation at Humberston Road.

The Pottery by Site

A summary of the pottery by site is presented in **Table 4.1**.

Chase Hill Road

Some 466 sherds (6.489 kg, 2.39 RE) were recovered in total from mitigation and evaluation excavation (**Tables 4.4** and **4.5**). The pottery from this site was exclusively Iron Age and the vast majority of vessels dated to the Late Iron Age. In this region many sites with Late Iron Age activity appear to have continued to be occupied into the Romano-British period. This assemblage appears to be a discrete group of pottery, probably from a fairly limited period of occupation, from a site that was probably abandoned some time before the introduction of Romano-British wheel-made wares after the Roman conquest. The radiocarbon date of 40 BC–AD 70 (UB44163) acquired from the carbonised residue adhering to illustrated vessel **Figure 4.1**, 2 would appear to support a date in the 1st century BC/AD, which would fit the range of pottery present in this assemblage.

The range of pottery from this site, with a mix of rock-gritted and shell-gritted sherds, can perhaps be seen to broadly represent Iron Age activity in the Middle to Late Iron Age period, with vessels in a similar range of forms recorded from Barnetby le Wold (Darling 2002) and the North Killingholme Vehicle Redistribution centre (Darling 2006; 2007). The assemblage from the Immingham Rosper Road site had a higher proportion of rock-gritted wares than the Chase Hill Road assemblage. No examples of jars with rounded or wedge-shaped rims similar to Dragonby types 20e and 20g were present at Rosper Road but these types were present at Chase Hill Road in small numbers (Elsdon 1996b; Rowlandson and Fiske 2019b). Radiocarbon dates for vessels from the Rosper Road assemblage suggested that the site was active in the 5th or perhaps later 6th century BC, and the decorated sherds from that site were far cruder and in local rock-gritted wares, in contrast to the shell-gritted examples from Chase Hill Road. The assemblage from Chase Hill Road would appear to represent activity in the Late Iron Age, perhaps more akin to the phase 2.1 groups from the Immingham Brocklesby Interchange site where a higher proportion of shell-gritted wares were present, including fine thin-walled types and jars with more rounded rim forms of the Dragonby types 20e and 20g. At the Brocklesby Interchange site, radiocarbon dating provided a tentative date of mid-4th to early 2nd century BC for some of the earlier activity. Similar groups remain to be subjected to scientific dating from the Able UK project (Rowlandson *et al.* 2017, eg, ALP2).

Table 4.4 Chase Hill Road fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
IASA	Reduced	IA type sandy wares	1	0.21%	1	0.02%	0
IASA1	Reduced	Iron Age Sandy: Site fabric 1	2	0.43%	40	0.62%	0
IASA2	Reduced	Iron Age Sandy: Site fabric 2	11	2.36%	99	1.53%	12
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	181	38.84%	2823	43.50%	68
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	99	21.24%	849	13.08%	46
IASH3	Calcareous	Iron Age Shell Gritted: Site fabric 3	6	1.29%	53	0.82%	9
IASH4	Calcareous	Iron Age Shell Gritted: Site fabric 4	12	2.58%	126	1.94%	35
IASH5	Calcareous	Iron Age Shell Gritted: Site fabric 5	8	1.72%	72	1.11%	8
IASH7	Calcareous	Iron Age Shell Gritted: Site fabric 7	42	9.01%	968	14.92%	2
ETW	Rock temper	Erratic pebbles broken up as temper	45	9.66%	773	11.91%	36
ETW2	Rock temper	Erratic pebbles broken up as temper	24	5.15%	334	5.15%	13
ETW4	Rock temper	Erratic pebbles broken up as temper, finer than ETW2	19	4.08%	292	4.50%	10
ETWF	Rock temper	Erratic pebbles broken up as temper – fine	12	2.58%	44	0.68%	0
IAGROG1	Grog	Iron Age grog gritted wares: Site fabric 1	3	0.64%	11	0.17%	0
FCLAY?	Fired clay	Fired clay	1	0.21%	4	0.06%	0

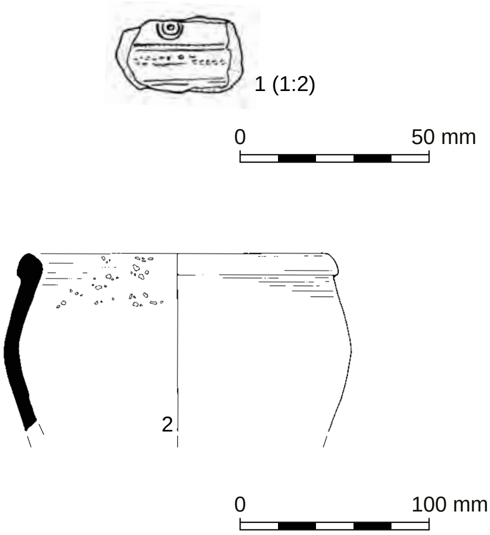


Figure 4.1 Iron Age pottery (1–2) from Chase Hill Road

Iron Age

There were 389 sherds (5.351 kg, 1.9 RE) from a maximum of 277 vessels. Nearly all of the pottery was retrieved from the main enclosure ditch (6000), which could be dated to the Late Iron Age on the basis of the fine shell-gritted vessels including necked jars and the presence of shell-gritted vessels decorated with stamped and rouletted decoration in the later La Tène style. A small number of quartz sand-gritted thin-walled Late La Tène III vessels were also present. The majority of sherds were from coarse shell-gritted jars along with a smaller quantity of rock-gritted vessels. A small group of shell-gritted sherds, including a coarse shell-gritted vessel with a flattened lip and a gently rounded outer edge in the IASH7 fabric and small sherds in fine shell-gritted IASH3 fabric, were retrieved from the accompanying gully 6100, which could also be dated to the Late Iron Age.

Unphased

Some 77 sherds (1.138 kg, 0 RE) were recovered; these were from the evaluation and comprised mostly coarse shell-gritted jars along with a smaller quantity of rock-gritted vessels and a single finer shell-gritted vessel.

Illustrated sherds

Fig. 4.1

Iron Age

1. Roulette-decorated and roundel-stamped Iron Age sherds, decoration as Elsdon 1996b 'Double-tooth rouletting' (Type 22) with roundel stamp type 4. Examples of vessels with similar La Tène type decoration are known from Dragonby in both earlier and later La Tène groups suggesting a date in the Middle or Late Iron Age for this vessel (eg, Knight 2002, fig. 12.3.26–7; Elsdon 1996b, fig. 19.20.8). *Fabric IASH2, form unknown, ditch 6084, context 6091*

Unphased

2. A jar with a squared-off bead rim similar to an example illustrated from the Welton to Glentham pipeline by Elsdon (1996a, C.17, AW2). The carbonised residue from this vessel was dated to 40 BC–AD 70 (UB44163), which would fit with a Late Iron Age date expected for this form. *Fabric IASH1, Form HWFE12 evaluation, ditch 104028, context 104014, HWFE12*

Table 4.5 Chase Hill Road forms summary

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
BL	Bowl – large	Large	14	3.00%	612	9.43%	0
CLSD	Closed	Form	28	6.01%	332	5.12%	0
CPN	Jar	Native tradition	1	0.21%	9	0.14%	7
J	Jar	Unclassified form	44	9.44%	865	13.33%	60
JBR	Jar	Bead-rimmed	3	0.64%	24	0.37%	6
JEV	Jar	Everted rim	11	2.36%	93	1.43%	44
JIR	Jar	In-turned rim	2	0.43%	231	3.56%	20
JL	Jar	Large	1	0.21%	158	2.43%	8
JNK	Jar	Necked	27	5.79%	272	4.19%	67
JBK	Jar/beaker	Small jar or beaker	1	0.21%	3	0.05%	6
JB	Jar/bowl	Unclassified form	5	1.07%	60	0.92%	4
JBEV	Jar/bowl	Everted rim	1	0.21%	15	0.23%	4
JBL	Jar/bowl	Large	58	12.45%	1764	27.18%	4
-	Unknown	Form uncertain	270	57.94%	2051	31.61%	9

East Field Road

There were 234 sherds (3.894 kg, 1.95 RE) from a maximum of 142 vessels recovered from mitigation and evaluation excavation (**Tables 4.6** and **4.7**). The majority of the sherds were fresh and retrieved from ditches. The activity phased as Iron Age appears to have occurred in the 1st century AD, with Romano-British phased features containing a similar range of material with additional transitional shell-gritted wares and wheel-made Romano-British wares suggesting activity in the mid-1st century AD into the early 2nd century AD. This site is similar to a number of assemblages from the area where the transition from local Late La Tène styles to Romano-British pottery use in the 1st century AD can be seen. No material conclusively dating to the 3rd century AD was present.

Table 4.6 East Field Road fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAMCG	Samian	Central Gaulish	1	0.43%	6	0.15%	0
OX1	Oxidised	Oxidised fabric 1	6	2.56%	19	0.49%	16
GREY	Reduced	Miscellaneous grey wares	1	0.43%	22	0.56%	0
GREY1	Reduced	Reduced fabric 1	3	1.28%	49	1.26%	37
GREY3	Reduced	Reduced fabric 3	2	0.85%	16	0.41%	0
IAGR	Reduced	Native tradition/transitional gritty wares	2	0.85%	73	1.87%	0
IAGR1	Reduced	Iron Age tradition 'Gritty': Site fabric 1	1	0.43%	5	0.13%	0
IAGR2	Reduced	Iron Age tradition 'Gritty': Site fabric 2	29	12.39%	943	24.22%	69
IAGR4	Reduced	Iron Age tradition 'Gritty': Site fabric 4	1	0.43%	128	3.29%	23
IASA	Reduced	IA type sandy wares	1	0.43%	28	0.72%	0
IASA1	Reduced	Iron Age Sandy: Site fabric 1	8	3.42%	209	5.37%	0
IASA2	Reduced	Iron Age Sandy: Site fabric 2	10	4.27%	70	1.80%	0
NELGR1	Reduced	North East Lincolnshire Early Roman wheel-made 1	1	0.43%	102	2.62%	0
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	82	35.04%	765	19.65%	17
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	7	2.99%	32	0.82%	0
IASH3	Calcareous	Iron Age Shell Gritted: Site fabric 3	2	0.85%	21	0.54%	6
IASH5	Calcareous	Iron Age Shell Gritted: Site fabric 5	4	1.71%	53	1.36%	7
IASH7	Calcareous	Iron Age Shell Gritted: Site fabric 7	12	5.13%	176	4.52%	0
SHEL	Calcareous	Miscellaneous undifferentiated shell-tempered	1	0.43%	5	0.13%	0
ETW	Rock temper	Erratic pebbles broken up as temper	16	6.84%	379	9.73%	0
ETW2	Rock temper	Erratic pebbles broken up as temper	15	6.41%	271	6.96%	20
ETW2C	Rock temper	Erratic pebbles broken up as temper – coarser version of ETW2	1	0.43%	6	0.15%	0
ETW4	Rock temper	Erratic pebbles broken up as temper, finer than ETW2	23	9.83%	471	12.10%	0
ETWSH	Rock temper	Erratic pebbles broken up as temper with shell	1	0.43%	25	0.64%	0
IAGROG1	Grog	Iron Age grog gritted wares: Site fabric 1	1	0.43%	11	0.28%	0
IAGROG2	Grog	Iron Age grog gritted wares: Site fabric 2	3	1.28%	9	0.23%	0

Iron Age

Some 85 sherds (1.295 kg, 0 RE) were recovered from a maximum of 20 vessels. All of the features contained handmade shell-gritted and rock-gritted sherds that could be dated to the Iron Age. Few feature sherds were noted and no rims. Ditch group 5201 included fine shell-gritted sherds in the IASH2 fabric group that may suggest that this feature was open in the Late Iron Age, but little more could be said about these small assemblages. The pottery from this phase was broadly similar to that from nearby Chase Hill Road but lacking the range of Late La Tène III fine wares.

Early Romano-British

There were 145 sherds (2.551 kg, 1.89 RE) recovered from a series of ditches phased as early Romano-British. The range of material from this group would suggest that occupation during this phase continued into the Flavian period or beyond, perhaps into the early 2nd century AD. It mostly consisted of a similar range to the Iron Age phase assemblage, with the addition of thin-walled IASA type sand-gritted wares, a sherd from a samian form

37 bowl, a sherd from a jar or beaker in a local oxidised fabric, sherds from a grey ware carinated drinking bowl (B334) and a grey ware bowl with a low carination (Darling and Precious 2014, no. 1156). The other key additions were examples of the native tradition gritty ware fabrics, notably examples of the IAGR2 shell-gritted fabric including a large bowl with a wedge-shaped rim, a jar with an everted rim, a jar with a hooked everted rim (JHER) and a similar jar, possibly a lug-handled type. A further jar with a hooked everted rim in the IAGR4 fabric was also noted. There were considerably higher proportions of native tradition wares than of wheel-made grey ware and oxidised sherds from this site; the wheel-made vessels in this group that could be recognised were all table ware forms. The pottery from this phase was similar to examples from the Able UK projects (Rowlandson *et al.* 2017, eg, AMEP1) and Brocklesby Interchange, Immingham (Rowlandson and Fiske 2016 and 2019b). Although some of the grey ware sherds present may have been of 2nd century AD date, the majority of the material would fit with a date in the Flavian to Trajanic period.

Table 4.7 East Field Road forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
BKCAR	Beaker	Carinated	1	0.43%	27	0.69%	18
37	Bowl	Samian form, see Webster 1996	1	0.43%	6	0.15%	0
B334	Bowl	Carinated jar/bowl (flat cordon as Darling and Precious 2014, 1157–9)	2	0.85%	22	0.56%	19
BL	Bowl – large	Large	1	0.43%	102	2.62%	0
BNAT	Bowl – large	Native tradition bowl eg, Darling and Precious 2014, no. 700	3	1.28%	130	3.34%	20
CLSD	Closed	Form	34	14.53%	561	14.41%	0
J	Jar	Unclassified form	15	6.41%	368	9.45%	13
JEV	Jar	Everted rim	3	1.28%	37	0.95%	25
JHER	Jar	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	2	0.85%	531	13.64%	41
JIR	Jar	In-turned rim	14	5.98%	56	1.44%	2
JL	Jar	Large	29	12.39%	560	14.38%	27
JNK	Jar	Necked	2	0.85%	31	0.80%	7
JBKEV	Jar/beaker	Everted rim	6	2.56%	19	0.49%	16
JB	Jar/bowl	Unclassified form	3	1.28%	52	1.34%	0
JBL	Jar/bowl	Large	10	4.27%	432	11.09%	0
JBNAT	Jar/bowl	Native tradition	1	0.43%	28	0.72%	7
-	Unknown	Form uncertain	107	45.73%	932	23.93%	0

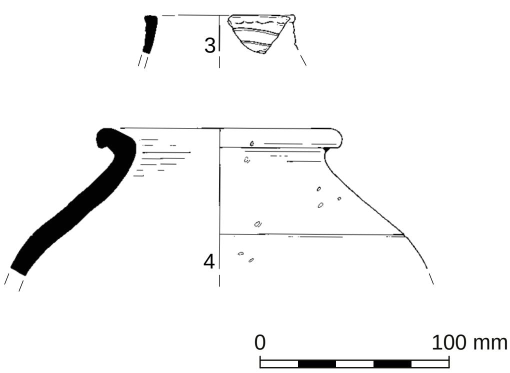


Figure 4.2 Iron Age and Roman pottery (3–4) from East Field Road

Illustrated sherds

Figure 4.2

3. Late Iron Age necked jar in a relatively fine rock-gritted fabric. *Fabric ETW2, Form J, ditch 5042, context 5043*

4. Early Romano-British possible lug-handled jar in a shell-gritted native tradition fabric. *Fabric IAGR2, Form JL, ditch 5033, context 5034*

Furrows

Another four sherds (48 g, 0.06 RE) of native tradition ware including a fragment from a bowl were recovered residually from furrow 5150.

Humberston Road

There were 2299 sherds (58.668 kg, 37.70 RE) from a maximum of 1524 vessels, from areas of mitigation excavation (including targeted watching brief 12; TWB12) and both phases of evaluation (**Tables 4.8** and **4.9**).

This was the largest group of pottery from the project. The Late Iron Age/early Romano-British phased groups and a quantity of material from the early Romano-British phase assemblage suggest activity on the site in the Late Iron Age, most probably in the 1st century AD, as there was little evidence for the rock-gritted wares typically found on sites with an earlier start date. The late Romano-British phase features were radiocarbon dated by charred plant material (ditch 7624) to 320–120 BC (Poz-123510), therefore probably residual, whereas the fills of this feature contained a range of material mostly dating to the early Romano-British period.

The majority of the pottery was retrieved from the Romano-British phases, which included some dated to the later 1st to the 3rd century AD. The range present would suggest that much of this pottery dates to the 2nd century AD. A small number of fine ware vessels were retrieved, suggesting the inhabitants had access to some imported goods such as samian ware, but most of the table ware appears to have been produced by the local pottery industries. The majority of the vessels from the site were jars or large bowls, with over a third of the assemblage made up of native tradition 'gritty wares' and shell-gritted Dales ware vessels, which were mostly used for kitchen or storage functions. The overall picture is of a typical basic rural settlement, of a type often investigated in northern Lincolnshire. In contrast to the East Field Road assemblage, the range of pottery suggested that activity on this site continued into the 3rd century AD.

Late Iron Age/early Romano-British

Some 50 sherds (1.057 kg, 0.43 RE) were recovered; the pottery from features assigned to this phase could be dated to the Late Iron Age or perhaps into the middle years of the 1st century AD. The most notable assemblage from this phase was from well 7441, which contained a fresh group of handmade sherds including some from a large jar or bowl with a wedge-shaped rim and some from a necked jar in a fine shell-gritted fabric (**Fig. 4.3**, 5).

Early Romano-British

There were 833 sherds (26.654 kg, 13.34 RE) from a maximum of 499 vessels. Nearly all of this came from ditches. Few features contained more than 25 sherds and the pattern of deposition appeared similar to many other sites from northern Lincolnshire, where small- to medium-sized groups of Romano-British pottery were retrieved from varied features across the site in contrast to the concentrated 'dumps' seen on many Romano-British sites from South Yorkshire (Chadwick 2008, 2010; Rowlandson with Hartley 2013).

A proportion of Iron Age handmade shell-gritted wares were retrieved from this phase, including fragments from up to six large vessels in the coarser IASH1 and IASH7 fabrics, along with sherds from necked jars or bowls in the finer IASH2 and IASH3 fabrics and a bowl with a low carination in IASH3 fabric (**Fig. 4.3**, 13). The majority of these sherds were stratified with Romano-British pottery dating to the later 1st to 2nd century AD and were probably residual from the Late Iron Age/early Romano-British phased activity on this site. A single sand-gritted, wheel-finished sherd in the IASA1 fabric and a small quantity of handmade rock-gritted vessels in ETW2 and ETW4 fabrics were found with Romano-British pottery and probably also related to the earlier activity on the site. Furrow group 7419 contained a small quantity of residual Romano-British pottery, including a fresh fragment from a Roxby 'type A' jar in the transitional IAGR4 fabric (Form J105, **Fig. 4.3**, 11).

Amphorae were rare and limited to two sherds from Gaulish wine amphorae; one handle sherd, possibly from a Gauloise flat-bottomed form (Williams, this chapter), was retrieved from grave 7392 and may have been repurposed as a tool. Lincolnshire mortaria sherds were retrieved from two fills from ditch 7356, one vessel had a stamp (**Fig. 4.3**, 14; form as Darling and Precious 2014, no. 1484) and another had pierced holes possibly from a repair (**Fig. 4.3**, 15; Darling and Precious 2014, no. 1471).

Table 4.8 Humberston Road fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAM	Samian	Undifferentiated	4	0.17%	104	0.18%	27
SAMCG	Samian	Central Gaulish	36	1.57%	373	0.64%	83
SAMLG	Samian	La Graufesenque samian ware	1	0.04%	5	0.01%	6
SAMRZ	Samian	Rheinzabern samian ware	3	0.13%	170	0.29%	28
SAMTR	Samian	Trier samian (Trier I and Trier II)	1	0.04%	57	0.10%	0
GAU	Amphora	Undifferentiated Gaulish amphorae	3	0.13%	144	0.25%	0
MOLIN	Mortaria	Lincoln mortaria	3	0.13%	787	1.34%	26
MOMH2	Mortaria	Mancetter/Hartshill mortaria: Meta sediment trits; Leicester fabric MO4	3	0.13%	202	0.34%	20
MORT	Mortaria	Mortaria, undifferentiated	1	0.04%	103	0.18%	13
GFIN	Fine	Miscellaneous fine grey wares	26	1.13%	253	0.43%	0
CC?	Fine	Other colour-coated wares	1	0.04%	20	0.03%	0
CC1	Fine	Colour-coated fabric 1	19	0.83%	132	0.22%	6
ROXPART	Fine	Parisian type, NW Lincs fabric	1	0.04%	12	0.02%	0
CR	Oxidised	Roman cream wares (various)	3	0.13%	23	0.04%	24
OX	Oxidised	Misc. oxidised wares	13	0.57%	81	0.14%	6
OX?	Oxidised	Misc. oxidised wares	10	0.43%	59	0.10%	7
OX1	Oxidised	Oxidised fabric 1	15	0.65%	356	0.61%	19
OXFIN	Oxidised	Fine Oxidised fabric	1	0.04%	4	0.01%	0
OXWS	Oxidised	Oxidised with white slip	1	0.04%	18	0.03%	0
BB1	Reduced	Black burnished 1, unspecified	33	1.44%	288	0.49%	18
GREY	Reduced	Miscellaneous grey wares	35	1.52%	808	1.38%	25
GREY?	Reduced	Miscellaneous grey wares	6	0.26%	56	0.10%	0
GREY1	Reduced	Reduced fabric 1	893	38.84%	19014	32.41%	1816
GREY2	Reduced	Reduced fabric 2	6	0.26%	358	0.61%	6
GREY3	Reduced	Reduced fabric 3	139	6.05%	2093	3.57%	229
GREY4	Reduced	Reduced fabric 4	40	1.74%	1484	2.53%	94
GREYB	Reduced	High-fired late Roman grey wares	1	0.04%	9	0.02%	0
GREYC	Reduced	Coarse grey ware	2	0.09%	74	0.13%	17
IAGR	Reduced	Native tradition/transitional gritty wares	11	0.48%	155	0.26%	2
IAGR1	Reduced	Iron Age tradition 'Gritty': Site fabric 1	69	3.00%	2204	3.76%	19
IAGR2	Reduced	Iron Age tradition 'Gritty': Site fabric 2	288	12.53%	12144	20.70%	312
IAGR3	Reduced	Iron Age tradition 'Gritty': Site fabric 3	30	1.30%	770	1.31%	37
IAGR4	Reduced	Iron Age tradition 'Gritty': Site fabric 4	253	11.00%	10922	18.62%	512
IAGR5	Reduced	Iron Age tradition 'Gritty': Site fabric 5	3	0.13%	92	0.16%	7
IASA1	Reduced	Iron Age Sandy: Site fabric 1	2	0.09%	17	0.03%	0
NWLGR	Reduced	North-west Lincolnshire grey ware	9	0.39%	166	0.28%	15
ROXGR	Reduced	Roxby grey ware	17	0.74%	194	0.33%	16
SFGR	Reduced	South Ferriby Grey ware	33	1.44%	420	0.72%	96
DWSHT	Calcareous	Dales ware type	156	6.79%	2320	3.95%	184
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	46	2.00%	1297	2.21%	13
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	21	0.91%	127	0.22%	33
IASH3	Calcareous	Iron Age Shell Gritted; Site fabric 3	9	0.39%	167	0.28%	17
IASH5	Calcareous	Iron Age Shell Gritted; Site fabric 5	7	0.30%	79	0.13%	21
IASH7	Calcareous	Iron Age Shell Gritted: Site fabric 7	3	0.13%	58	0.10%	0
SHEL	Calcareous	Miscellaneous undifferentiated shell-tempered	13	0.57%	237	0.40%	9
ETW2	Rock temper	Erratic pebbles broken up as temper	2	0.09%	10	0.02%	0
ETW4	Rock temper	Erratic pebbles broken up as temper, finer than ETW2	12	0.52%	104	0.18%	2

Fabric code	Fabric group	Fabric details	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
ETW7	Rock temper	Gold mica	2	0.09%	8	0.01%	0
IAGROG1	Grog	Iron Age grog gritted wares: Site fabric 1	2	0.09%	40	0.07%	0
MISC	Misc.	Misc. uncategorised	2	0.09%	6	0.01%	5
FCLAY	Fired clay	Fired clay	7	0.30%	36	0.06%	0
FCLAY?	Fired clay	Fired clay	1	0.04%	2	0.00%	0

Samian was reasonably well represented for a basic rural site; it mostly comprised of plain ware bowls and dishes, including two stamped vessels. Other fine wares consisted of a small number of colour-coated ware beakers, including folded and scaled types, and fine grey wares, mostly beakers, including two vessels with stamped decoration in the Parisian ware style (**Fig. 4.4**, 16 and 17). Other table ware vessels included a sherd from a white ware jar or flagon, and oxidised wares including a bag-shaped beaker with an everted rim (**Fig. 4.4**, 18). A typical suite of 2nd-century AD vessels commonly seen in northern Lincolnshire were well represented (see Darling and Precious 2014, 137–9), including jars and large bowls with hooked everted rims (JHER, BHER), Roxby type A lid-seated jars (J105), carinated drinking vessels (B334, **Fig. 4.4**, 22 and 23), a bowl with a bifid rim (B333) and dishes with in-turned beaded rims (D452). One of the B334 vessels showed signs of being repurposed as a strainer after breakage (**Fig. 4.4**, 23).

A small number of grey ware vessels mimicking samian forms included form 37 (B37, **Fig. 4.4**, 28), and an unusual carinated vessel broadly mimicking samian form 29 (B29, **Fig. 4.4**, 23), demonstrating that the local coarse ware industries fulfilled the need for table ware vessels.

Broadly Romano-British

Some 64 sherds (1.15 kg, 0.62 RE) were from features that could not be differentiated into early or late Romano-British phases. The range of material was broadly similar to that discussed above, including a samian base and a fragment from a Black Burnished ware jar along with grey ware and native tradition ware.

Late Romano-British

A total of 916 sherds (21.628 kg, 17.07 RE) were recovered from a maximum of 667 vessels. A considerable proportion of the material from this phase was probably produced in the 2nd century AD and may be residual within later features. This included sherds from three Mancetter/Hartshill type mortaria with fired clay trituration grits (MOMH2), including a flanged type (MFL) from ditch 7135, a hammer head type from ditch 7624 and a basal fragment from ditch 7623. A white-slipped oxidised ware vessel with a footring base from ditch 7625 was probably from a flagon.

Grey wares (GREY1–4) made up a large proportion of the assemblage from this phase. These fabric groups appear likely to have been manufactured in the Market Rasen area or perhaps at other sites in north-eastern Lincolnshire (Darling 2005 and 2007; Rowlandson 2011; Samuels 1983). It was noticeable that none of the burnished GREYB ware group seen from the predominantly 4th century AD assemblage at Hatcliffe Top (Rowlandson and Fiske 2020c) were present, suggesting that there was probably only limited activity on the site in the 4th century AD (the site was likely abandoned at the end of the 3rd century).

Sherds in a number of the more distinctive north Lincolnshire fabrics were recognised, including a lipped bowl and a cheese press in the north-west Lincolnshire NWLGR fabric (ditch 7135), a necked jar or beaker in the Roxby-type ROXGR fabric and a small range of vessels in the South Ferriby type grey ware SFGR including a wide-mouthed bowl (BWM1), a lipped bowl and a small flagon (**Fig. 4.5**, 38), from ditch 7623 (broadly as Darling and Precious 2014, no. 312).

Table 4.9 Humberston Road forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
A	Amphora	Unclassified form	3	0.13%	144	0.25%	0
BK	Beaker	Unclassified form	13	0.57%	81	0.14%	2
BKEV	Beaker	Everted rim	15	0.65%	399	0.68%	55
BKFOS	Beaker	Folded scaled beaker	1	0.04%	3	0.01%	0
BKFOSF	Beaker	Folded scaled: funnel neck	8	0.35%	67	0.11%	6
BKNK	Beaker	Necked	1	0.04%	7	0.01%	13
37	Bowl	Samian form: see Webster 1996	1	0.04%	1	0.00%	0
B	Bowl	Unclassified form	5	0.22%	120	0.20%	24
B29	Bowl	Carinated possibly imitating samian 29	9	0.39%	217	0.37%	22
B318	Bowl	Flared rim as Petch 1962, fig. 7.23	6	0.26%	16	0.03%	7
B333	Bowl	Bifid rim as Gillam 301	1	0.04%	4	0.01%	2
B334	Bowl	Carinated jar/bowl (flat cordon as Darling and Precious 2014, 1157–9)	16	0.70%	408	0.70%	74
B36	Bowl	Copy of samian form 36	2	0.09%	69	0.12%	12
B37	Bowl	Hemispherical possibly imitating samian 37	3	0.13%	78	0.13%	22
BCAR	Bowl	Carinated	27	1.17%	389	0.66%	8
BFB	Bowl	Bead and flange bowl	5	0.22%	223	0.38%	18
BFL	Bowl	Flange-rimmed (eg, Gillam 1970 types 218–220)	13	0.57%	476	0.81%	105
BNK	Bowl	Necked	3	0.13%	42	0.07%	0
BREED	Bowl	Reeded rim	4	0.17%	466	0.79%	44
BTR	Bowl	Triangular-rimmed (eg, Gillam 1970 types 222–3)	8	0.35%	283	0.48%	73
CU23	Bowl	Samian form, see Webster 1996	5	0.22%	34	0.06%	15
BFLL	Bowl – large	Flange-rimmed	7	0.30%	874	1.49%	43
BHER	Bowl – large	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	9	0.39%	399	0.68%	82
BL	Bowl – large	Large	28	1.22%	1757	2.99%	41
BNAT	Bowl – large	Native tradition bowl, eg, Darling and Precious 2014, no. 700	31	1.35%	3014	5.14%	176
BNNK	Bowl – large	Large bowl with no neck	1	0.04%	129	0.22%	21
BWM	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1225-30	4	0.17%	99	0.17%	7
BWM1	Bowl – large	Wide-mouthed; Darling and Precious 2014, no.1225-7	55	2.39%	2077	3.54%	275
BWM2	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1228	4	0.17%	221	0.38%	46
BWM3	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1229-30	2	0.09%	155	0.26%	21
18/31-31	Bowl/dish	Samian form, see Webster 1996	5	0.22%	21	0.04%	11
BD	Bowl/dish	-	36	1.57%	1409	2.40%	40
BDGR	Bowl/dish	Grooved rim	1	0.04%	23	0.04%	7
CLSD	Closed	Form	229	9.96%	5143	8.77%	0
CLSD?	Closed	Form	1	0.04%	12	0.02%	0
27	Cup	Samian form, see Webster 1996	1	0.04%	12	0.02%	0
33	Cup	Samian form, see Webster 1996	4	0.17%	38	0.06%	30
80	Cup	Samian form, see Webster 1996	1	0.04%	16	0.03%	0
C	Cup	Unclassified form	2	0.09%	8	0.01%	0
C33	Cup	Imitation samian 33	4	0.17%	51	0.09%	8
18/31	Dish	Samian form, see Webster 1996	4	0.17%	77	0.13%	11
18/31R	Dish	Samian form, see Webster 1996	1	0.04%	10	0.02%	4
31	Dish	Samian form, see Webster 1996	9	0.39%	202	0.34%	29

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
31R	Dish	Samian form, see Webster 1996	1	0.04%	8	0.01%	0
31R?	Dish	Samian form, see Webster 1996	1	0.04%	57	0.10%	0
32	Dish	Samian form, see Webster 1996	1	0.04%	91	0.16%	20
D	Dish	Unclassified form	1	0.04%	18	0.03%	7
D452	Dish	as Gillam 337 GB Cam 16 copy	3	0.13%	110	0.19%	19
DGR	Dish	Grooved rim	5	0.22%	75	0.13%	33
DPR	Dish	Plain rim	18	0.78%	766	1.31%	157
DTR	Dish	Triangular rim (eg, Gillam 1970 types 222–3)	1	0.04%	98	0.17%	18
LUDSB	Dish	Samian form, see Webster 1996	1	0.04%	70	0.12%	0
FR	Flagon	Ringed	1	0.04%	10	0.02%	24
FJ	Flagon/jar	Unclassified form	2	0.09%	50	0.09%	0
FS	Flask	Or exceptionally small flagon	4	0.17%	18	0.03%	35
CPN	Jar	Native tradition	11	0.48%	280	0.48%	75
J	Jar	Unclassified form	94	4.09%	3164	5.39%	24
J?	Jar	Unclassified form	6	0.26%	94	0.16%	6
J105	Jar	Lid-seated; as Rigby and Stead 1976 Roxby form A	32	1.39%	989	1.69%	134
JBR	Jar	Bead-rimmed	3	0.13%	30	0.05%	2
JDW	Jar	Dales ware	3	0.13%	39	0.07%	16
JDW1	Jar	Dales ware, as Gillam 1970 157	46	2.00%	740	1.26%	177
JDW2	Jar	Dales ware, as Monaghan JD2 form	1	0.04%	13	0.02%	7
JEV	Jar	Everted rim	51	2.22%	945	1.61%	326
JEVC	Jar	Everted rim, curved as Gillam 1970 type 135	29	1.26%	469	0.80%	133
JEVS	Jar	Everted rim, stubby	1	0.04%	52	0.09%	11
JFO	Jar	Folded	3	0.13%	51	0.09%	0
JHER	Jar	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	3	0.13%	185	0.32%	40
JL	Jar	Large	66	2.87%	3704	6.31%	272
JLH	Jar	Lug-handled	37	1.61%	3930	6.70%	148
JLS	Jar	Lid-seated	47	2.04%	2239	3.82%	140
JNK	Jar	Necked	15	0.65%	195	0.33%	69
JNN	Jar	Narrow-necked	15	0.65%	376	0.64%	85
JRUST	Jar	Rusticated	20	0.87%	617	1.05%	0
JS	Jar	Storage	9	0.39%	926	1.58%	5
JBK	Jar/beaker	Small jar or beaker	3	0.13%	33	0.06%	7
JBKEV	Jar/beaker	Everted rim	2	0.09%	4	0.01%	7
JBKFO	Jar/beaker	Folded; indeterminate type	6	0.26%	49	0.08%	0
JBKNK	Jar/beaker	Necked	3	0.13%	23	0.04%	27
JB	Jar/bowl	Unclassified form	16	0.70%	299	0.51%	60
JBEV	Jar/bowl	Everted rim	2	0.09%	21	0.04%	14
JBHER	Jar/bowl	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	4	0.17%	146	0.25%	23
JBL	Jar/bowl	Large	145	6.31%	6061	10.33%	14
JBNAT	Jar/bowl	Native tradition	3	0.13%	237	0.40%	10
JBNK	Jar/bowl	Necked	39	1.70%	392	0.67%	144
L	Lid	Unclassified form	3	0.13%	87	0.15%	29
LB	Lid/bowl	-	1	0.04%	12	0.02%	7
LD	Lid/dish	Unclassified	2	0.09%	31	0.05%	12
CHP	Misc.	Cheese press	1	0.04%	24	0.04%	7

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
CRUC	Misc.	Crucible	1	0.04%	3	0.01%	5
ST	Misc.	Strainer	10	0.43%	136	0.23%	0
M	Mortaria	Unclassified form	1	0.04%	82	0.14%	0
MFL	Mortaria	Flange-rimmed as Gillam 1970, 246	1	0.04%	29	0.05%	7
MHH	Mortaria	Hammerheads as Gillam 1970, 279–84	1	0.04%	91	0.16%	13
MHK	Mortaria	Hook-rimmed as Gillam 1970, 237–45	3	0.13%	787	1.34%	26
MRR	Mortaria	Reeded rim	1	0.04%	103	0.18%	13
OPEN	Open	Form	4	0.17%	61	0.10%	0
18R	Plate	Samian form, see Webster 1996	1	0.04%	5	0.01%	6
PD	Plate/dish	Form	1	0.04%	21	0.04%	0
-	Unknown	Form uncertain	926	40.28%	10248	17.47%	2

Grey ware forms of the 3rd century AD or later included a developed carinated drinking vessel (BCAR, Darling and Precious 2014, no. 1160), wide-mouthed bowls including a limited number of the more developed BWM2 and BWM3 variants, plain rimmed dishes (DPR), a straight-sided bead and flanged bowl (BFB), a copy of samian form 36 (B36, **Fig. 4.5**, 36) and a copy of a Dales ware jar (JDW1, **Fig. 4.5**, 34).

A single example of a specialist strainer (ST) and a number of lug-handled jars (JLH, **Fig. 4.5**, 37) were also recorded in the GREY1–4 fabrics. A number of large grey ware bowl types (BWM1 and BNNK), and smaller bowl or dish types (eg, BFL and BTR) were also present and may have dated to the 2nd or 3rd century AD. Small quantities of beakers with everted rims (BKEV, **Fig. 4.5**, 33) and a cup copying samian form 33 (**Fig. 4.5**, 32) were also recorded.

Shell-gritted Dales ware was well represented among groups dating from the 3rd to 4th centuries AD, as it has been from other sites from this scheme and other excavations in this area. All of the recognisable forms were typical Dales ware lid-seated jars (JDW1); a few examples had carbonised residues and it appears that these vessels were commonly used for cooking or rendering fat (Dunne and Evershed 2018a and b). A grey ware Dales-type jar sampled from this site also showed signs of being used for boiling up animal fat (**Fig. 4.5**, 34, HRN53). In the 3rd century AD to the first half of the 4th it appears that this vessel in this fabric became the most common medium necked jar type, probably replacing the IAGR type fabrics, which appear to have ceased production in the 2nd century AD. The shell-gritted fabric suggests that the majority of Dales ware was produced to the west of the Lincolnshire Wolds. Small quantities of shell-gritted wares were recorded from this phase that could not be securely dated but none of the wheel-made double lid-seated jars that typically occur in deposits of the late 4th century AD were present.

Further vessels of note were the suspected crucibles from ditch 7298 (**Fig. 4.5**, 40) and ditch 7457 (**Fig. 4.5**, 39) although specialist examination (Andrews, Chapter 6) suggested only vessel 40 was possibly a crucible.

Medieval
There were 20 sherds (0.489 kg, 0.22 RE) from potentially medieval features comprising grey ware, fine grey ware and native tradition ware.

Furrows
Another 37 sherds (1.738 kg, 1.15 RE) were recovered from furrows. Furrow 7314 included samian, a fine oxidised sherd and a fragment from an unusual conical bowl with a reeded triangular rim (**Fig. 4.5**, 41). This group of Romano-British pottery could be dated to the late 2nd century AD or later.

Post-medieval

A further 30 sherds (0.723 kg, 0.53 RE) were recovered from post-medieval features, mostly of Iron Age/Romano-British transitional date.

Unphased

A total of 340 sherds (5.062 kg, 3.97 RE) were recovered from a maximum of 208 vessels from unphased features. Notable vessels included sherds from a Late Iron Age necked jar or bowl in a fine shell-gritted fabric (see **Fig. 4.3**, 13, context 7086) and an early Romano-British lipped bowl with a low carination in an oxidised fabric (B318 form, gully 7217).

Illustrated sherds

Figure 4.3–4.5

5. Late Iron Age to early Romano-British necked jar in a shell-gritted native tradition fabric. The sample contained ruminant adipose residue. *Fabric IASH5, Form JNK, well 7441, contexts 7445 and 7450, ORA sample HRN48 and 49*
6. 'Roxby Type A' lid-seated jar in a gritty native tradition fabric, hand-built with a wheel-finished rim. The high levels of ruminant adipose residue retrieved from the sample suggested that the vessels were used for processing carcass products. *Fabric IAGR1, Form J105, ditch 7414 (group 7634), context 7416, ORA sample HRN46*
7. Almost complete early Romano-British lug-handled jar in a gritty native tradition fabric. *Fabric IAGR2, Form JLH, ditch 7356, context 7358*
8. Early Romano-British handmade rusticated jar with footring base, in a gritty native tradition fabric. Dairy lipids were retrieved from the samples from this vessel. *Fabric IAGR2, Form JRUST, ditch 7356, context 7358, ORA sample HRN37*
9. Large necked jar with slack shoulder in a gritty native tradition fabric. *Fabric IAGR4, Form JL, ditch 7356, context 7358*
10. Jar with everted rim in a gritty native tradition fabric, wheel-made and/or wheel-finished. *Fabric IAGR4, Form JEV, ditch 7356, context 7358*
11. Early Romano-British 'Roxby Type A' lid-seated jar in a gritty native tradition fabric with scored wavy line decoration. The sample from this vessel included evidence for high concentrations of dairy lipids and ruminant adipose residue. *Fabric IAGR4, Form J105, ditch 7404 (group 7634), context 7402, also furrow 7419, context 7420, ORA samples HRN43 and 47*
12. Bowl with a reeded rim and bifid rim tip, in a gritty native tradition fabric. *Fabric IAGR4, Form BREED, ditch 7356, context 7358*
13. Necked jar or bowl in a shell-gritted native tradition fabric with external burnishing, as Dragonby Necked Bowl form (Elsdon 1996b 19.47.491, ceramic stage 7). The two residue samples from this vessel suggest that it was used for processing ruminant dairy and carcass fats. *Fabric IASH3, Form JBNK, ditch 7029 (group 7636), context 7030, also unstratified context 7086 (not illustrated), ORA samples HRN28 and 30*
14. Lincoln-produced mortarium with a hooked rim and low bead (as Darling and Precious 2014, no. 1484). The partial name stamp is possibly that of potter BISO/IBISO from the Lincoln Technical College site. *Fabric MOLIN, Form MHK, ditch 7356, context 7358*
15. Heavily worn Lincoln mortarium with hooked rim, pierced several times post-firing 5 mm below the rim bead (form as Darling and Precious 2014, no. 1471*). Fabric MOLIN, Form MHK, ditch 7356, context 7358*
16. Fine grey ware sherd with stamped roundel and fern motif. *Fabric GFIN, Form unknown, ditch 7494 (group 7634), context 7495*
17. Fine Roxby Parisian-type ware sherd from a closed vessel (Elsdon 1982, form 5 or 2) with stamped roundel and line decoration (roundels as Elsdon 1982, fig. 7.55, lines as CO1). *Fabric ROXPART, Form CLSD?, ditch 7150 (group 7626), context 7151*
18. Bag-shaped beaker with everted rim in an oxidised fabric with a footring base. *Fabric OX1, Form BKEV, ditch 7479 (group 7635), context 7480*
19. Grey ware jar with everted rim. The lipid analysis suggested the vessel was used for processing ruminant carcass products. *Fabric GREY1, Form JEV, ditch 7356, context 7358, ORA sample HRN39*
20. Grey ware wide-mouthed bowl with burnished wavy line and scored horizontal groove decoration. The vessel sample had significant proportions of dairy lipids. This vessel was of very similar form to vessel 21 and perhaps both were used together as a set for dairy processing, possibly cheese making, as shown for examples discussed by Green from Godmanchester (2017, 121, fig. 5.3). *Fabric GREY1, Form BWM1, ditch 7356, context 7358, ORA sample HRN40*
21. Grey ware wide-mouthed bowl with burnished wavy line, scored horizontal groove decoration,

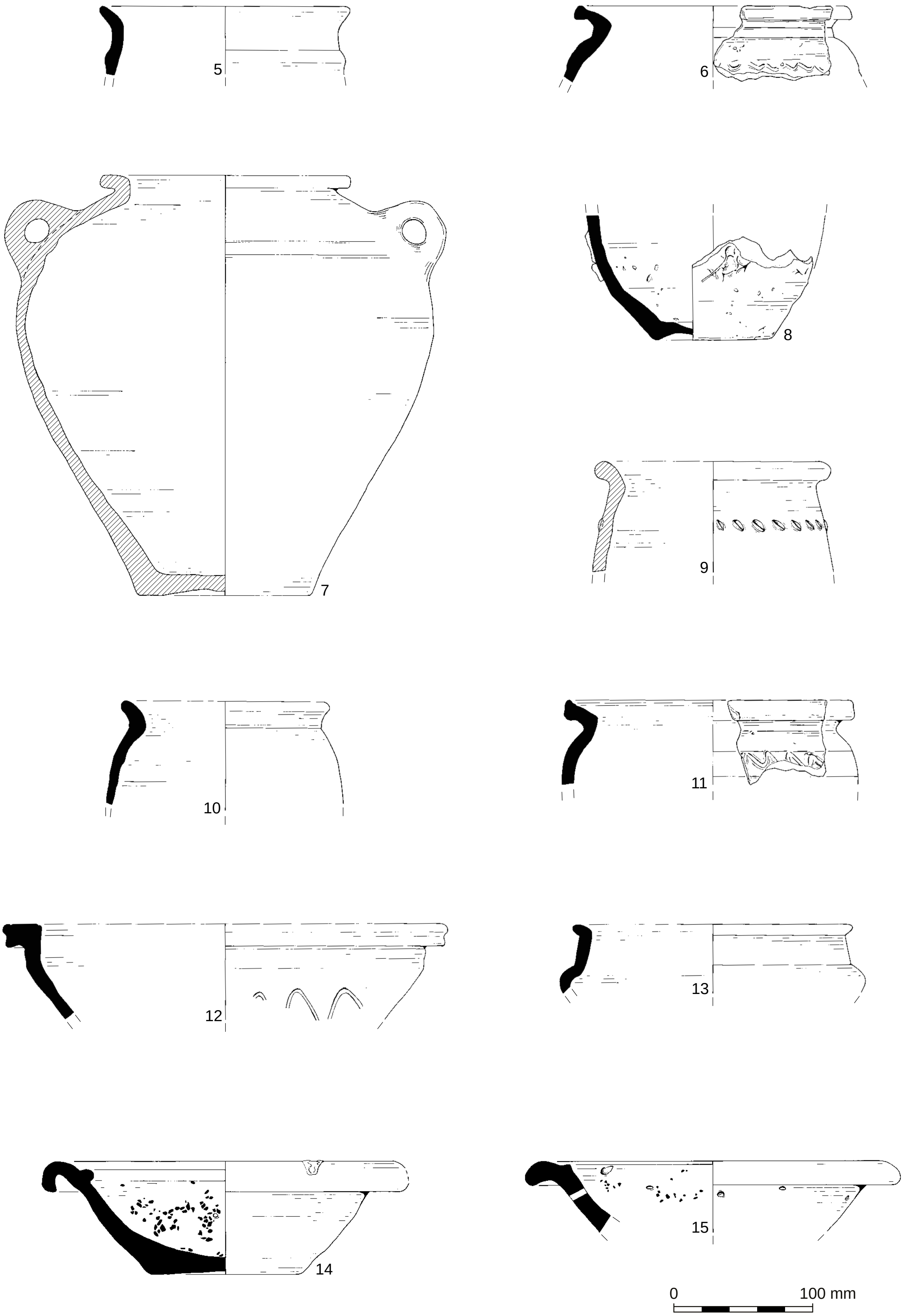


Figure 4.3 Iron Age and Roman pottery (5–15) from Humberston Road

and a 12 mm post-firing hole pierced through the centre of the base. A high proportion of dairy lipids were retrieved from the sample from this vessel suggesting that it was used for processing. *Fabric GREY1, Form BWM1, ditch 7356, context 7358, ORA sample HRN89*

22. Grey ware carinated jar or bowl (as Darling and Precious 2014, nos 1157–9). A large fragment of white Wold flint is evident in the wall of the vessel. These vessels are typically assumed to be drinking vessels, but the residue analysis suggested that this vessel was 'subjected to sustained use in processing of high-lipid-yielding commodities' and, therefore, specialised in processing ruminant carcass products (Dunne this volume). *Fabric GREY1, Form B334, ditch 7479, context 7480, ORA sample HRN56*
23. Grey ware carinated jar or bowl (as Darling & Precious 2014, nos 1157–9) reworked with pierced base and ground-down neck. *Fabric GREY1, Form B334, ditch 7356, context 7358*
24. Grey ware copy of samian form 29 carinated bowl. *Fabric GREY1, Form B29, ditch 7404, context 7403*
25. Large grey ware bowl. *Fabric GREY1, Form BNNK, ditch 7356, context 7359*
26. Sherd from a grey ware vessel with roundel stamps and a band of diagonal tooled rouletted lines. *Fabric GREY1, Form CLSD, ditch 7496 (feature not illustrated), context 7497*
27. Grey ware beaker with everted rim. High levels of ruminant adipose residue were recorded from this sample. *Fabric GREY3, Form BKEV, ditch 7356, context 7359, ORA sample HRN42*
28. Grey ware hemispherical bowl. *Fabric GREY3, Form B37, ditch 7404, context 7403*
29. Large bowl in a transitional gritty fabric. This vessel was probably produced in the later 1st or 2nd century AD. The high concentration of residue from this vessel suggested that it had been used for processing dairy products. *Fabric IAGR2, Form BNAT, ditch 7054, context 7055, ORA sample HRN29*
30. Lid-seated jar in a transitional gritty fabric with scored/burnished wavy line decoration. *Fabric IAGR4, Form JLS, ditch 7066, context 7067, also ditch 7068, context 7069*
31. Large lipped-rimmed bowl with burnished wavy line decoration. Low levels of ruminant carcass fats were present in the sample from near the rim of this vessel with traces of ruminant dairy fat from the base. This is suggested to represent multiple functions (Dunne this volume). *Fabric IAGR4, Form BFLL, ditch 7135 (feature not illustrated), contexts 7136 and 7137, also ditch 7138, context 7139, ORA samples HRN32, 33 and 34*
32. Oxidised ware cup with a footring base imitating samian form 33. Lipids retrieved from this vessel were varied (see Dunne this volume). *Fabric OX1, Form C33, ditch 7457, context 7458, ORA sample HRN50*
33. Grey ware beaker with an everted rim. *Fabric GREY1, Form BKEV, ditch 7316 (not illustrated; located below tidal flats deposits in south-east of excavation area), context 7318*
34. Grey ware jar in a Dales-type lid-seated form. As with a number of jars of this form sampled from other projects, this jar contained evidence for processing ruminant carcass products. *Fabric GREY1, Form JDW1, ditch 7457, context 7458, ORA sample HRN53*
35. Jar with a curved everted rim in a coarser grey ware fabric. The samples suggested this vessel was used for processing ruminant adipose material but with the possibility of some pig fat. *Fabric GREY1, Form JEVC, ditch 7457, contexts 7458 and 7460, ORA sample HRN54*
36. Grey ware bowl broadly copying samian form 36. The sample suggested the possibility of the presence of dairy lipids. *Fabric GREY3, Form B36, ditch 7457, context 7458, ORA sample HRN51*
37. Grey ware lug-handled jar. Fabric GREY4, Form JLH, ditch 7457, context 7458
38. Grey ware flask or small flagon in a South Ferriby fabric. *Fabric SFGR, Form FS, ditch 7113, context 7112*
39. A suspected crucible fragment in a fired clay fabric. However, no metalworking residues were evident. *Fabric FCLAY, Form possible CRUC, ditch 7457, context 7458*
40. A crucible fragment, vitrified with traces of copper alloy, fabric unclear. *Fabric MISC, Form CRUC, ditch 7298, context 7300*
41. Conical grey ware bowl with unusual triangular section reeded rim. *Fabric GREY1, Form BREED, furrow 7314, context 7315*
42. Grey ware narrow-necked jar. *Fabric GREY1, Form JNN, ditch terminus 7256 (group 7631), context 7257*
43. Mortarium with reeded rim and slag trituration, fine quartz sand fabric with chalk inclusions. Although a typical Nene Valley form, a more local production source for this vessel might be possible as the fabric was not a good match with typical Nene Valley products (Rowlandson 2015). *Fabric MORT, Form MRR, evaluation trench 31, context 31010*
44. Grey ware carinated vessel, broadly as Roxby type E and similar to the Lincoln B334 form without the sharp carination (Rigby and Stead 1976, fig. 66.32). *Fabric ROXGR, Form BCAR, unstratified context 7609 (context not illustrated)*

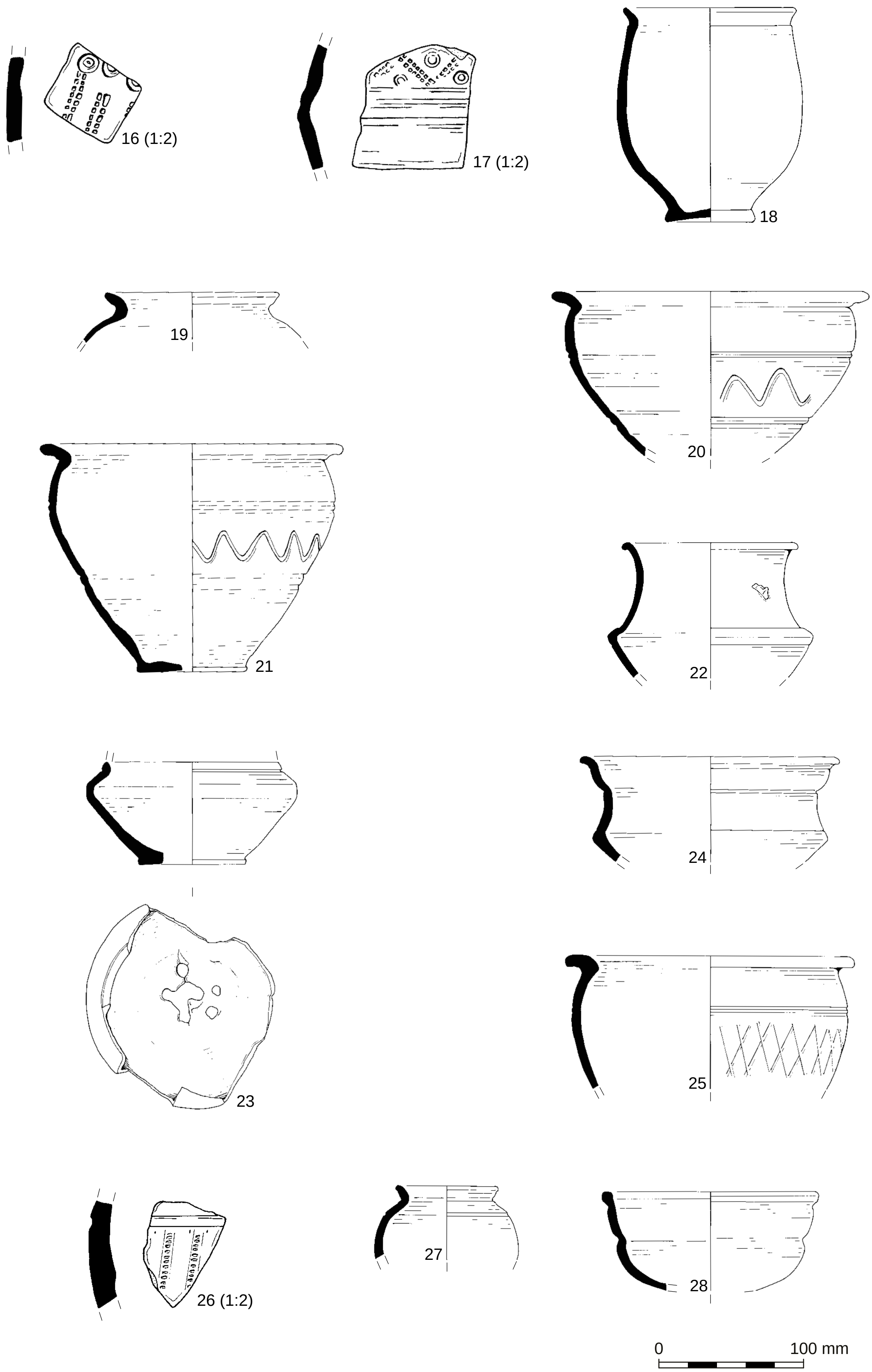


Figure 4.4 Roman pottery (16–28) from Humberston Road

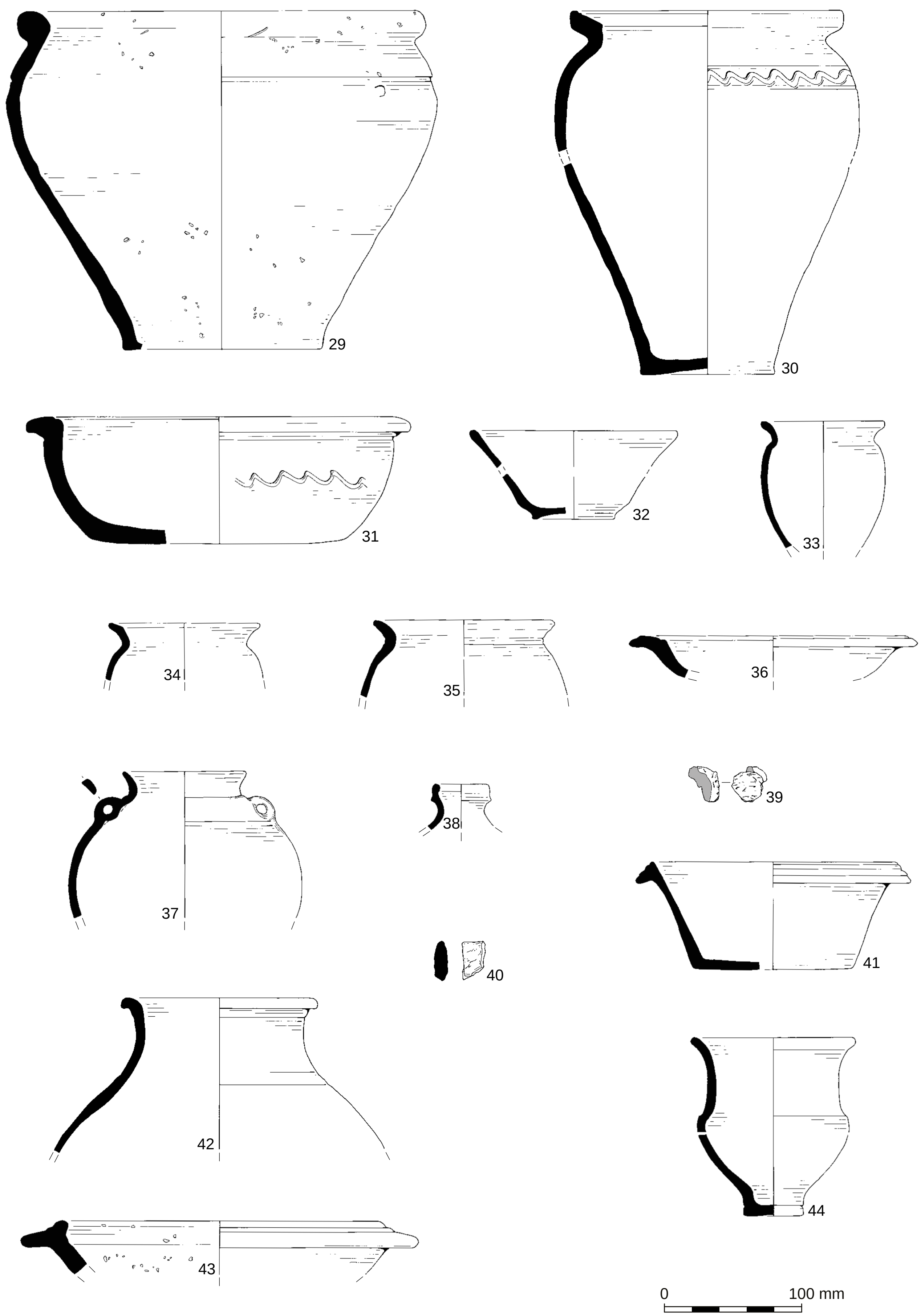


Figure 4.5 Roman pottery (29–44) from Humberston Road

Keelby Road

A total of 1060 sherds (26.424 kg, 18.45 RE) were recovered from a maximum of 596 vessels from the mitigation and evaluation excavations (**Tables 4.10** and **4.11**). The pottery from the early Romano-British phase compares favourably with the other contemporary assemblages that were encountered in this scheme, suggesting a site with a small amount of Late Iron Age activity, the majority of the occupation in the late 1st to 2nd century AD, and some evidence for continued activity on the site in the 3rd and 4th centuries AD. With the exception of a few exotic items the material was similar to the other contemporary assemblages from this scheme and others in the local area.

Early Romano-British phase

Some 222 sherds (5.013 kg, 3.76 RE) were recovered from a maximum of 95 vessels. The majority of the material from this group dated to the later 1st to 2nd century AD. Ditch 861, however, contained a possible sherd of Black Burnished ware 2 more likely to belong to the late 2nd century AD or later. Furthermore, pit 2013 (feature not illustrated) contained a large fragment from a folded colour-coated beaker more likely to date to the 3rd century AD; pit 2005 also contained a fragment from a colour-coated beaker, likely to be of late 2nd- to 3rd-century date. The largest assemblage was from deposits attributed to ditch 2326, which included a variety of material ranging from shell-gritted and rock-gritted sherds possibly of Iron Age date, a range of native tradition wares of late 1st- to 2nd-century AD date, through to a few grey ware sherds including a grey ware straight-sided bead and flanged bowl and an oversized lipped bowl that were likely to be intrusive, possibly in the upper fills of the feature. The range of material from this group was of interest as there were small quantities of Iron Age shell-gritted fabrics present, including a coarse gritted jar with a bead rim, a large bowl with a wedge-shaped rim and fine shell-gritted necked jars and bowls with bead rims in the fine Late La Tène III style commonly seen at Dragonby (IASH3, IASH5). These vessels suggested some activity on the site prior to the Roman conquest but it was notable that vessels in the rock-gritted tradition (ETW4, ETW2) were restricted to a single sherd from ditch group 2326.

No samian, amphorae or early fine ware sherds were noted but this is not unusual for rural sites of this period. The grey wares from this phase consisted of a similar range of forms to those illustrated by Rigby and Stead (1976) from Neronian to early Flavian deposits at Old Winteringham. These included a bowl (**Fig. 4.6**, 50, ditch group 2338, as Rigby and Stead 1976, fig. 75.34), a carinated drinking bowl (Rigby and Stead 1976, fig. 75.31), a small jar with an everted rim and cordoned decoration (**Fig. 4.6**, 51, Rigby and Stead 1976, fig. 76.46) and a rusticated jar. With the exception of two grey ware vessels from ditch 2326 which might be intrusive, the grey ware vessels present could all be paralleled with groups dating to the early Romano-British period.

A significant proportion of the group, over half by sherd count, was made up of transitional/native tradition gritty wares (IAGR1, IAGR2 and IAGR4). A small amount of the grog-gritted IAGR1 fabric was present, including a handmade jar with a bead rim from ditch 2338 and a wheel-finished vessel with an everted rim and cordoned decoration (similar in form to Elsdon 1996b, nos 36 and 1049; Leary 2009, fig. 16. 6) probably dating to the 1st century AD. Similar material has been illustrated from Immingham (Rowlandson and Fiske 2019b, nos 145–8).

The shell-gritted IAGR2 fabric group was the most common, being likely to be the post-conquest version of the IASH1 or IASH7 fabric groups. This fabric group was probably made to the west of the Lincolnshire Wolds at potting centres such as South Ferriby (Dudley 1949; Firth *et al.* 2010). This fabric was more consistently fired and more commonly wheel-made or wheel-finished than its Iron Age precursors (IASH1 and IASH7); however, the repertoire included large jars with similar wedge-shaped rims (CPN or BNAT) such as a decorated example from ditch group 2338 (**Fig. 4.6**, 47), examples with simple everted rims (JEV) such as an example from ditch group 2328

Table 4.10 Keelby Road fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAM	Samian	Undifferentiated	1	0.09%	1	0.00%	0
SAMCG	Samian	Central Gaulish	1	0.09%	7	0.03%	2
SAMRZ?	Samian	Rheinzabern samian ware	1	0.09%	12	0.05%	0
IT24	Amphora	Italian Dr 2-4	2	0.19%	208	0.79%	0
MOMH3	Mortaria	Mancetter/Hartshill mortaria: Meta sediment trits: Sandy white fabric Leicester MO19	1	0.09%	101	0.38%	0
MOSPT	Mortaria	Swanpool type	6	0.57%	421	1.59%	30
CC1	Fine	Colour-coated fabric 1	10	0.94%	218	0.83%	0
CC1?	Fine	Colour-coated fabric 1	2	0.19%	5	0.02%	0
CC2	Fine	Dark colour-coat and red fabric – Late Roman fabric	1	0.09%	3	0.01%	0
NVCC1	Fine	Nene Valley Colour-coat – light firing fabric	1	0.09%	4	0.02%	0
CR	Oxidised	Roman cream wares (various)	2	0.19%	4	0.02%	0
KMOX	Oxidised	Kirmington 'Swanpool' type	2	0.19%	220	0.83%	32
OX	Oxidised	Misc. oxidised wares	6	0.57%	36	0.14%	2
OX?	Oxidised	Misc. oxidised wares	4	0.38%	26	0.10%	0
OX1	Oxidised	Oxidised fabric 1	21	1.98%	537	2.03%	28
BB2?	Reduced	Black burnished 2	1	0.09%	27	0.10%	0
GREY	Reduced	Miscellaneous grey wares	27	2.55%	590	2.23%	91
GREY?	Reduced	Miscellaneous grey wares	3	0.28%	10	0.04%	0
GREY1	Reduced	Reduced fabric 1	368	34.72%	9813	37.14%	845
GREY2	Reduced	Reduced fabric 2	3	0.28%	82	0.31%	0
GREY3	Reduced	Reduced fabric 3	18	1.70%	433	1.64%	30
GREY4	Reduced	Reduced fabric 4	39	3.68%	830	3.14%	56
GREYB	Reduced	High-fired late Roman grey wares	3	0.28%	476	1.80%	30
GROG?	Reduced	Grog-tempered wares	1	0.09%	7	0.03%	0
IAGR	Reduced	Native tradition/transitional gritty wares	15	1.42%	357	1.35%	5
IAGR1	Reduced	Iron Age tradition 'Gritty': Site fabric 1	24	2.26%	978	3.70%	54
IAGR2	Reduced	Iron Age tradition 'Gritty': Site fabric 2	114	10.75%	3134	11.86%	225
IAGR3	Reduced	Iron Age tradition 'Gritty': Site fabric 3	1	0.09%	18	0.07%	0
IAGR4	Reduced	Iron Age tradition 'Gritty': Site fabric 4	9	0.85%	479	1.81%	7
IASA	Reduced	IA type sandy wares	2	0.19%	13	0.05%	0
IASA1	Reduced	Iron Age Sandy: Site fabric 1	6	0.57%	14	0.05%	2
IASA2	Reduced	Iron Age Sandy: Site fabric 2	9	0.85%	136	0.51%	0
NELGR1	Reduced	North East Lincolnshire Early Roman wheel-made 1	1	0.09%	23	0.09%	0
ROXGR	Reduced	Roxby grey ware	1	0.09%	20	0.08%	0
SFGR	Reduced	South Ferriby grey ware	19	1.79%	292	1.11%	42
DWNEL	Calcareous	Dales ware: North East Lincolnshire	4	0.38%	65	0.25%	17
DWSH	Calcareous	Dales ware: lid-seated jars	2	0.19%	6	0.02%	0
DWSHT	Calcareous	Dales ware type	224	21.13%	5085	19.24%	233
IASH	Calcareous	Native tradition shell-tempered	1	0.09%	2	0.01%	0
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	40	3.77%	739	2.80%	53
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	4	0.38%	20	0.08%	2
IASH3	Calcareous	Iron Age Shell Gritted: Site fabric 3	15	1.42%	35	0.13%	15
IASH4	Calcareous	Iron Age Shell Gritted: Site fabric 4	1	0.09%	9	0.03%	0
IASH5	Calcareous	Iron Age Shell Gritted: Site fabric 5	6	0.57%	67	0.25%	29
IASH7	Calcareous	Iron Age Shell Gritted: Site fabric 7	6	0.57%	36	0.14%	2
SHEL	Calcareous	Miscellaneous undifferentiated shell-tempered	13	1.23%	513	1.94%	2

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SHEL?	Calcareous	Shell gritted	4	0.38%	20	0.08%	0
SHGR	Calcareous	North East Lincs Shell and Grog fabric	4	0.38%	92	0.35%	11
VESIC	Shell?	Vesicular fabric	1	0.09%	12	0.05%	0
ETW	Rock temper	Erratic pebbles broken up as temper	1	0.09%	8	0.03%	0
ETW2	Rock temper	Erratic pebbles broken up as temper	1	0.09%	48	0.18%	0
ETWSH	Rock temper	Erratic pebbles broken up as temper with shell	1	0.09%	5	0.02%	0
IAGROG	Grog	Iron Age grog-tempered wares	3	0.28%	66	0.25%	0
IAGROG1	Grog	Iron Age grog gritted wares: Site fabric 1	2	0.19%	37	0.14%	0
MISC	Misc.	Misc. uncategorised	2	0.19%	24	0.09%	0
STONE	Non-ceramic	Stone	0	0.00%	0	0.00%	0

(**Fig. 4.6**, 46) and the later development of the jar or large bowl with the hooked everted rim (JHER, BHER or JBHER). All of these forms are known from the South Ferriby Brickyard site, although other production centres such as Dragonby (Gregory 1996, no. 1306) might also be possible. A similar range of forms were present in the glassy quartz-gritted variant (IAGR3) and the grog-gritted variant (IAGR4), both types known from Market Rasen and possibly other production sites (see descriptions in Darling 2007). Numerous examples of native tradition transitional wares can be seen among the Neronian to early Flavian groups from Old Winteringham and also from groups dated to the 2nd century AD. Although the assemblage from this phase lacks the complement of fine ware and amphora seen from a site like Old Winteringham, it would appear that the suite of coarse wares was broadly the same, though perhaps with a higher proportion of transitional wares than wheel-thrown wares.

Late Romano-British

There were 766 sherds (20.185 kg, 14.27 RE) recovered from a maximum of 480 vessels. Small quantities of Late Iron Age or early Romano-British material were present, including transitional wares and a necked jar in the fine shell-gritted IASH3 fabric that could be dated to the 1st century AD, which were retrieved from ditch 2323, and a single Late Iron Age sherd from ditch 2331. The remaining features all contained Dales ware and later Romano-British pottery, suggesting that most were open in the later 3rd to 4th century AD. Human bone from ditch 2319 was radiocarbon dated to 200 BC–AD 10 (SUERC-95455), showing it to be residual, found in association with Romano-British pottery dating to the 3rd century AD. This would appear to fit with the presence of a proportion of Iron Age pottery amongst deposits from this phase.

Apart from the Late Iron Age wares, coarse gritted transitional wares and a few grey ware sherds likely to have been manufactured in the later 1st to 2nd century AD, the groups contained a fairly typical range of local late Romano-British pottery. Single sherds from a Mancetter/Hartshill mortarium and a Swanpool mortarium (**Fig. 4.6**, 52 and 53) were the only mortaria present.

Colour-coated pottery from this group was limited but included a fragment from a base trimmed to a disc 85 mm in diameter, and a sherd from a folded beaker. Two sherds of samian were also recorded. Oxidised wares were similarly limited but included a fragment from a bowl in a burnished Swanpool oxidised fabric (B428, **Fig. 4.6**, 54). Shell-gritted Dales ware jars and vessels in the GREY1 local grey ware made up a significant proportion by sherd count; the latter included wide-mouthed bowls (BWM3), a jar with a collared rim (JCR) and a straight-sided bead and flanged bowl (BFB) typical of a late Romano-British group. A small quantity of the local late Romano-British burnished grey ware GREYB was also present.

The most unusual sherds from the late Romano-British phase were a handle and handle scar from an Italian amphora from ditch 2172 (group 2335), an unusual find for

Table 4.11 Keelby Road forms summary

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
A	Amphora	Unclassified form	2	0.19%	208	0.79%	0
BK	Beaker	Unclassified form	3	0.28%	8	0.03%	0
BKEV	Beaker	Everted rim	6	0.57%	58	0.22%	39
BKFO	Beaker	Folded; indeterminate type	9	0.85%	174	0.66%	0
B	Bowl	Unclassified form	5	0.47%	209	0.79%	29
B?	Bowl	Unclassified form	1	0.09%	20	0.08%	0
B31	Bowl	Imitation samian form 31	7	0.66%	316	1.20%	28
B428	Bowl	As Darling 1999, fig. 41. 533	2	0.19%	220	0.83%	32
BCAR	Bowl	Carinated	3	0.28%	37	0.14%	0
BFB	Bowl	Bead and flange bowl	8	0.75%	551	2.09%	108
BFL	Bowl	Flange-rimmed (eg, Gillam 1970 types 218–220)	7	0.66%	161	0.61%	51
BG225	Bowl	Rounded as Gillam 1970, no 225	3	0.28%	121	0.46%	29
BNK	Bowl	Necked	11	1.04%	400	1.51%	45
BPR	Bowl	Plain-rimmed	1	0.09%	22	0.08%	7
BTR	Bowl	Triangular-rimmed (eg, Gillam 1970, types 222–3)	5	0.47%	228	0.86%	39
BFLL	Bowl – large	Flange-rimmed	5	0.47%	1089	4.12%	87
BL	Bowl – large	Large	8	0.75%	550	2.08%	21
BNAT	Bowl – large	Native tradition bowl, eg, Darling and Precious 2014, no. 700	38	3.58%	954	3.61%	77
BWM	Bowl – large	Wide-mouthed; Darling and Precious 2014, no 1225–30	13	1.23%	655	2.48%	48
BWM1	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1225–7	5	0.47%	162	0.61%	50
BWM2	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1228	2	0.19%	116	0.44%	14
BWM3	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1229–30	10	0.94%	607	2.30%	47
BD	Bowl/dish	-	17	1.60%	647	2.45%	2
CLSD	Closed	Form	145	13.68%	3179	12.03%	0
31R?	Dish	Samian form, see Webster 1996	1	0.09%	12	0.05%	0
D	Dish	Unclassified form	3	0.28%	57	0.22%	0
D452	Dish	As Gillam 1970, 337 GB Cam 16 copy	1	0.09%	7	0.03%	5
D452V	Dish	In-turned bead rim	1	0.09%	41	0.16%	12
DGR	Dish	Grooved rim	1	0.09%	16	0.06%	5
DPR	Dish	Plain rim	4	0.38%	138	0.52%	41
FJ	Flagon/jar	Unclassified form	1	0.09%	5	0.02%	0
CPN	Jar	Native tradition	16	1.51%	633	2.40%	49
J	Jar	Unclassified form	38	3.58%	1280	4.84%	22
JBR	Jar	Bead-rimmed	12	1.13%	193	0.73%	54
JCR	Jar	Collared rim as Swanpool type C40–1	1	0.09%	83	0.31%	18
JDW	Jar	Dales ware	4	0.38%	72	0.27%	21
JDW1	Jar	Dales ware, as Gillam 1970, 157	45	4.25%	1416	5.36%	213
JDW2	Jar	Dales ware, as Monaghan JD2 form	1	0.09%	26	0.10%	12
JEV	Jar	Everted rim	47	4.43%	928	3.51%	158
JEVC	Jar	Everted rim – curved as Gillam 1970, type 135	23	2.17%	290	1.10%	63
JFO	Jar	Folded	2	0.19%	28	0.11%	0
JHER	Jar	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	3	0.28%	109	0.41%	24
JL	Jar	Large	25	2.36%	1837	6.95%	11
JLH	Jar	Lug-handled	2	0.19%	83	0.31%	42

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
JLS	Jar	Lid-seated	1	0.09%	11	0.04%	17
JNK	Jar	Necked	14	1.32%	31	0.12%	33
JNN	Jar	Narrow-necked	2	0.19%	118	0.45%	45
JRUST	Jar	Rusticated	1	0.09%	11	0.04%	0
JS	Jar	Storage	2	0.19%	330	1.25%	0
JBK	Jar/beaker	Small jar or beaker	9	0.85%	136	0.51%	0
JBKEV	Jar/beaker	Everted rim	3	0.28%	20	0.08%	15
JBKNK	Jar/beaker	Necked	4	0.38%	32	0.12%	17
JB	Jar/bowl	Unclassified form	18	1.70%	239	0.90%	48
JBEV	Jar/bowl	Everted rim	2	0.19%	47	0.18%	4
JBHER	Jar/bowl	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	6	0.57%	574	2.17%	70
JBL	Jar/bowl	Large	54	5.09%	2224	8.42%	0
JBNAT	Jar/bowl	Native tradition	9	0.85%	175	0.66%	7
JBNK	Jar/bowl	Necked	7	0.66%	83	0.31%	39
LBIF	Lid	Bifurcated rim	1	0.09%	14	0.05%	8
CHP	Misc.	Cheese press	1	0.09%	71	0.27%	7
COL	Misc.	Colander	2	0.19%	64	0.24%	0
M	Mortaria	Unclassified form	3	0.28%	179	0.68%	0
MHH	Mortaria	Hammerheads as Gillam 1970, 279–84	2	0.19%	222	0.84%	14
MRR	Mortaria	Reeded rim	2	0.19%	121	0.46%	16
OPEN	Open	Form	1	0.09%	20	0.08%	0
-	Unknown	Form uncertain	369	34.81%	3756	14.21%	2

a rural site in northern Lincolnshire. As with the Gaulish example from context 7393 (Humberston Road, discussed above), it may have had a function as an object or tool rather than suggesting that the inhabitants drank imported continental wine.

Two pits (845 and 2050) contained grey ware and Dales ware that could be dated to the 3rd century or later. A further pit (2123) contained a single sherd of Romano-British grey ware. A hearth (2027) containing Dales ware and grey ware could also be dated to the 3rd century AD or later. The majority of Romano-British sherds from this group came from ditch 2342; these included a sherd from a colour-coated beaker, a lug-handled jar in a native tradition fabric, Dales ware jars, a grey ware straight-sided bead and flanged bowl and a plain rimmed dish. The Romano-British pottery from this feature could be dated to the late 3rd to 4th century AD.

The quantity of shell-gritted Dales ware present was relatively low when compared with the Westfield Farm assemblage from the same phase. The forms present were exclusively Dales ware lid-seated jar types. The majority of the assemblage was in the local GREY1 fabric group and consisted of wide-mouthed bowls, a necked bowl (**Fig. 4.6**, 56), a bowl with a plain rim, and straight-sided bead and flanged bowls. A bowl in an oxidised fabric mimicking samian form 31 was the only specialist table ware vessel present (B31, **Fig. 4.6**, 55); no examples of colour-coated fine wares were recorded from this phase.

Furrows
Four sherds (0.182 kg, 0 RE) were recovered from furrow 2314; the sherds could be broadly dated to the Romano-British period.

Unphased
Some 28 sherds (0.367 kg, 0.38 RE) were recovered, including a range of shell-gritted native tradition wares (IAGR2), local grey ware and burnished grey ware (GREYB). A grey ware lid with a bifid rim was the only noteworthy sherd from this group.

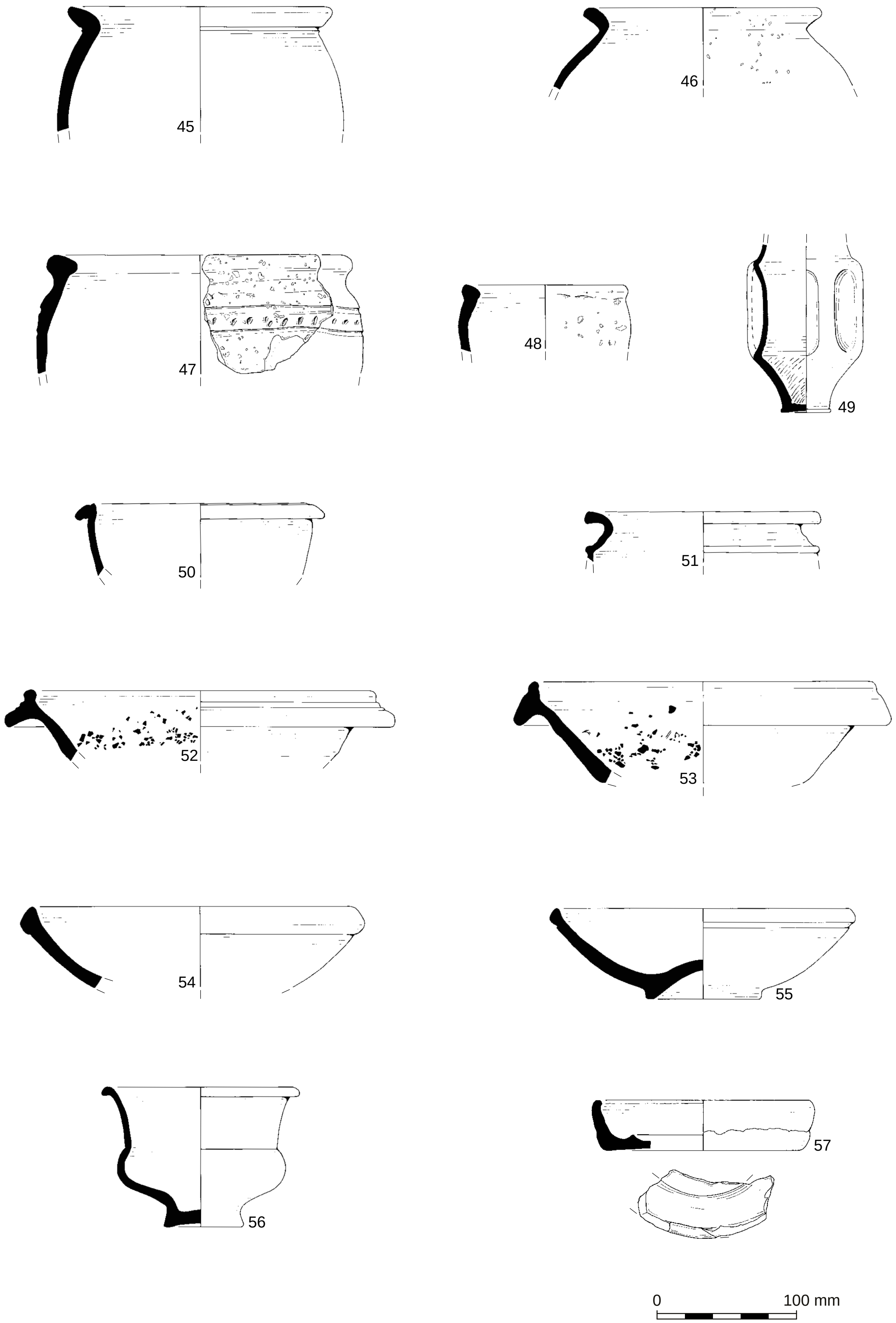


Figure 4.6 Iron Age and Roman pottery (45–57) from Keelby Road

Illustrated sherds

Figure 4.6

45. Jar with everted rim in a gritty transitional fabric, wheel-finished with cordon below rim (as Elsdon 1996a, C15C.1049, top right). The ORA analysis suggested the vessel was used for processing ruminant carcass products. *Fabric IAGR1, Form JEV, ditch 2178 (group 2324), context 2179, ORA sample HRN21*
46. Wheel-made jar with everted rim in a gritty transitional fabric. *Fabric IAGR2, Form JEV, ditch 2180, context 2184*
47. Large native tradition bowl with stabbed decoration. *Fabric IAGR2, Form CPN, ditch 2214 (group 2338), context 2215*
48. Handmade jar with a bead rim in an Iron Age shell-gritted fabric (as Elsdon 1996a, C15E.923). *Fabric IASH1, Form JBR, ditch 2180, context 2184*
49. Colour-coated folded beaker with a pedestal base. This vessel probably dated to the 3rd century AD or later. *Fabric CC1, Form BKFO, pit 2013, context 2014*
50. Grey ware bowl (form as Rigby and Stead 1976, fig. 75.34). Dairy residues were retrieved from this vessel, suggesting it was used for processing milk products. *Fabric GREY, Form B, ditch 2214, context 2215, ORA sample HRN23*
51. Grey ware jar with everted rim and cordon decoration (as Rigby and Stead 1976, fig. 76.46). A high density of ruminant dairy fat was retrieved from this vessel suggesting it was used for processing. *Fabric GREY3, Form JEV, ditch 2214, context 2215, ORA sample HRN22*
52. Swanpool-type reeded rim mortarium, worn, burnt and discoloured but traces of white over-slip survive. *Fabric MOSPT, Form MRR, ditch 2034 (group 2313), context 2033*
53. Swanpool-type hammerhead rim mortarium, white slipped. *Fabric MOSPT, Form MHH, ditch 2257 (group 2332), context 2259*
54. Bowl in Kirmington 'Swanpool-type' fabric (form as Darling 1999, fig. 41. 533; also Rowlandson *et al.* 2015b, no. 20). This vessel contained ruminant carcass fats and plant-based lipids. *Fabric KMOX, Form B428, ditch 2174 (group 2335), context 2174, ORA sample HRN20*
55. Copy of samian form 31 bowl in an oxidised fabric, spalled with patchy surfaces. Small quantities of ruminant adipose residue were retrieved from this vessel. *Fabric OX1, Form B31, ditch 2054, context 2054, also ditch 2117 (group 2322), context 2118, ORA sample HRN19*
56. Grey ware necked bowl with pedestal base, low girth, rounded lower wall and flared neck. Similar to Dragonby example (Gregory 1996, fig. 20.3.783, Claudian–early Flavian). *Fabric GREY1, Form BNK, ditch 2054, context 2055*
57. Grey ware cheese press. Analysis shows that rather than dairy products this vessel was used to process ruminant and non-ruminant (pig) carcass products. *Fabric GREY3, Form CHP, ditch 2295 (group 2332), context 2297, ORA sample HRN24*

Station Road

A total of 2012 sherds (46.590 kg, 32.9 RE) were recovered in total, from a maximum of 1460 vessels, from the mitigation and evaluation excavations (**Tables 4.12** and **4.13**). It was noticeable that this assemblage mostly dated from the 1st to 2nd century AD, with much of the pottery present in late phases being residual material of this date. It was noted that although there was a greater number of white ware fragments than from Humberston Road, there was also a lot less samian. There was also a greater number of table ware bowls and beakers in oxidised and coarse grey ware fabrics than from Humberston Road so, overall, it does not appear that the sites were of noticeably different status or function.

The majority of pottery from Station Road was retrieved from ditches, with fewer than 100 sherds retrieved from other features. This site had evidence for a low level of Late Iron Age activity with the majority of the pottery dating from the late-1st to 2nd century AD. There appeared to be limited pottery dating to the 3rd century AD, but a group dating to the 4th century AD was noted, including material from the final phase of Romano-British pottery production. Much of the pottery retrieved from the later phases dated to the 2nd century AD; it is possible, therefore, that the nature of occupation on site changed in the 3rd century AD and the focus of settlement may have moved away from the investigated area.

Iron Age

There were 42 sherds (0.48 kg, 0.04 RE) recovered from ditches attributed to the Iron Age phase. Sherds present included a small number of handmade examples in ETW2, ETW2C and IAGROG? fabrics that probably dated to the Iron Age, along with a sherd of grey ware and a shell-gritted transitional ware sherd in the IAGR2 fabric group.

Early Romano-British

Some 437 sherds (10.175 kg, 8.43 RE) were recovered from a maximum of 249 vessels. The majority of pottery consisted of small groups dating from the late 1st to 2nd century AD which were retrieved from ditch 1004 (group 1800) and pits 1086, 1164, 1199, 1234 and 1379. Human bone taken from ditch 1801, associated with pottery dating to the 2nd century AD, yielded a radiocarbon date of AD 240–420 (SUERC-95454).

Ditch 1669 (feature not illustrated) contained a group of 20 sherds including a small group of Late Iron Age vessels: a shell-gritted jar with a wedge-shaped rim (CPN, **Fig. 4.7**, 62), a similar quartz sand-gritted vessel (CPN, **Fig. 4.7**, 61) and a fine shell-gritted jar with an everted rim and cordoned decoration (JBEV, **Fig. 4.7**, 63, as Elsdon 1996b, no. 1639).

Iron Age transitional wares included a range of jars and large bowls dating from the mid-1st to mid-2nd century AD in IAGR2 shell-gritted fabric and a jar with a wedge-shaped rim in the IASA1 fabric (CPN, **Fig. 4.7**, 60). A large fresh fragment from a large bowl with a wedge-shaped rim in the IAGR2 fabric came from ditch 1062 (as Darling and Jones 1988, fig. 7.56) and a Roxby type A jar in the IAGR3 fabric from ditch 1151 (J105). A large bowl in the IAGR4 transitional fabric came from ditch 1359 (BFB412, as Darling 1999, fig. 36.369).

A grey ware wide-mouthed bowl (BWM3) and a sherd of shell-gritted Dales ware (DWSHT) that dated to the mid-3rd century AD or later were retrieved from pit 1352. Unusual items for this phase were a fragment from a Gaulish wine amphora (ditch 1800) and a Black Burnished ware 1 jar with burnished lattice decoration (Gillam 1976, fig. 1.3) from pit 1379. A light-fired flagon rim from a ring-necked type (**Fig. 4.7,** 64, FR) came from ditch 109, and a grey ware necked jar or bowl in the GREY1 fabric from ditch 1105 had an unusual corrugated profile (**Fig. 4.7**, 66). A fragment from a Dales ware jar in a sandy shell-gritted fabric (DWNEL, **Fig. 4.7**, 65) from ditch 107 dated to the 3rd century AD.

Late Romano-British

A total of 1254 sherds (30.271 kg, 19.16 RE) were recovered, from a maximum of 964 vessels. Many of the groups dated from the 3rd to 4th century AD, but others contained a range of sherds from the Late Iron Age to the early 2nd century AD, including a jar with an everted rim in the IAGROG1 fabric, a fine shell-gritted vessel with a footring base and a fine sand-gritted carinated bowl in the IASA2 fabric (**Fig. 4.8**, 70, as Darling and Jones 1988, fig. 5.9) and a typical range of transitional ware sherds mostly consisting of vessels in the shell-gritted IAGR2 fabric. Ditch 100 included a shell-gritted jar with an in-turned rim, this presumed to be of Iron Age date but stratified with a group of pottery dated to the 4th century AD. Early to mid-Romano-British wares present included a fragment from a flagon or jar in a light-fired fabric, a fine grey ware beaker, a dish in the SFGR fabric (**Fig. 4.8**, 79, D452V) and a bowl with a reeded rim in the GREY1 fabric (**Fig. 4.8**, 74; BREED).

A significant proportion of the assemblage was retrieved from ditch 124, which contained 174 sherds dating to the early to mid-2nd century AD. Notable were a bowl with a bifid rim (B333, **Fig. 4.8**, 77), a dish with an in-turned bead rim (D452, **Fig. 4.8**, 76) and a Roxby 'type A' jar (J105, **Fig. 4.8**, 75) in GREY3 fabric. Also present were a jar with a wedge-shaped rim in GREY1 fabric (CPN, **Fig. 4.8**, 73), a Roxby 'type A' lid-seated jar (J105, **Fig. 4.8**, 69), a sherd from a white ware flagon or jar from ditch 1805 and a burnished oxidised bowl mimicking carinated samian form 29 from ditch 111 (broadly as Gregory 1996, fig. 20.21.1224). Ditch 127 contained 20 sherds, most notably a sharply carinated bowl in the GREY3 fabric dated to the 2nd century AD (B321V, **Fig. 4.8**, 78, Darling and Precious 2014, no. 1192A), a grey ware wide-mouthed bowl

Table 4.12 Station Road fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAMCG	Samian	Central Gaulish	6	0.30%	63	0.14%	23
SAMEG	Samian	East Gaulish	3	0.15%	56	0.12%	33
SAMLG	Samian	La Graufesenque samian ware	1	0.05%	1	0.00%	0
SAMRZ	Samian	Rheinzabern samian ware	1	0.05%	1	0.00%	0
DR20	Amphora	Dr 20 amphorae	1	0.05%	74	0.16%	0
GAU	Amphora	Undifferentiated Gaulish amphorae	4	0.20%	33	0.07%	0
MOMH	Mortaria	Mancetter/Hartshill mortaria	1	0.05%	9	0.02%	5
MOMH3	Mortaria	Mancetter/Hartshill mortaria: Meta sediment trits; Sandy white fabric Leicester MO19	14	0.70%	1001	2.15%	85
MORT	Mortaria	Mortaria, undifferentiated	1	0.05%	35	0.08%	0
MOSPT	Mortaria	Swanpool type	3	0.15%	117	0.25%	4
GFIN	Fine	Miscellaneous fine grey wares	23	1.14%	380	0.82%	11
CC	Fine	Other colour-coated wares	2	0.10%	5	0.01%	0
CC1	Fine	Colour-coated fabric 1	7	0.35%	94	0.20%	70
CC2	Fine	Dark colour-coat and red fabric; Late Roman fabric	2	0.10%	5	0.01%	0
CC3	Fine	Colour-coated with a pale orange fabric	2	0.10%	5	0.01%	11
NVCC1	Fine	Nene Valley Colour-coat- light firing fabric	4	0.20%	20	0.04%	0
SPOXT	Oxidised	Swanpool-type oxidised wares	1	0.05%	2	0.00%	3
CR	Oxidised	Roman cream wares (various)	19	0.94%	386	0.83%	132
KMOX	Oxidised	Kirmington 'Swanpool' type	1	0.05%	31	0.07%	7
OX	Oxidised	Misc. oxidised wares	5	0.25%	105	0.23%	0
OX?	Oxidised	Misc. oxidised wares	5	0.25%	21	0.05%	0
OX1	Oxidised	Oxidised fabric 1	12	0.60%	225	0.48%	16
OXFIN	Oxidised	Fine oxidised fabric	1	0.05%	5	0.01%	0
PARC	Oxidised	Parchment: cream painted red, unknown source/s	1	0.05%	37	0.08%	0
BB1	Reduced	Black burnished 1, unspecified	8	0.40%	85	0.18%	22
GREY	Reduced	Miscellaneous grey wares	31	1.54%	923	1.98%	44
GREY?	Reduced	Miscellaneous grey wares	1	0.05%	9	0.02%	0
GREY1	Reduced	Reduced fabric 1	756	37.57%	14120	30.31%	1107
GREY2	Reduced	Reduced fabric 2	15	0.75%	517	1.11%	47
GREY3	Reduced	Reduced fabric 3	164	8.15%	2403	5.16%	202
GREY4	Reduced	Reduced fabric 4	89	4.42%	2666	5.72%	149
GREY5	Reduced	Reduced fabric 5	2	0.10%	91	0.20%	0
GREY8	Reduced	Reduced fabric 8	10	0.50%	218	0.47%	0
GREYB	Reduced	High-fired late Roman grey wares	62	3.08%	2900	6.22%	295
GREYC	Reduced	Coarse grey ware	5	0.25%	189	0.41%	0
GROG	Reduced	Grog-tempered wares	2	0.10%	1462	3.14%	45
GRRO	Reduced	Grey ware with Greensand Quartz	7	0.35%	120	0.26%	15
IAGR	Reduced	Native tradition/transitional gritty wares	85	4.22%	2750	5.90%	68
IAGR?	Reduced	Native tradition/transitional gritty wares	1	0.05%	19	0.04%	2
IAGR1	Reduced	Iron Age tradition 'Gritty': Site fabric 1	36	1.79%	1247	2.68%	40
IAGR2	Reduced	Iron Age tradition 'Gritty': Site fabric 2	247	12.28%	6527	14.01%	345
IAGR3	Reduced	Iron Age tradition 'Gritty': Site fabric 3	22	1.09%	513	1.10%	36
IAGR4	Reduced	Iron Age tradition 'Gritty': Site fabric 4	91	4.52%	2422	5.20%	77
IASA?	Reduced	IA type sandy wares	1	0.05%	8	0.02%	0
IASA1	Reduced	Iron Age Sandy: Site fabric 1	6	0.30%	198	0.42%	50
IASA2	Reduced	Iron Age Sandy: Site fabric 2	2	0.10%	105	0.23%	11

Fabric code	Fabric group	Fabric details	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
LCQU	Reduced	Late Roman coarse quartz gritted	1	0.05%	9	0.02%	0
NELGR1	Reduced	North East Lincolnshire Early Roman wheel-made 1	10	0.50%	240	0.52%	27
NWLGR	Reduced	North-west Lincolnshire grey ware	4	0.20%	143	0.31%	10
SFGR	Reduced	South Ferriby grey ware	10	0.50%	392	0.84%	30
CALGS	Calcareous	Sparry calcite gritted	8	0.40%	263	0.56%	24
DWNEL	Calcareous	Dales ware – North East Lincolnshire	4	0.20%	62	0.13%	35
DWSHT	Calcareous	Dales ware type	101	5.02%	1379	2.96%	78
DWSHT?	Calcareous	Dales ware type	1	0.05%	10	0.02%	0
IASH	Calcareous	Native tradition shell-tempered	1	0.05%	107	0.23%	7
IASH?	Calcareous	Native tradition shell-tempered	1	0.05%	7	0.02%	0
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	38	1.89%	450	0.97%	15
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	10	0.50%	141	0.30%	46
IASH3	Calcareous	Iron Age Shell Gritted: Site fabric 3	1	0.05%	39	0.08%	0
IASH5	Calcareous	Iron Age Shell Gritted: Site fabric 5	1	0.05%	14	0.03%	0
IASH7	Calcareous	Iron Age Shell Gritted: Site fabric 7	11	0.55%	340	0.73%	32
SHEL	Calcareous	Miscellaneous undifferentiated shell-tempered	26	1.29%	408	0.88%	20
VESIC	Shell?	Vesicular fabric	1	0.05%	1	0.00%	0
ETW	Rock temper	Erratic pebbles broken up as temper	4	0.20%	28	0.06%	11
ETW2	Rock temper	Erratic pebbles broken up as temper	6	0.30%	162	0.35%	0
ETW2C	Rock temper	Erratic pebbles broken up as temper, coarser version of ETW2	1	0.05%	103	0.22%	0
IAGROG?	Grog	Iron Age grog-tempered wares	1	0.05%	4	0.01%	0
IAGROG1	Grog	Iron Age grog gritted wares: Site fabric 1	2	0.10%	63	0.14%	0
MISC	Misc.	Misc. uncategorised	4	0.20%	19	0.04%	0
FCLAY	Fired clay	Fired clay	2	0.10%	3	0.01%	0

and a sherd from a shell-gritted jar that dated this group to the 3rd century AD. Local grey wares (GREY1, GREY3) were present, including a bowl with a sharply carinated form commonly found on sites in northern Lincolnshire (B321; Webster 1949, fig 14.72).

A small number of colour-coated sherds were recorded; a beaker with a corniced rim (CC1) and another with an everted rim (CC3) may have both dated to the mid- to late 2nd century AD. A similar range of native tradition wares and grey ware dating to the 2nd century were present, including an unusual shell-gritted handled jar or flagon in IAGR2 fabric (**Fig. 4.8**, 68).

Pottery from this phase that could be dated to the 3rd century AD or later included shell-gritted Dales ware jars, a wide-mouthed bowl (BWM3), a dish with a plain rim in GREY4 fabric, a straight-sided bead and flanged bowl (BFB) and a dish with a plain rim (DPR) in burnished GREYB fabric, a sherd from a Swanpool-type mortarium and a sherd from a Swanpool-type oxidised ware vessel.

A fragment from a grey ware cheese press, broadly of Romano-British date, was retrieved from ditch 1264.

A notable group came from ditch 123, which contained a sherd from a sparry mineral calcite-gritted Huntcliff jar, suggesting the feature may have remained open until the later 4th to 5th century AD. Other sherds dating from the 3rd to 4th century AD included shell-gritted Dales ware jars, a colour-coated Castor box (BX, **Fig. 4.8**, 71), a plain rimmed dish and a Dales-type jar in GREY1 fabric, a bowl in a local late Romano-British oxidised fabric (KMOX) and a Swanpool-type mortarium. Also present was the local 'East Midlands Burnished ware'-type fabric GREYB, which was well represented

Table 4.13 Station Road forms summary

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
A	Amphora	Unclassified form	5	0.25%	107	0.23%	0
BK	Beaker	Unclassified form	11	0.55%	49	0.11%	0
BK?	Beaker	Unclassified form	1	0.05%	2	0.00%	0
BKCAR	Beaker	Carinated	2	0.10%	17	0.04%	0
BKCOR	Beaker	Cornice rim	8	0.40%	239	0.51%	13
BKEV	Beaker	Everted rim	8	0.40%	71	0.15%	88
BKFN	Beaker	Funnel necked; form unknown	1	0.05%	3	0.01%	0
BKFOS	Beaker	Folded scaled beaker	4	0.20%	12	0.03%	0
BKSC	Beaker	Scaled decoration (not folded)	2	0.10%	6	0.01%	0
B	Bowl	Unclassified form	19	0.95%	671	1.44%	39
B?	Bowl	Unclassified form	1	0.05%	18	0.04%	0
B321	Bowl	As Webster 1949 fig. 14.72	4	0.20%	37	0.08%	13
B321V	Bowl	As Coppack 1973 fig. 5.11	1	0.05%	103	0.22%	7
B333	Bowl	Bifid rim as Gillam 301	4	0.20%	50	0.11%	18
B334	Bowl	Carinated jar/bowl (flat cordon as Darling and Precious 2014, 1157–9)	12	0.60%	140	0.30%	7
B36	Bowl	Copy of samian form 36	1	0.05%	13	0.03%	11
BCAR	Bowl	Carinated	5	0.25%	100	0.21%	11
BFB	Bowl	Bead and flange bowl	4	0.20%	141	0.30%	28
BFL	Bowl	Flange-rimmed (eg, Gillam 1970, types 218–220)	12	0.60%	349	0.75%	91
BGR	Bowl	With grooved rim	1	0.05%	12	0.03%	2
BPR	Bowl	Plain-rimmed	1	0.05%	44	0.09%	8
BREED	Bowl	Reeded rim	2	0.10%	36	0.08%	25
BSEG	Bowl	Segmental Gillam 1970 294–5	1	0.05%	21	0.05%	14
BTR	Bowl	Triangular-rimmed (eg, Gillam 1970 types 222–3)	9	0.45%	317	0.68%	86
BFB412	Bowl – large	Bead and flange – large as Darling 1999 fig. 36.369	1	0.05%	92	0.20%	12
BFLL	Bowl – large	Flange-rimmed	1	0.05%	72	0.15%	12
BL	Bowl – large	Large	19	0.95%	1405	3.02%	18
BLD3	Bowl – large	Conical club rim, Buckland et al. 1980, fig. 4.31	1	0.05%	152	0.33%	13
BNAT	Bowl – large	Native tradition bowl, eg, Darling and Precious 2014, no. 700	42	2.09%	2860	6.14%	225
BNATV	Bowl – large	Native tradition bowl variant of Darling and Precious 2014, no. 700	1	0.05%	107	0.23%	7
BNNK	Bowl – large	Large bowl with no neck	1	0.05%	67	0.14%	16
BTRL	Bowl – large	Triangular-rimmed	1	0.05%	1418	3.04%	45
BWM	Bowl – large	Wide-mouthed; Darling and Precious 2014, no 1225–30	16	0.80%	519	1.11%	105
BWM1	Bowl – large	Wide-mouthed; Darling and Precious 2014, no.1225–7	22	1.10%	947	2.03%	113
BWM2	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1228	7	0.35%	339	0.73%	57
BWM3	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1229–30	18	0.90%	1703	3.66%	143
BD	Bowl/dish	-	58	2.89%	1429	3.07%	27
BDTR	Bowl/dish	Triangular rim (eg, Gillam 1970, types 222–3)	1	0.05%	8	0.02%	8
CLSD	Closed	Form	282	14.04%	5760	12.37%	0
27	Cup	Samian form, see Webster 1996	1	0.05%	9	0.02%	15
33	Cup	Samian form, see Webster 1996	3	0.15%	56	0.12%	33
18/31	Dish	Samian form, see Webster 1996	3	0.15%	39	0.08%	2
31	Dish	Samian form, see Webster 1996	1	0.05%	8	0.02%	6
D	Dish	Unclassified form	3	0.15%	119	0.26%	31

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
D452	Dish	as Gillam 1970, 337 GB Cam 16 copy	3	0.15%	85	0.18%	25
D452V	Dish	In-turned bead rim	1	0.05%	50	0.11%	12
DGR	Dish	Grooved rim	4	0.20%	87	0.19%	25
DPR	Dish	Plain rim	21	1.05%	560	1.20%	132
FR	Flagon	Ringed	6	0.30%	116	0.25%	100
FTR	Flagon	Ringed dominant top ring	1	0.05%	21	0.05%	32
FJ	Flagon/jar	Unclassified form	10	0.50%	258	0.55%	15
CPN	Jar	Native tradition	16	0.80%	511	1.10%	135
CPN141	Jar	Native tradition, Darling and Jones 1988, fig. 7.53	2	0.10%	56	0.12%	16
J	Jar	Unclassified form	51	2.54%	1114	2.39%	50
J?	Jar	Unclassified form	1	0.05%	51	0.11%	0
J105	Jar	Lid-seated; as Rigby and Stead 1976, Roxby form A	26	1.29%	467	1.00%	133
JBR	Jar	Bead-rimmed	2	0.10%	23	0.05%	4
JCH	Jar	Channel rim – Iron Age type	1	0.05%	73	0.16%	14
JCOR	Jar	Cordoned	2	0.10%	27	0.06%	0
JCUR	Jar	Curved	2	0.10%	11	0.02%	4
JDW	Jar	Dales ware	10	0.50%	129	0.28%	45
JDW1	Jar	Dales ware, as Gillam 1970, 157	9	0.45%	123	0.26%	57
JDW2	Jar	Dales ware, as Monaghan JD2 form	2	0.10%	35	0.08%	14
JEV	Jar	Everted rim	28	1.39%	450	0.97%	176
JEVC	Jar	Everted rim – curved as Gillam 1970, type 135	9	0.45%	103	0.22%	29
JEVS	Jar	Everted rim – stubby	10	0.50%	146	0.31%	44
JHER	Jar	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	9	0.45%	306	0.66%	73
JHUN	Jar	Huntcliff	4	0.20%	242	0.52%	20
JIR	Jar	In-turned rim	1	0.05%	16	0.03%	6
JL	Jar	Large	49	2.44%	2793	5.99%	58
JLH	Jar	Lug-handled	22	1.09%	287	0.62%	28
JLS	Jar	Lid-seated	5	0.25%	113	0.24%	46
JNK	Jar	Necked	12	0.60%	135	0.29%	87
JNN	Jar	Narrow-necked	1	0.05%	15	0.03%	7
JRUST	Jar	Rusticated	3	0.15%	43	0.09%	0
JS	Jar	Storage	18	0.89%	1377	2.96%	11
JBK	Jar/Beaker	Small jar or beaker	5	0.25%	137	0.29%	15
JBKEV	Jar/Beaker	Everted rim	1	0.05%	18	0.04%	17
JBKFO	Jar/Beaker	Folded; indeterminate type	2	0.10%	20	0.04%	0
JBKNK	Jar/Beaker	Necked	4	0.20%	48	0.10%	29
JB	Jar/Bowl	Unclassified form	31	1.54%	618	1.33%	38
JBCAR	Jar/Bowl	Carinated	1	0.05%	3	0.01%	0
JBEV	Jar/Bowl	Everted rim	15	0.75%	539	1.16%	64
JBHER	Jar/Bowl	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	5	0.25%	294	0.63%	23
JBL	Jar/Bowl	Large	169	8.40%	5721	12.28%	47
JBNAT	Jar/Bowl	Native tradition	5	0.25%	152	0.33%	4
JBNK	Jar/Bowl	Necked	56	2.78%	974	2.09%	141
L	Lid	Unclassified form	1	0.05%	17	0.04%	7
BX	Misc	Castor box	1	0.05%	58	0.12%	50
CHP	Misc	Cheese press	1	0.05%	32	0.07%	0
CRUC	Misc	Crucible	2	0.10%	32	0.07%	11

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
M	Mortaria	Unclassified form	4	0.20%	145	0.31%	7
MHH	Mortaria	Hammerheads as Gillam 1970, 279–84	1	0.05%	16	0.03%	2
MHK	Mortaria	Hook-rimmed as Gillam 1970, 237–45	14	0.70%	1001	2.15%	85
OPEN	Open	Form	4	0.20%	72	0.15%	0
-	Unknown	Form uncertain	750	37.28%	7209	15.47%	3

and included sherds from large bowls (BLD3 and BWM3), plain rimmed dishes (DPR) and straight-sided bead and flanged bowls. Shell-gritted Dales ware jars occurred along with sherds of the coarse quartz-gritted LCQU fabric and the GREY5 fabric typically found in deposits dating to the late 4th century AD. A sherd with sparry mineral calcite grits and probably dating to the 4th century AD was also noted. Ditch 105 included Dales ware along with a sherd from a colour-coated beaker, a grey ware dish with a plain rim, and a rim sherd from a sparry mineral calcite-gritted Huntcliff jar, which dated the group to the late 4th to early 5th century AD.

Unphased

A further 276 sherds (5.657 kg, 5.27 RE) were recovered from unphased contexts and represented a maximum of 233 vessels. A notable vessel was a rim and spout fragment from a Mancetter/Hartshill mortarium stamped by the potter Minomelus (**Figure 4.8**, 81).

Illustrated sherds

Figure 4.7–4.8

58. Jar or bowl with everted rim in a wheel-finished transitional gritty fabric (as Rigby and Stead 1976, fig. 75.13; also Darling and Jones 1988, fig. 7.52). *Fabric IAGR2, Form JBEV, ditch 1068 (group 1801), context 1067, also unstratified context 1043*
59. Channel-rimmed jar in a gritty native tradition fabric with stabbed decoration (similar to Rigby and Stead 1976, fig. 76.35). *Fabric IAGR4, Form JCH, ditch 1592 (group 125), context 1590*
60. Native tradition cook pot in a sandy transitional fabric, wheel-finished. *Fabric IASA1, Form CPN, ditch 1262, context 1261*
61. Native tradition cook pot in an Iron Age fabric, handmade. *Fabric IASA1, Form CPN, ditch 1669 (feature not illustrated), context 1670*
62. Native tradition cook pot in a shelly Iron Age handmade fabric with slight channel rim. *Fabric IASH1, Form CPN, ditch 1669 (feature not illustrated), context 1670*
63. Handmade jar or bowl with an everted rim and multiple cordon decoration in an Iron Age fine shell-gritted fabric, as example from Dragonby (Elsdon 1996b, no. 1638, ceramic stage 7). Ruminant adipose residue was retrieved from this vessel. *Fabric IASH2, Form JBEV, ditch 1669 (feature not illustrated), context 1670, ORA sample HRN14*
64. Large ring-necked flagon in a light-fired micaceous fabric, probably a Lincoln product (form as Darling and Precious 2014, no. 313). *Fabric CR, Form FR, ditch 1011 (group 109), context 1009*
65. Dales ware jar, probably dating to the 3rd or 4th century AD. *Fabric DWNEL, Form, JDW1, ditch 1406 (group 130), context 1405*
66. Grey ware necked jar or bowl with cordon decoration. The organic residue samples from this vessel predominantly provided evidence for ruminant dairy with some ruminant adipose lipids, suggesting that the vessel may have had a variety of uses. *Fabric GREY1, Form JBNK, ditch 1105 (group 109), contexts 1103 & 1104, also ditch 1108 (group 13), context 1107, also ditch 1111 (group 1804), context 1109, ORA samples HRN02, HRN03, HRN04, HRN05*
67. Large bowl in a native tradition fabric (BFB412, as Darling 1999, fig. 36.369). Ruminant adipose lipids were recorded from this vessel. *Fabric IAGR4, Form BFB412, ditch 1359 (feature not illustrated), context 1358, ORA sample HRN06*
68. Flagon or handled jar in a gritty native tradition fabric. *Fabric IAGR2, Form FJ, ditch 1447, context 1446*
69. Lid-seated jar as Roxby Type A (Rigby and Stead 1976) in a gritty native tradition fabric. Ruminant adipose lipids in the highest concentration from amongst the samples from this site. Some traces of pig fats were noted. *Fabric IAGR2, Form J105, ditch 1643 (group 124), context 1644, ORA sample HRN09*
70. Carinated necked drinking bowl, possibly wheel-finished (broadly as Darling and Jones 1988, fig. 5.9) in a sandy Iron Age fabric. *Fabric IASA2, Form BCAR, ditch 1054 (group 128), context 1053*

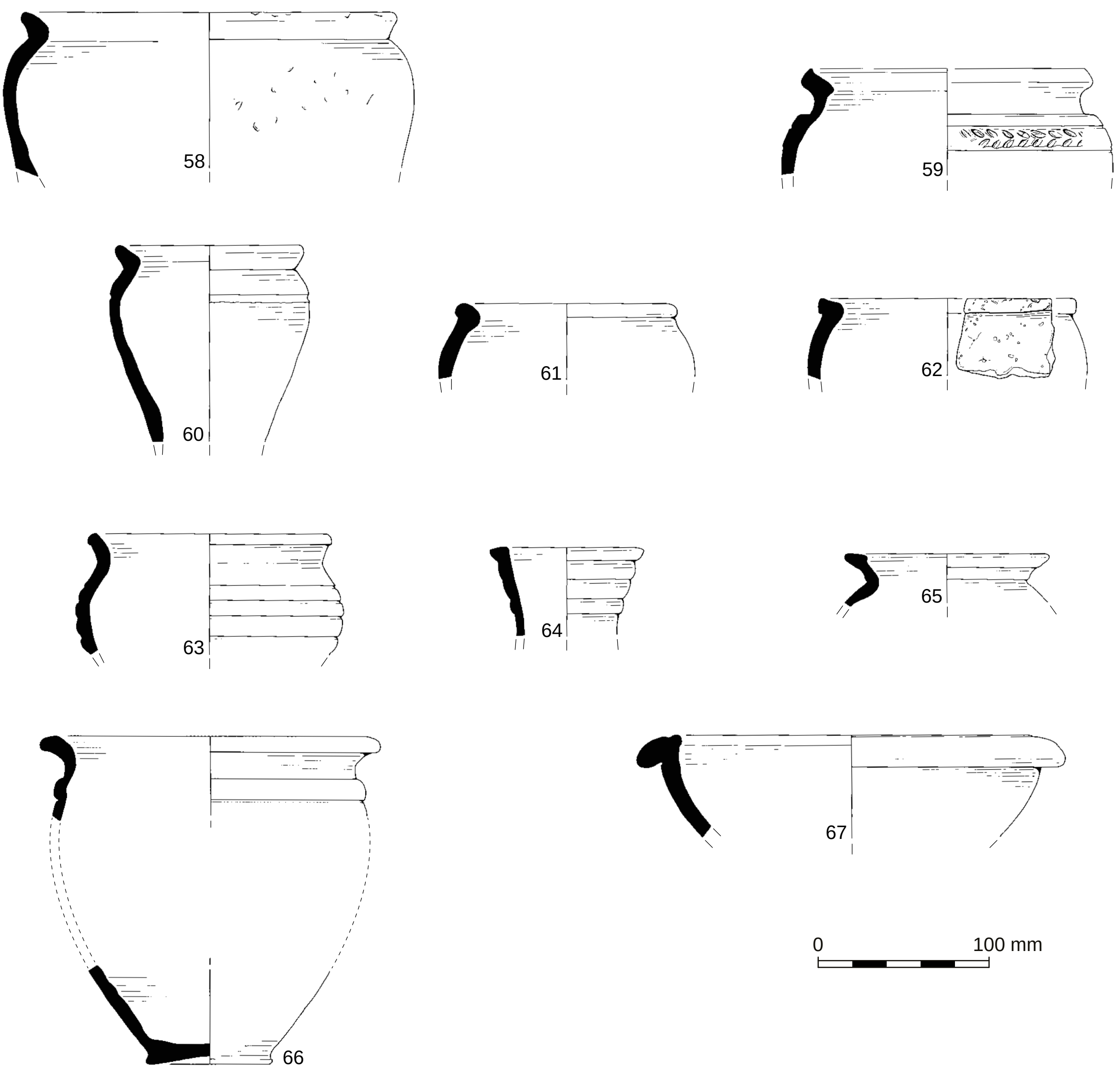


Figure 4.7 Iron Age and Roman pottery (58–67) from Station Road

71. Small example of a rouletted colour-coated Castor box, burnt. *Fabric CC1, Form BX, ditch 1586 (group 129), context 1587*
72. Bowl in a local red self-slipped fabric. *Fabric KMOX, Form B, ditch 1551, context 1552*
73. Grey ware jar. Ruminant adipose residue was retrieved from this vessel, suggesting it was used as a stew pot. *Fabric GREY1, Form CPN, ditch 1643, context 1644, ORA sample HRN13*
74. Grey ware reeded rim bowl. Ruminant adipose lipids were found within this vessel. *Fabric GREY1, Form BREED, ditch 1579 (group 123), context 1578, ORA sample HRN08*
75. Grey ware Roxby Type A lid-seated jar. High concentrations of ruminant adipose residue were found, suggesting the jar functioned for part of its life as a stew pot. *Fabric GREY3, Form J105, ditch 1643, context 1644, ORA sample HRN12*
76. Grey ware dish (Gillam 1970, no. 337). Ruminant adipose residue was recovered from the ORA sample. *Fabric GREY3, Form D452, ditch 1643, context 1644, ORA sample HRN11*
77. Grey ware bowl with bifid rim (Gillam 1970, no. 301). Ruminant dairy fats were recovered from this vessel. *Fabric GREY3, Form B333, ditch 1643, context 1644, ORA sample HRN10*
78. Grey ware bowl (as Darling and Precious 2014, no. 1192A). Ruminant adipose residue was retrieved from this vessel. *Fabric GREY3, Form B321V, ditch 1713 (ditch 127), context 1714, ORA sample HRN16*
79. South Ferriby grey ware dish with in-turned bead rim and burnished wavy line decoration. *Fabric SFGR, Form D452V, ditch 1694 (group 128), context 1695*
80. Mineral calcite-gritted Huntcliff jar. *Fabric CALGS, Form JHUN, ditch 1516, context 1515*
81. Almost complete hook-rimmed mortarium from the Mancetter/Hartshill industries, stamped by potter Minomelus, sandy fabric with meta-sediment trituration grits. *Fabric MOMH3, Form MHK, unstratified context 1013*

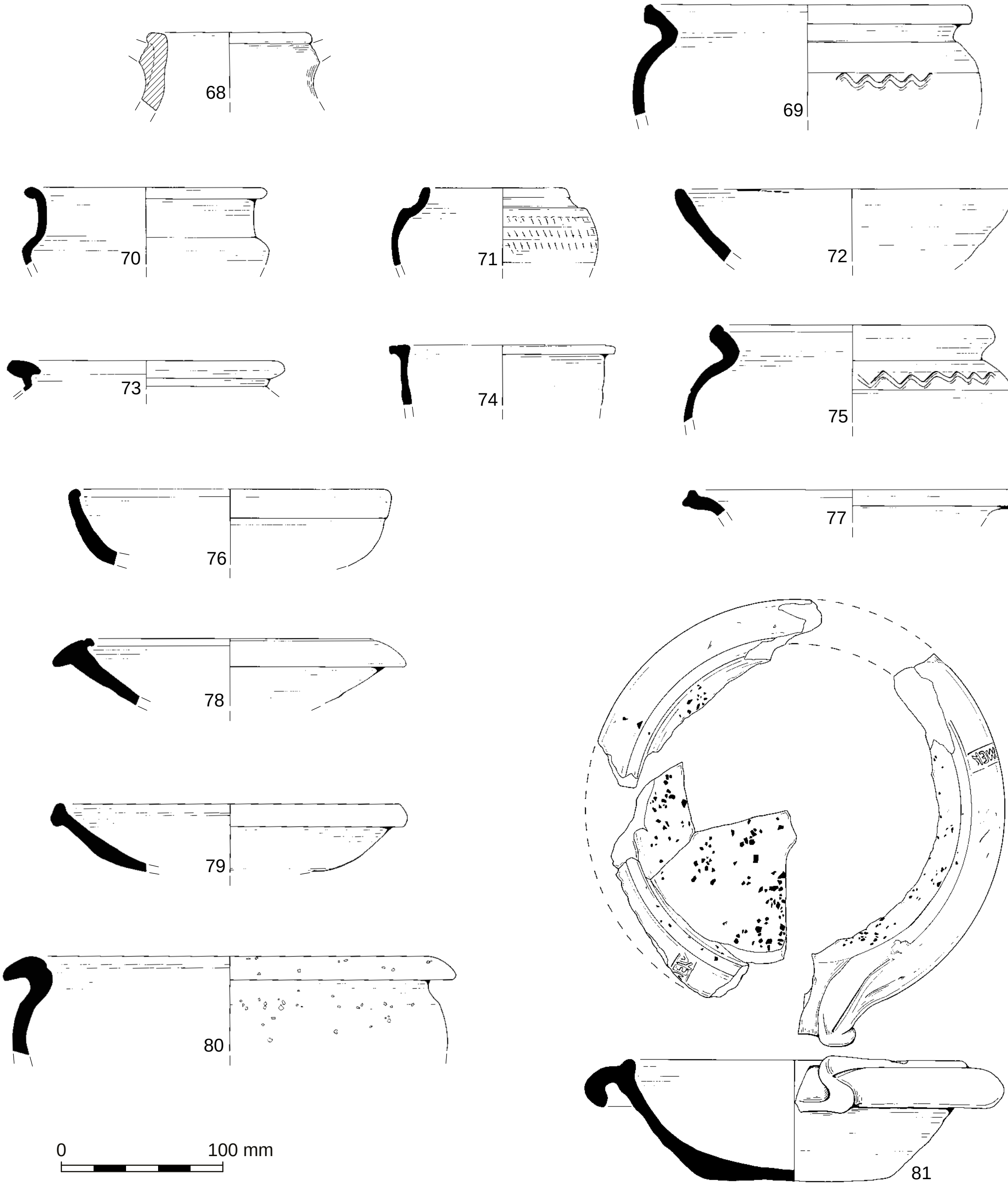


Figure 4.8 Iron Age and Roman pottery (68–81) from Station Road

Westfield Farm

A total of 1797 sherds (40.219 kg, 27.28 RE) were recovered in total from a maximum of 1111 vessels from mitigation and evaluation excavations (**Tables 4.14** and **4.15**). The site lay in an area of Romano-British activity near to South Killingholme parish subsequently investigated by Allen Archaeology as part of the Hornsea Project Two scheme, where similar pottery of Late Iron Age to 3rd century AD date has been recovered in smaller quantities (Rowlandson and Fiske 2020a).

The majority of the activity on the Westfield Farm site appeared to be Late Iron Age (1st century AD) to earlier 4th century AD in range. A single rock-gritted, possibly Early or Middle Iron Age jar with an in-turned rim (ditch 8027) was the only vessel that could be considered to have an earlier date, in the 1st millennium BC. Pottery from the

Iron Age phase consisted of a Late Iron Age to early Romano-British group, including evidence suggesting activity on the site before, after and probably during the Roman conquest in the 1st century AD, with a number of unusual vessels of this date present. The early Romano-British phase group suggested activity may have continued on site during the 2nd century AD. The pottery from the late Romano-British phase ditch systems and pits consisted of small quantities of Romano-British pottery from a range of features, suggesting a more basic rural suite of pottery was in use on the site during the 3rd to 4th centuries AD.

Iron Age

Some 24 sherds (0.617 kg, 0.21 RE) were recovered. As most of the sherds were small and none of the features yielded more than 14 sherds, there is a limited amount that can be said about the pottery from this phase. Pottery was retrieved from ring gully 4702, which is dated to the Late Iron Age on the basis of a sherd from a fine shell-gritted necked jar; ditch 8271 contained a single Late Iron Age sand-gritted sherd; pit 4803 contained a single Late Iron Age shell-gritted sherd; and ditch 8289 yielded rock-gritted and shell-gritted sherds that could be broadly dated to the Iron Age. A handmade small vessel, initially thought to be a crucible (**Fig. 4.9**, 83) from ditch 8321 was rejected as such by the metallurgical specialist (Andrews this volume). It is possible that these small vessels represent similar small vessel types illustrated from Dragonby ceramic stage 1 (Elsdon 1996b, fig. 20.7).

The earliest Iron Age vessel, a large rock-gritted jar or bowl (**Fig. 4.9**, 82), was retrieved from ditch 8027. The vessel has a similar open profile to examples from Heathery Burn Cave (Challis and Harding 1975, fig. 45.17) and the British Museum Yorkshire Settlements project, where Rigby classified them as 'non-spill bowls or jars' which she dates to 900–600 BC. A vessel with a broadly similar form has been illustrated by Elsdon from Weelsby Avenue, Grimsby (Elsdon 1996a, C.6A; Rowlandson and Fiske in prep.).

Early Romano-British

There were 225 sherds (4.014 kg, 1.86 RE) from this phase. The majority of the contexts could be dated from the late 1st to mid-2nd century AD, but it was notable that there was only a single rock-gritted sherd (ETW2) and very little handmade shell-gritted IASH1 fabric from this group. Only three sherds of fine shell-gritted Late Iron Age fabrics were present (IASH3 and IASH5). Sherds from two fine sand-gritted Late Iron Age vessels (**Fig. 4.9**, 84) were retrieved from pits 4503 and 4508, including a large globular jar decorated with burnished line decoration similar to examples published from Dragonby (Elsdon 1996b, fig. 19.27.143). It is possible that these impressive vessels may have had a specialist function for brewing or display as they are unusual on rural sites; the majority of large jars of this period show no signs of decoration (cf. discussion of decorative Saxon vessels by Perry 2011).

Ditch 8312 contained a few rock-gritted sherds, from a handmade shell-gritted jar with a triangular rim, fine shell-gritted jars including an ovoid jar with a footring base, a necked jar and a jar with an everted rim and double-toothed rouletting and stamped decoration (**Fig. 4.9**, 85, Elsdon 1996b, rouletting style 22, roundel type 1). These sherds could be dated to the Late Iron Age prior to the Roman conquest. A small number of sherds in the transitional IAGR2 shell-gritted fabric would suggest a date in the middle of the 1st century AD for this feature.

Transitional wares were well represented, including jars with everted rims in the IAGR2 fabric and a lid-seated jar and jars with hooked everted rims in the IAGR4 fabric. A single sherd from a samian form 27 cup was the only Romano-British fine ware vessel present. A basal sherd from a white ware flagon was recorded from gully 8306. Small quantities of grey ware were identified including South Ferriby grey ware from pit 8001 and necked jars in the GREY1 fabric. A lipped bowl and a dish with a grooved rim in the GREY1 fabric were also retrieved from pit 8001, suggesting a mid-2nd century AD date. A single shell-gritted Dales ware sherd from ditch 8306 of 3rd century AD date or later was probably intrusive within this phase.

Table 4.14 Westfield Farm fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAM	Samian	Undifferentiated	1	0.06%	7	0.02%	12
SAMCG	Samian	Central Gaulish	5	0.28%	64	0.16%	4
SAMEG	Samian	East Gaulish	1	0.06%	13	0.03%	0
SAMMV	Samian	Les Martres-de-Veyre samian (inclusion-less)	1	0.06%	42	0.10%	13
SAMRZ?	Samian	Rheinzabern samian ware	1	0.06%	2	0.00%	2
SAMTR	Samian	Trier samian (Trier I and Trier II)	1	0.06%	10	0.02%	0
DR20	Amphora	Dr 20 amphorae	1	0.06%	101	0.25%	0
MOCO	Mortaria	Colchester mortaria	1	0.06%	54	0.13%	7
MOMH2	Mortaria	Mancetter/Hartshill mortaria: Meta sediment trits; Leicester fabric MO4	1	0.06%	10	0.02%	0
MONV?	Mortaria	Nene Valley mortaria	1	0.06%	72	0.18%	11
MORT	Mortaria	Mortaria; undifferentiated	1	0.06%	17	0.04%	0
MOSPT	Mortaria	Swanpool type	1	0.06%	138	0.34%	17
GFIN	Fine	Miscellaneous fine grey wares	6	0.33%	84	0.21%	0
CC1	Fine	Colour-coated fabric 1	9	0.50%	42	0.10%	5
CC2	Fine	Dark colour-coat and red fabric, Late Roman fabric	25	1.39%	249	0.62%	0
CR	Oxidised	Roman cream wares (various)	9	0.50%	214	0.53%	15
MICA	Oxidised	Mica-dusted	1	0.06%	1	0.00%	0
OX	Oxidised	Misc. oxidised wares	3	0.17%	15	0.04%	4
OX?	Oxidised	Misc. oxidised wares	9	0.50%	65	0.16%	0
OX1	Oxidised	Oxidised fabric 1	7	0.39%	529	1.32%	148
BB1	Reduced	Black burnished 1, unspecified	3	0.17%	30	0.07%	0
BB2?	Reduced	Black burnished 2	5	0.28%	120	0.30%	16
GREY	Reduced	Miscellaneous grey wares	29	1.61%	583	1.45%	42
GREY?	Reduced	Miscellaneous grey wares	7	0.39%	109	0.27%	8
GREY1	Reduced	Reduced fabric 1	435	24.21%	10760	26.75%	899
GREY2	Reduced	Reduced fabric 2	7	0.39%	213	0.53%	43
GREY3	Reduced	Reduced fabric 3	85	4.73%	1739	4.32%	123
GREY4	Reduced	Reduced fabric 4	61	3.39%	2846	7.08%	226
GREY8	Reduced	Reduced fabric 8	8	0.45%	213	0.53%	19
GREYB	Reduced	High-fired late Roman grey wares	52	2.89%	1456	3.62%	249
GREYC?	Reduced	Coarse grey ware	1	0.06%	27	0.07%	0
IAGR	Reduced	Native tradition/transitional gritty wares	3	0.17%	46	0.11%	0
IAGR?	Reduced	Native tradition/transitional gritty wares	1	0.06%	6	0.01%	0
IAGR1	Reduced	Iron Age tradition ‘Gritty’: Site fabric 1	13	0.72%	298	0.74%	18
IAGR2	Reduced	Iron Age tradition ‘Gritty’: Site fabric 2	181	10.07%	4373	10.87%	99
IAGR2?	Reduced	Iron Age tradition ‘Gritty’: Site fabric 2	1	0.06%	8	0.02%	0
IAGR3	Reduced	Iron Age tradition ‘Gritty’: Site fabric 3	18	1.00%	391	0.97%	0
IAGR4	Reduced	Iron Age tradition ‘Gritty’: Site fabric 4	85	4.73%	2222	5.52%	56
IAGR5	Reduced	Iron Age tradition ‘Gritty’: Site fabric 5	1	0.06%	11	0.03%	0
IASA1	Reduced	Iron Age Sandy: Site fabric 1	2	0.11%	19	0.05%	0
IASA2	Reduced	Iron Age Sandy: Site fabric 2	9	0.50%	360	0.90%	0
LCQU	Reduced	Late Roman coarse quartz gritted	2	0.11%	46	0.11%	0
ROXGR	Reduced	Roxby grey ware	2	0.11%	20	0.05%	8
SFGR	Reduced	South Ferriby grey ware	15	0.83%	311	0.77%	44
CALGS	Calcareous	Sparry calcite gritted	13	0.72%	172	0.43%	16
DWSHT	Calcareous	Dales ware type	398	22.15%	7056	17.54%	450
IASH	Calcareous	Native tradition shell-tempered	1	0.06%	2	0.00%	0

Fabric code	Fabric group	Fabric details	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	86	4.79%	1728	4.30%	18
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	10	0.56%	93	0.23%	0
IASH3	Calcareous	Iron Age Shell Gritted: Site fabric 3	1	0.06%	12	0.03%	0
IASH4	Calcareous	Iron Age Shell Gritted: Site fabric 4	1	0.06%	10	0.02%	7
IASH5	Calcareous	Iron Age Shell Gritted: Site fabric 5	20	1.11%	259	0.64%	19
IASH7	Calcareous	Iron Age Shell Gritted: Site fabric 7	66	3.67%	1389	3.45%	33
SHEL	Calcareous	Miscellaneous undifferentiated shell-tempered	23	1.28%	507	1.26%	47
SHEL?	Calcareous	Shell gritted	1	0.06%	2	0.00%	0
ETW	Rock temper	Erratic pebbles broken up as temper	1	0.06%	12	0.03%	0
ETW2	Rock temper	Erratic pebbles broken up as temper	35	1.95%	545	1.36%	8
ETW2C	Rock temper	Erratic pebbles broken up as temper, coarser version of ETW2	5	0.28%	296	0.74%	7
ETW4	Rock temper	Erratic pebbles broken up as temper, finer than ETW2	8	0.45%	95	0.24%	35
IAGROG	Grog	Iron Age grog-tempered wares	1	0.06%	17	0.04%	0
IAGROG2	Grog	Iron Age grog gritted wares, Site fabric 2	1	0.06%	8	0.02%	0
MISC	Misc.	Misc. uncategorised	4	0.22%	22	0.05%	0
FCLAY	Fired clay	Fired clay	3	0.17%	12	0.03%	0
FCLAY?	Fired clay	Fired clay	8	0.45%	46	0.11%	0

Pits 4437 and 4503 and ditches 4952 and 8302 all contained shell-gritted handmade wares and native tradition wares. Single grey ware sherds were retrieved from pit 8303, posthole 8328, ditch 20039 and ditch 8304.

Pit 8001 was the only feature that had a significant proportion of grey ware with a lower proportion of native tradition ware. Ditch 8276 contained a range of grey ware and native tradition wares that may have dated to the 2nd century AD. Gully 20012 also contained a small quantity of grey ware and native tradition ware sherds.

Indeterminate early/late Romano-British
A total of 138 sherds (2.216 kg, 1.49 RE) were recovered from deposits that were phased as Romano-British but could not be assigned to early or late Romano-British phases.

Roundhouse 4740 contained sherds from rock-gritted handmade jars, handmade shell-gritted jars, two grey ware sherds and a sherd from a native tradition jar with a wedge-shaped jar in the IAGR1 fabric. An early Romano-British date for the infilling of this feature would appear likely. A single shell-gritted sherd from gully 8315 may date to the Iron Age or Romano-British period.

Ditch groups 8336 and 8337 contained assemblages of predominantly early Romano-British pottery, including white ware flagons, a fine grey ware narrow-necked jar, a dish with an in-turned lip (Gillam 1970, type 337), native tradition shell-gritted jars and small fragments from a handmade miniature bowl or crucible (**Fig. 4.9**, 87) that did not produce evidence of metalworking residue. This vessel may be residual in this context and similar to vessel 83 (**Fig. 4.9**).

Native tradition ware sherds, grey ware everted rim jars, a lipped bowl and a Roxby form A lid-seated jar were recovered from ditches 8286 and 8277.

Late Romano-British
A total of 973 sherds (22.794 kg, 17.64 RE) were recovered. Many of the features from this phase yielded only small assemblages of fewer than 20 sherds. This fits the pattern of pottery deposition seen on many rural sites from Lincolnshire, where ditches appear to contain small quantities of pottery (eg, Rowlandson and Fiske 2016; Rowlandson *et al.*

Table 4.15 Westfield Farm forms summary

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
A	Amphora	Unclassified form	1	0.06%	101	0.25%	0
BK	Beaker	Unclassified form	11	0.61%	34	0.08%	0
BKBAG	Beaker	Baggy	2	0.11%	10	0.02%	0
BKFN	Beaker	Funnel necked; form unknown	25	1.39%	249	0.62%	0
BKFO	Beaker	Folded; indeterminate type	1	0.06%	5	0.01%	0
37	Bowl	Samian form, see Webster 1996	1	0.06%	42	0.10%	13
B	Bowl	Unclassified form	11	0.61%	490	1.22%	7
B333	Bowl	Bifid rim as Gillam 1970, 301	2	0.11%	15	0.04%	9
B334	Bowl	Carinated jar/bowl (flat cordon as Darling and Precious 2014, 1157–9)	2	0.11%	38	0.09%	14
B38	Bowl	Imitation samian 38	1	0.06%	245	0.61%	100
B405	Bowl	As Darling and Precious 2014, no. 389	1	0.06%	26	0.06%	15
B428	Bowl	As Darling 1999, fig. 41 533	1	0.06%	7	0.02%	4
BCAR	Bowl	Carinated	8	0.45%	270	0.67%	26
BFB	Bowl	Bead and flange bowl	12	0.67%	624	1.55%	79
BFL	Bowl	Flange-rimmed (eg, Gillam 1970, types 218–220)	15	0.83%	385	0.96%	104
BG225	Bowl	Rounded as Gillam 1970, no 225	2	0.11%	66	0.16%	16
BPR	Bowl	Plain-rimmed	1	0.06%	40	0.10%	14
BSEG	Bowl	Segmental Gillam 1970, 294–5	1	0.06%	21	0.05%	7
BTR	Bowl	Triangular-rimmed (eg, Gillam 1970, types 222–3)	4	0.22%	100	0.25%	25
BL	Bowl – large	Large	18	1.00%	1207	3.00%	8
BNAT	Bowl – large	Native tradition bowl, eg, Darling and Precious 2014, no. 700	5	0.28%	185	0.46%	21
BWM	Bowl – large	Wide-mouthed; Darling and Precious 2014 No 1225-30	3	0.17%	114	0.28%	29
BWM1	Bowl – large	Wide-mouthed; Darling and Precious 2014, no.1225-7	8	0.45%	419	1.04%	101
BWM2	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1228	2	0.11%	104	0.26%	15
BWM3	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1229-30	19	1.06%	1216	3.02%	111
BD	Bowl/dish	-	29	1.61%	1132	2.81%	10
CLSD	Closed	Form	274	15.25%	5921	14.72%	0
27	Cup	Samian form – see Webster 1996	1	0.06%	9	0.02%	0
C	Cup	Unclassified form	1	0.06%	7	0.02%	12
31	Dish	Samian form– see Webster 1996	2	0.11%	50	0.12%	4
31?	Dish	Samian form – see Webster 1996	1	0.06%	10	0.02%	0
D	Dish	Unclassified form	4	0.22%	113	0.28%	23
D452	Dish	as Gillam 337 GB Cam 16 copy	1	0.06%	11	0.03%	6
DFL	Dish	Flange-rimmed (eg, Gillam 1970, types 218–220)	2	0.11%	46	0.11%	13
DGR	Dish	Grooved rim	8	0.45%	174	0.43%	28
DPR	Dish	Plain rim	24	1.34%	1071	2.66%	185
FJ	Flagon/jar	Unclassified form	7	0.39%	183	0.46%	0
CPN	Jar	Native tradition	13	0.72%	129	0.32%	30
J	Jar	Unclassified form	48	2.67%	942	2.34%	41
J105	Jar	Lid-seated; as Rigby and Stead 1976, Roxby form A	11	0.61%	180	0.45%	76
JBR	Jar	Bead-rimmed	1	0.06%	24	0.06%	7
JCR	Jar	Collared rim as Swanpool type C40–1	3	0.17%	66	0.16%	18
JCUR	Jar	Curved	13	0.72%	172	0.43%	16
JDW	Jar	Dales ware	4	0.22%	54	0.13%	21

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
JDW1	Jar	Dales ware, as Gillam 157	164	9.13%	2780	6.91%	417
JDW2	Jar	Dales ware, as Monaghan JD2 form	6	0.33%	237	0.59%	15
JEV	Jar	Everted rim	16	0.89%	285	0.71%	95
JEVC	Jar	Everted rim – curved as Gillam type 135	4	0.22%	99	0.25%	68
JEVS	Jar	Everted rim – stubby	2	0.11%	66	0.16%	16
JHER	Jar	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	3	0.17%	51	0.13%	18
JL	Jar	Large	73	4.06%	4910	12.21%	166
JLH	Jar	Lug-handled	1	0.06%	91	0.23%	0
JLS	Jar	Lid-seated	11	0.61%	179	0.45%	62
JNK	Jar	Necked	49	2.73%	932	2.32%	155
JNN	Jar	Narrow-necked	9	0.50%	238	0.59%	60
JRUST	Jar	Rusticated	7	0.39%	140	0.35%	0
JS	Jar	Storage	2	0.11%	258	0.64%	0
JTR	Jar	Triangular rim	5	0.28%	165	0.41%	28
JBK	Jar/beaker	Small jar or beaker	1	0.06%	26	0.06%	0
JBKEV	Jar/beaker	Everted rim	2	0.11%	13	0.03%	16
JB	Jar/bowl	Unclassified form	45	2.50%	655	1.63%	92
JBCAR	Jar/bowl	Carinated	2	0.11%	19	0.05%	0
JBEV	Jar/bowl	Everted rim	12	0.67%	331	0.82%	30
JBHER	Jar/bowl	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	3	0.17%	200	0.50%	29
JBL	Jar/bowl	Large	97	5.40%	4407	10.96%	18
JBNK	Jar/bowl	Necked	11	0.61%	198	0.49%	100
L	Lid	Unclassified form	3	0.17%	99	0.25%	35
CHP	Misc.	Cheese press	2	0.11%	54	0.13%	11
CRUC?	Misc.	Crucible	7	0.39%	86	0.21%	35
M	Mortaria	Unclassified Form	2	0.11%	27	0.07%	0
MBF	Mortaria	Bead-and-flange-rimmed	2	0.11%	210	0.52%	28
MCO	Mortaria	Collared rim, cf. Colchester types	1	0.06%	54	0.13%	7
OPEN	Open	Form	3	0.17%	44	0.11%	0
-	Unknown	Form uncertain	648	36.06%	7058	17.55%	19

2017) in contrast to the concentrated dumps of pottery often encountered on sites in South Yorkshire and northern Nottinghamshire (see Chadwick 2008; 2010; Rowlandson with Hartley 2013).

A residual sherd from a fine shell-gritted vessel with double-toothed rouletting (**Fig. 4.9**, 89) similar to an example from East Field Road would suggest activity on the site in the late pre-Roman Iron Age. In addition, a small range of rock-gritted handmade sherds and Iron Age shell-gritted types similar to the Iron Age phase material were identified, which were also probably residual. A larger proportion of transitional wares (IAGR1–5) were present, perhaps suggesting that a number of the features from this phase contained pottery dating to the 2nd century AD.

The majority of the features from this phase could be dated to the 3rd century or perhaps later. There were few groups that could be dated to the 4th century AD, largely on the evidence of a few diagnostic sherds. Those dated to the 4th century AD were restricted to a coarse quartz-gritted sherd in the LCQU fabric from ditch 8292, a small group from ditch 8293 that included a paint-decorated colour-coated beaker (**Fig. 4.9**, 90) and a hemispherical flanged bowl in an oxidised fabric (**Fig. 4.9**, 92), and a small group from ditch 8296 that contained a sparry mineral calcite-gritted ‘proto-

Huntcliff' jar. As rare examples here of the latest forms found from north Lincolnshire, on sites such as North Killingholme (Rowlandson *et al.* 2017, AMEP2 site) and the Barton upon Humber Glebe Farm site (Bryant 1994; Didsbury nd), it suggests that this site was not close to a settlement focus in the second half of the 4th century AD and that the majority of activity, excluding these few diagnostic sherds, may have been restricted to the 3rd century AD.

A further 11 features could be dated to the late 3rd or 4th century AD. Of these most were ditches (4598, 8267, 8288, 8292, 8293, 8296, 8297 and 8308) and pits (8278, 8313 and 8318). These features were dated by the presence of local burnished grey ware (GREYB) and diagnostic forms such as plain rimmed dishes, straight-sided bead and flanged bowls and developed wide-mouthed bowls (BWM3). Dales ware, a pottery type produced until at least the middle of the 4th century AD, was also present, and smaller quantities of earlier, probably residual, Romano-British pottery such as native tradition wares (IAGR) were recovered from these deposits, as might be expected, particularly amongst groups from ditches. Few of these groups yielded significant quantities of Romano-British pottery, with only ditch 8292 containing in excess of 100 sherds, although these included fragmentary Dales ware sherds, and probably a maximum of only 31 vessels were present. Other ditches (4598, 8273, 8286 and 8278) with less diagnostic material probably related to the same phase of late Romano-British activity.

A range of other features could also be dated to the 3rd century AD or later, mainly on the evidence of shell-gritted Dales ware sherds. A small number could only be broadly dated to the Romano-British period or only contained sherds diagnostic of the later 1st to 2nd century AD but, as these groups often contained fewer than 20 sherds and the features were almost exclusively ditches, it is likely that the pottery from these features was residual from earlier phases of occupation on the site.

As already noted, this phase marked the first occurrence of significant quantities of shell-gritted Dales ware. Forms mostly consisted of typical lid-seated jars along with a few examples of plain rimmed dishes. A sparry mineral calcite-gritted jar with a curved rim was retrieved from ditch 8296, probably an unusual import from the Vale of Pickering dating to the 4th century AD. A small quantity of pottery in the Dales ware tradition (recorded as SHEL) was in a far sandier fabric than that of the typical DWSHT fabric from north-western Lincolnshire along the Jurassic Limestone ridge. The vessels included a typical Dales ware lid-seated jar (**Fig. 4.9**, 96, pit 8313) and a dish with a plain rim (**Fig. 4.9**, 97, ditch 8311); it is possible that these two vessels should be considered as examples of the sandy shell-gritted DWNEL fabric group.

A broader range of colour-coated wares were present, including bag-shaped and folded types, but sherds from only six vessels were present. The most notable example was a vessel with painted decoration in the CC2 fabric group that had a ground-down funnel neck, probably a repair to a chipped rim (**Fig. 4.9**, 90). It was noticeable that there were few colour-coated jars, flagons, bowls or dishes from this phase, as is commonly the case with assemblages dating to the 3rd century AD from this part of Lincolnshire. A sherd from a mica-dusted beaker was retrieved from gully 8311, although this vessel may relate to the earlier Romano-British activity on the site.

Small quantities of Black Burnished ware 1 and 2 were present, including a BB2 bowl (BG225), from across ditches 8311, 8313, 8337 and 8336. Samian occurred in limited quantities, along with grey ware sherds in the ROXGR and SFGR fabrics which were probably produced in the 2nd century AD. A sherd from a Mancetter/Hartshill mortarium with worn fired clay trituration grits was the only mortarium from this phase.

The majority of the grey ware pottery from this phase consisted of local fabrics in a typical suite of 3rd to 4th century AD forms mostly consisting of plain rimmed dishes, straight-sided bead and flanged bowls and wide-mouthed bowl variants. A smaller number of grey ware forms dating to the 2nd century AD were also present in the GREY1–4 fabric groups.

Medieval and post-medieval phases
A total of 358 sherds (8.753 kg, 5.33 RE) were recovered residually in medieval and post-medieval contexts.

Colour-coated ware, grey ware and shell-gritted Dales ware were recovered from pit 8215 (feature not illustrated).

Early Romano-British pottery came from ditch 8309, including quartz sand-gritted jars decorated with cordons (as Rigby and Stead 1976, fig. 75.32) and shell-gritted jars including the shoulder from a large storage jar.

Some features contained very mixed assemblages, with Late Iron Age through to medieval material. However, sherds from a colour-coated bag-shaped beaker, a fine mica-dusted sherd, native tradition ware, sherds from a grey ware jar and shell-gritted basal sherds recovered from ditch 4321 (group 8311) might suggest a 3rd-century date for this feature, consistent with Black Burnished ware, a sherd from a grog-gritted lid-seated jar (Roxby form A, also in ditch 4598), a grey ware wide mouth bowl and a shell-gritted Dales ware body sherd recovered from intervention 4620 in the same group.

Later Romano-British material, dated potentially to the 3rd or 4th century AD, from ditch 4301 (group 8311) included shell-gritted Dales ware, sherds from a shell-gritted plain rimmed dish (**Fig. 4.9**, 97) and a grey ware wide-mouthed bowl from ditch 4301 (group 8311).

Sherds of mid- to late 3rd-century or later date were recovered from ditches 8311/8313, including a grey ware necked drinking bowl (as Darling and Precious 2014, no. 1160), a grey ware bowl (Gillam 1970, type 225) and shell-gritted Dales ware.

Parish boundary ditch 8264 contained a range of material, including a Colchester-type collared mortarium (**Fig. 4.9**, 98; Hull 1958, 498–501) which is a rare occurrence of a vessel from this industry in this area. A grey ware jar with linear rustication up to the rim (**Fig. 4.9**, 100; Didsbury 2001, fig. 6.12.7; Rigby and Stead 1976, fig. 66.26) and a lid in an oxidised fabric (**Fig. 4.9**, 99) were also recorded. Thirty sherds were recovered from recuts of the parish boundary (8263 and 8320). Little of the material was noteworthy but further sherds from the rusticated jar (**Fig. 4.9**, 100) and a fragment from a grey ware narrow-necked jar (**Fig. 4.9**, 101) from ditch 8263 were worthy of illustration. A further mixed group of Romano-British pottery was retrieved from ditch 8265. The only amphora sherd from the site, a Dressel 20 body sherd, was retrieved from this phase.

Unphased
Some 61 sherds (1.556 kg, 0.6 RE) were recovered, including a samian form 37 decorated bowl sherd from ditch 4941 (feature not illustrated), native tradition ware bowls, grey ware necked jars and a Roxby type A lid-seated jar from unstratified context 8969, a worn slag-gritted mortarium sherd from ditch 4530 (feature not illustrated), grey ware, rock-gritted sherds and shell-gritted ware.

Illustrated sherds

Figure 4.9

82. Large jar or bowl in coarse rock-gritted fabric, similar open form to example from Heathery Burn Cave (Challis and Harding 1975, fig. 45.17). *Fabric ETW2C, Form B, ditch 8027, context 8028*
83. Handmade small vessel or less likely a crucible, poorly mixed rock-gritted fabric. *Fabric ETW4, Form CRUC?; ditch 8221 (group 8321), context 8222*
84. Large jar in an Iron Age tradition sandy fabric with very sparse fine shell (form as Elsdon 1996b, 19.27.143). *Fabric IASA2, Form JL, pit 4503, contexts 4504 and 4507, also pit 4508, context 4510, also ditch 8144 (group 8292), context 8145 (late Romano-British phase)*
85. Jar with everted rim in native tradition shelly fabric, double-toothed rouletting and stamped roundels as in Dragonby examples. *Fabric IASH5, Form JEV, ditch 4342 (group 8312), context*

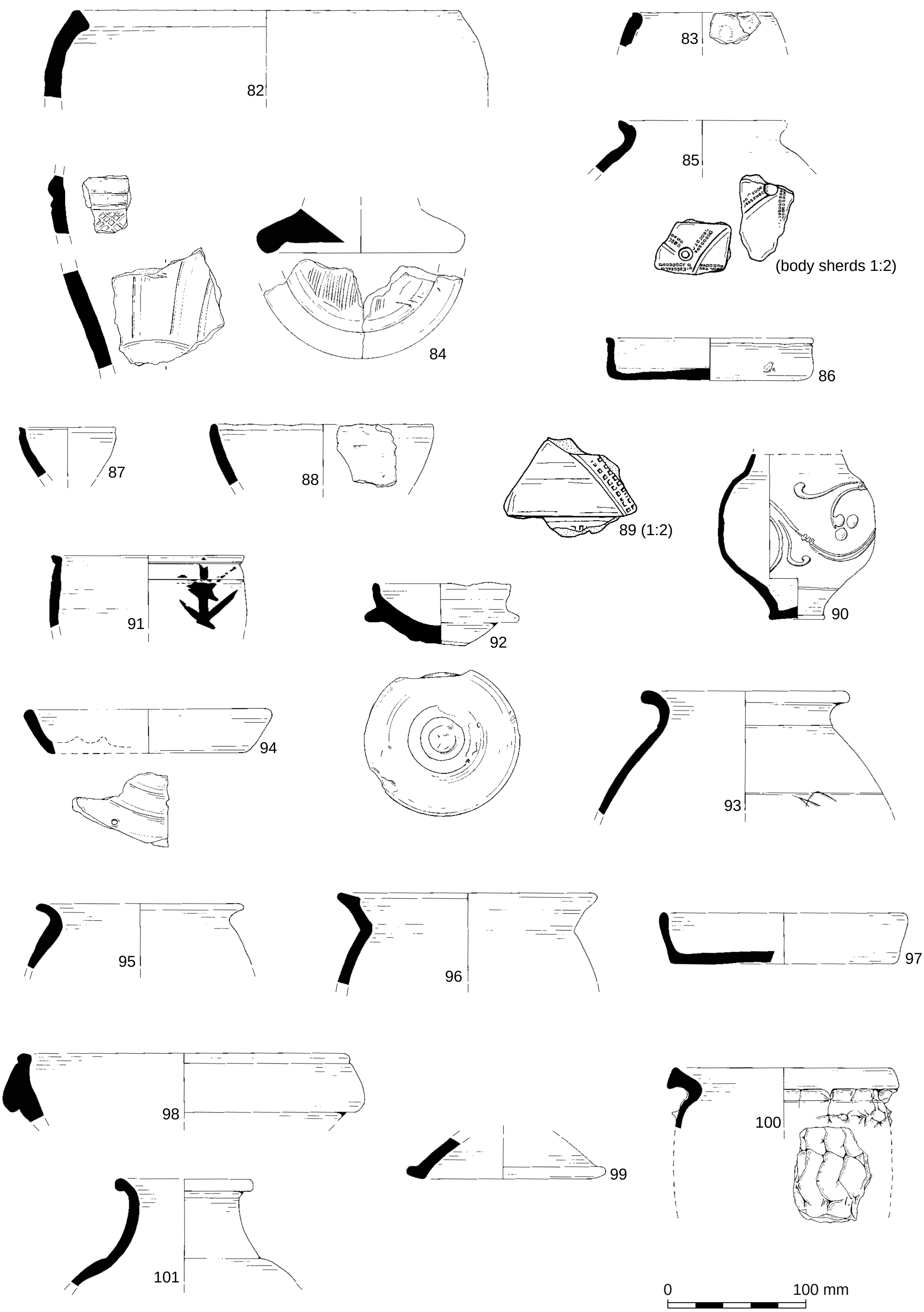


Figure 4.9 Iron Age and Roman pottery (82–101) from Westfield Farm

4344, also ditch 4612 (group 8312), context 4613

86. Grey ware dish with a grooved rim. The sample from this vessel yielded a high concentration of ruminant carcass fats, suggesting that it was a specialist vessel for processing animal fats. *Fabric GREY1, Form DGR, gully 4999 (part of pit 8001), context 8000, ORA sample HRN57*
87. Crucible or miniature vessel in a rock-gritted fabric. *Fabric ETW4, Form CRUC?; ditches 4370 and 4372 (groups 8313 and 8336), contexts 4371 and 4373*
88. Possible crucible fragment in a rock-gritted fabric. *Fabric ETW4, Form CRUC?; ditch 8079 (group 8340), context 8082*
89. Native tradition ware shell-gritted sherd with scored and double-toothed rouletting line decoration. *Fabric IASH2, Form unknown, ditch 8077 (group 8340), context 8078*
90. Funnel-necked colour-coated beaker, reworked with funnel ground off (as Darling and Precious 2014, no. 194). *Fabric CC2, Form BKFN, ditch 8175 (group 8293), context 8176*
91. Cream ware bowl with orange painted line decoration, possibly a product of the legionary-period kilns at Lincoln (form as Darling and Precious 2014, no. 390). The sample from this vessel contained high levels of ruminant carcass lipids, suggesting that it was used for processing animal products (Dunne this volume). *Fabric CR, Form B405, ditch 8209 (group 8340), context 8210, ORA sample HRN63*
92. Small hemispherical flanged bowl mimicking samian form 38 in an oxidised fabric. The sample from this vessel suggested that it was used for processing dairy products. *Fabric OX1, Form B38, ditch 8175, context 8176, ORA sample HRN58*
93. Grey ware necked jar with burnished wavy line decoration. *Fabric GREY1, Form JNK, ditch 4677 (group 8292), context 4679*
94. Grey ware cheese press. Although this form is typically considered to have been designed for cheese making, the organic residues suggest it was used for processing ruminant carcass fats. *Fabric GREY1, Form CHP, ditch 4677 (group 8292), context 4679, ORA sample HRN27*
95. Sparry calcite-gritted jar with a curved rim. *Fabric CALGS, Form JCUR, ditch 4976 (group 8296), context 4977*
96. Dales ware jar possibly in north-west Lincolnshire Dales ware fabric. *Fabric SHEL or DWNEL?, Form JDW1, ditch 4334 (group 8313), context 4335*
97. Dish with a plain rim in an unusual shell-gritted slightly sandy fabric with mica-rich surfaces. Ruminant carcass residues were recovered from this vessel. *Fabric SHEL/DWNEL?, Form DPR, ditch 4301 (group 4311), context 4302, ORA sample HRN25*
98. Mortarium with collared rim; the fabric appears similar to Colchester types (Hull 1958, 498–501), burnt. *Fabric MOCO?, Form MCO, ditch 20007 (group 8264), context 20008*
99. A lid in an oxidised fabric. The sample from this vessel contained ruminant carcass fats. *Fabric OX1, Form L, ditch 8207 (group 8264), context 8208, ORA sample HRN61*
100. Grey ware rusticated jar with triangular rim, as type D examples from Roxby (Rigby and Stead 1976, fig. 66.26) and Chase Hill Farm (Didsbury 2001, fig. 6.12.7). The samples from this vessel contained ruminant carcass products. *Fabric GREY1, Form JTR, drain 8205 (group 8262), context 8206, also ditch 8207 (group 8264), context 8208, ORA samples HRN59 and HRN61*
101. Large grey ware narrow-necked jar. *Fabric GREY2, Form JNN, drain 8205 (group 8262), context 8206*

Blow Field

A total of 93 sherds (1.606 kg, 1.3 RE) were retrieved from evaluation trenches situated at Blow Field (**Tables 4.16** and **4.17**). This material is probably representative of activity associated with the adjacent Westfield Farm site, extending into areas that were not tested by mitigation excavation (A Tuck pers. comm.). Although small quantities of later Romano-British pottery (two grey ware wide-mouthed bowls) were present in the unstratified groups from trenches 97 and 98, the majority of the pottery from this plot can be dated to the middle of the 1st century AD through to the first half of the 2nd century AD. A single bead rimmed jar (from context 98065, IASH3) suggests the possibility of some occupation of the site immediately before the Roman conquest. The assemblage has a high proportion of IAGR 'native'-type transitional fabrics and includes the large native tradition wedge-shaped rimmed bowl and the jar with the hooked everted rim. Also present in this group are a range of grey wares and a base from a jar or beaker in a cream fabric, probably from Lincoln. Other than this it appears that all of the pottery from this site is from northern Lincolnshire and is a utilitarian pottery assemblage typical of rural groups of this period in the area.

Table 4.16 Blow Field fabric summary

Fabric code	Fabric group	Fabric details	Sherd	Sherd %	Weight	Weight %	Total RE %
CR	Oxidised	Roman cream wares (various)	1	1.08%	39	2.43%	0
GREY1	Reduced	Reduced fabric 1	28	30.11%	314	19.55%	28
GREY2	Reduced	Reduced fabric 2	2	2.15%	26	1.62%	0
GREY3	Reduced	Reduced fabric 3	4	4.30%	132	8.22%	8
GRRO	Reduced	Greyware with Greensand Quartz	1	1.08%	10	0.62%	6
GYMS	Reduced	Grey wheel-made with minimal fine shell	1	1.08%	15	0.93%	0
IAGR	Reduced	Native tradition/transitional grit-tempered wares	24	25.81%	656	40.85%	56
IASA	Reduced	IA type sandy wares	1	1.08%	2	0.12%	0
IASA1	Reduced	Iron Age Sandy: Site fabric 1	1	1.08%	14	0.87%	0
NELGR1	Reduced	North East Lincolnshire Early Roman wheel-made 1	3	3.23%	39	2.43%	0
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	15	16.13%	143	8.90%	20
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	1	1.08%	6	0.37%	0
IASH3	Calcareous	Iron Age Shell Gritted: Site fabric 3	1	1.08%	32	1.99%	12
SHGR	Calcareous	NE Lincs Shell and Grog fabric	2	2.15%	61	3.80%	0
ETW	Rock temper	Erratic pebbles broken up as temper	7	7.53%	92	5.73%	0
ETWSH	Rock temper	Erratic pebbles broken up as temper with shell	1	1.08%	25	1.56%	0

Table 4.17 Blow Field form summary

Form	Form type	Form description	Sherd	Sherd %	Weight	Weight %	Total RE %
BK?	Beaker	Unclassified form	1	1.08%	39	2.43%	0
BPR	Bowl	Plain-rimmed	1	1.08%	55	3.42%	8
BL	Bowl – large	Large	2	2.15%	31	1.93%	4
BNAT	Bowl – large	Native tradition bowl, eg, Darling and Precious 2014, no. 700	2	2.15%	84	5.23%	16
BWM2	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1228	1	1.08%	38	2.37%	7
BWM3	Bowl – large	Wide-mouthed; Darling and Precious 2014, no. 1229–30	1	1.08%	24	1.49%	4
BD	Bowl/dish	-	2	2.15%	28	1.74%	0
CLSD	Closed	Form	10	10.75%	125	7.78%	0
DPR	Dish	Plain rim	1	1.08%	23	1.43%	6
CPN	Jar	Native tradition	1	1.08%	15	0.93%	7
J	Jar	Unclassified form	12	12.90%	257	16.00%	10
JBR	Jar	Bead-rimmed	1	1.08%	32	1.99%	12
JCH	Jar	Channel rim, Iron Age type	3	3.23%	27	1.68%	12
JHER	Jar	Hooked everted rim as Rigby and Stead 1976, fig. 64.4	4	4.30%	208	12.95%	37
JL	Jar	Large	4	4.30%	128	7.97%	0
JBKNK	Jar/beaker	Necked	1	1.08%	12	0.75%	0
JB	Jar/bowl	Unclassified form	5	5.38%	98	6.10%	0
JBL	Jar/bowl	Large	5	5.38%	146	9.09%	0
-	Unknown	Form uncertain	36	38.71%	236	14.69%	7

Wells Road

Only five sherds (163 g, 0.59 RE) were recovered, all from an early Romano-British phase (**Tables 4.18** and **4.19**). A single Romano-British grey ware rim sherd from a jar with a narrow neck was retrieved from ditch 603, and sherds from a jar with a hooked everted rim in a native tradition ware fabric that dated from the late 1st to 2nd century AD was recovered from ditch 613. Little more can be said about this small assemblage, but it is similar in composition to the contemporary groups from other parts of the scheme.

Table 4.18 Wells Road fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
GREY1	Reduced	Reduced fabric 1	1	20.00%	13	7.98%	11
IAGR4	Reduced	Iron Age tradition 'Gritty': Site fabric 4	4	80.00%	150	92.02%	48

Table 4.19 Wells Road forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
JHER	Jar	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	4	80.00%	150	92.02%	48
JNN	Jar	Narrow-necked	1	20.00%	13	7.98%	11

Laceby Beck

Thirty sherds (311 g, 0.42 RE) were recovered in total (**Tables 4.20** and **4.21**). The Iron Age and Romano-British pottery from this area ranged in date from the 1st to the 4th centuries AD, the majority found in post-Roman deposits. The wares present were broadly typical of those found in other areas of the scheme, but the small quantities suggest only limited Iron Age to Romano-British activity and the site was probably marginal to settlement of that period.

The material recorded includes sherds from a jar with a wedge-shaped rim (CPN) in the Late Iron Age IASA2 fabric, a native tradition ware Roxby 'type A' lid-seated jar (J105) and a rusticated grey ware jar. The presence of sherds of Crambeck grey ware, Dales ware and the burnished grey ware GREYB would suggest some activity on the site in the 4th century AD. Late Romano-British pottery has also, like here, been found on other Saxon sites in the region, such as the Able UK project area ALP1 (Rowlandson *et al.* 2017).

Table 4.20 Laceby Beck fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
CRGR	Reduced	Crambeck grey wares	1	3.33%	2	0.64%	0
GREY	Reduced	Miscellaneous grey wares	1	3.33%	37	11.90%	0
GREY?	Reduced	Miscellaneous grey wares	2	6.67%	16	5.14%	0
GREY1	Reduced	Reduced fabric 1	5	16.67%	42	13.50%	0
GREY3	Reduced	Reduced fabric 3	1	3.33%	33	10.61%	7
GREYB	Reduced	High-fired late Roman grey wares	2	6.67%	37	11.90%	8
IAGR	Reduced	Native tradition/transitional gritty wares	1	3.33%	6	1.93%	0
IAGR4	Reduced	Iron Age tradition 'Gritty': Site fabric 4	1	3.33%	20	6.43%	0
IAGR5	Reduced	Iron Age tradition 'Gritty': Site fabric 5	1	3.33%	36	11.58%	11
IASA2	Reduced	Iron Age Sandy: Site fabric 2	1	3.33%	6	1.93%	7
DWSHT	Calcareous	Dales ware type	2	6.67%	11	3.54%	0
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	1	3.33%	11	3.54%	0
ETW2	Rock temper	Erratic pebbles broken up as temper	1	3.33%	14	4.50%	7
ETW4	Rock temper	Erratic pebbles broken up as temper, finer than ETW2	4	13.33%	9	2.89%	0
QUCF	Quartz	Quartz common fine	2	6.67%	4	1.29%	2
MISC	Misc.	Misc. uncategorised	4	13.33%	27	8.68%	0

Table 4.21 Laceby Beck forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
B	Bowl	Unclassified form	1	3.33%	33	10.61%	7
CLSD	Closed	Form	6	20.00%	48	15.43%	0
CPN	Jar	Native tradition	1	3.33%	6	1.93%	7
J?	Jar	Unclassified form	2	6.67%	4	1.29%	2
J105	Jar	Lid-seated, as Rigby and Stead 1976, Roxby form A	1	3.33%	36	11.58%	11
JEV	Jar	Everted rim	1	3.33%	14	4.50%	7
JL	Jar	Large	1	3.33%	37	11.90%	0
JRUST	Jar	Rusticated	1	3.33%	19	6.11%	0
JB	Jar/bowl	Unclassified form	1	3.33%	14	4.50%	8
-	Unknown	Form uncertain	15	50.00%	100	32.15%	0

Tetney Lock

A total of nine sherds (73 g, RE 0.1) were retrieved from evaluation trench 22. (**Tables 4.22** and **4.23**) The pottery consisted of a small group of Middle to Late Iron Age sherds from ditch 22017, including a handmade shell-gritted jar with an everted rim, and unstratified Romano-British shell-gritted and grey ware sherds.

Pottery associated with Late Bronze Age to Early Iron Age salt production is already known from the parish of Tetney (Knight 1994). Work on the Hornsea Project Two scheme at Tetney has yielded evidence of pottery dating to the 1st century AD, including Terra Nigra and shell-gritted Late La Tène II/III type wares and Romano-British pottery dating from the 2nd to 3rd century AD (Rowlandson and Fiske 2020a).

Table 4.22 Tetney Lock fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
GREY1	Reduced	Reduced fabric 1	3	33.33%	47	64.38%	0
IAGR	Reduced	Native tradition/transitional grit-tempered wares	1	11.11%	5	6.85%	0
IASH?	Calcareous	Native tradition shell-tempered	5	55.56%	21	28.77%	10

Table 4.23 Tetney Lock form summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight*	*Weight %*	*Total RE %*
CLSD	Closed	Form	1	11.11%	5	6.85%	0
JEV	Jar	Everted rim	5	55.56%	21	28.77%	10
JB	Jar/bowl	Unclassified form	3	33.33%	47	64.38%	0

Brooklands

Nine sherds (238 g, 0 RE) were recovered in total (**Tables 4.24** and **4.25**). Little can be said about this small group, although it would appear to date from the later 1st to 2nd century AD. The Romano-British pottery from this site has been considered by the excavators to be incorporated within later saltmaking features.

Table 4.24 Brooklands fabric summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
IAGR1	Reduced	Iron Age tradition 'Gritty': Site fabric 1	1	11.11%	120	50.42%	0
IAGR2	Reduced	Iron Age tradition 'Gritty': Site fabric 2	5	55.56%	104	43.70%	0
MISC	Misc.	Misc. uncategorised	1	11.11%	7	2.94%	0
FCLAY?	Fired clay	Fired clay	2	22.22%	7	2.94%	0

Table 4.25 Brooklands forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
CLSD	Closed	Form	3	33.33%	82	34.45%	0
JBL	Jar/bowl	Large	1	11.11%	120	50.42%	0
-	Unknown	Form uncertain	5	55.56%	36	15.13%	0

Habrough

Some 44 sherds (844 g, 0.79 RE) were recovered in the vicinity of Habrough medieval moated site from GWB areas (areas AG and AH) and from evaluation trenches (**Tables 4.26** and **4.27**). This pottery consisted of small sherds probably of prehistoric, Iron Age and Romano-British date. The average sherd weight was rather low and none of the groups contained significant or unusual assemblages of pottery. This assemblage was similar to the material seen from other sites dating to the 1st century AD in the area, including the Immingham Top Road site (Rowlandson and Fiske 2019b) as well as similar groups from the Hornsea Project One scheme. The limited size of the assemblage precludes more detailed comparisons.

Table 4.26 Habrough fabric summary

Fabric code	Fabric group	Fabric details	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
CR	Oxidised	Roman cream wares (various)	1	2.27%	3	0.36%	0
GREY	Reduced	Miscellaneous grey wares	2	4.55%	56	6.64%	0
GREY1	Reduced	Reduced fabric 1	3	6.82%	70	8.29%	0
GREY3	Reduced	Reduced fabric 3	1	2.27%	33	3.91%	2
IAGR2	Reduced	Iron Age tradition 'Gritty': Site fabric 2	6	13.64%	265	31.40%	35
IAGR4	Reduced	Iron Age tradition 'Gritty': Site fabric 4	4	9.09%	161	19.08%	18
IASA2	Reduced	Iron Age Sandy: Site fabric 2	2	4.55%	39	4.62%	0
IASH1	Calcareous	Iron Age Shell Gritted: Site fabric 1	15	34.09%	158	18.72%	24
IASH2	Calcareous	Iron Age Shell Gritted: Site fabric 2	3	6.82%	14	1.66%	0
IASH6	Calcareous	Iron Age Shell Gritted: Site fabric 6	5	11.36%	32	3.79%	0
IASH7	Calcareous	Iron Age Shell Gritted: Site fabric 7	2	4.55%	13	1.54%	0

Table 4.27 Habrough forms summary

Form	Form type	Form description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
BCAR	Bowl	Carinated	2	4.55%	39	4.62%	0
BNAT	Bowl – large	Native tradition bowl, eg, Darling and Precious 2014, no. 700	1	2.27%	126	14.93%	11
CLSD	Closed	Form	4	9.09%	65	7.70%	0
CPN	Jar	Native tradition	1	2.27%	16	1.90%	11
JHER	Jar	Hooked everted rim (Rigby and Stead 1976, fig. 64.4)	3	6.82%	240	28.44%	24
JLS	Jar	Lid-seated	2	4.55%	30	3.55%	7
JRUST	Jar	Rusticated	1	2.27%	32	3.79%	0
JTR	Jar	Triangular rim	1	2.27%	18	2.13%	12
JBCAR	Jar/bowl	Carinated	2	4.55%	12	1.42%	0
JBEV	Jar/bowl	Everted rim	5	11.36%	65	7.70%	12
JBL	Jar/bowl	Large	1	2.27%	11	1.30%	0
JBNK	Jar/bowl	Necked	2	4.55%	11	1.30%	0
L	Lid	Unclassified form	1	2.27%	33	3.91%	2
-	Unknown	Form uncertain	18	40.91%	146	17.30%	0

Vessel Function

All of the mortaria from this project, where it was possible to determine, had internal use-wear from grinding. Analysis of previous mortaria samples from the region has shown some evidence for plant and ruminant carcass lipids, suggesting that this is what they were used to process (Dunne and Evershed 2018a; 2018b). By reference to a visible sooting pattern, one mortarium appeared to have been repurposed as a lid or cover (**Fig. 4.3**, 14). Attrition was evident on the internal surface of a storage jar in the shell-gritted IAGR2 fabric from the Humberston Road site, which was in otherwise good enough condition to rule out excoriation by other processes. This may be due to scouring or to chemical action caused by fermentation (Peňa 2007; Perry 2011).

Carbonised deposits, internal and/or external, were most commonly seen on vessels in the coarser handmade Iron Age fabrics, in the transitional IAGR fabrics, and in the shell-gritted Dales ware jars that replaced them. When these burnt residues have been studied on vessels from elsewhere in northern Lincolnshire they have typically occurred on vessels with high levels of ruminant carcass fat, probably as a result of stewing or fat rendering (Dunne and Evershed 2018a; 2018b); it would appear likely that the same can be said of the vessels from this project (eg, **Figs 4.6**, 45; **4.7**, 63 and **4.9**, 100). Internal white mineral residues, presumably from boiling liquids, were seen on nine vessels, mostly grey ware jars (five), Dales ware jars (three), and a native tradition ware vessel. Six of these vessels were recovered from Westfield Farm, two from Humberston Road and one from Station Road.

Previous Organic Residue Analysis (ORA) projects in this area have largely focused on shell-gritted jars, particularly Dales ware, from sites at Immingham and Goxhill (Dunne and Evershed 2018a; 2018b). These showed that medium-sized shell-gritted jars were commonly used for boiling up carcass products, either for stews or perhaps to render down parts of the animal for tallow. The focus of Hornsea Project One was to sample a broader range of forms and fabrics, particularly the grey wares. With the benefit of this new evidence Dunne (this volume) has discussed the residue analysis further, highlighting that a number of the bowls may have functioned as casseroles or baking ovens.

The results from Humberston Road were of interest as there was good evidence for a number of the large or wide-mouthed deep bowls from the early Romano-British phase being associated with significant quantities of ruminant dairy fats (**Fig. 4.4**, 20 and 21, as well as **Fig. 4.5**, 29 from a late-Romano-British phase feature). These included a rusticated jar and a lid-seated jar (**Fig. 4.3**, 8 and 11), along with an Iron Age bowl showing evidence of both carcass and dairy fats (**Fig. 4.3**, 13). One of the lid-seated jars from this phase (**Fig. 4.3**, 6) and a jar with an everted rim (**Fig. 4.4**, 19) contained high concentrations of carcass fats, suggesting they were used for stewing or rendering processes. Unusual features of the group were a carinated B334 vessel (**Fig. 4.4**, 22), typically considered to have been a drinking vessel, and a small beaker with an everted rim (**Fig. 4.4**, 27) which both contained high levels of carcass fat, suggesting that they may have at one time had functions in processing animal fats rather than being receptacles for drinks or broth. From the late Romano-British phase, a grey ware Dales-type jar (**Fig. 4.5**, 34) and a jar with an out-curved rim (**Fig. 4.5**, 35) showed evidence of ruminant carcass fat and some evidence of pig fat. Dairy signatures were obtained from a dish (**Fig. 4.5**, 36) and mixed readings from a cup (**Fig. 4.5**, 32; Dunne this volume, HRN50). A large bowl (**Fig. 4.5**, 31) appeared to have been used to process both carcass and dairy products. Overall, this small assemblage appeared to represent a greater specialisation towards dairy production and processing than has been seen on a number of other sites in the area (Dunne and Evershed 2018a; 2018b).

From Keelby Road, evidence of dairy lipids was obtained from early Romano-British phase vessels (**Fig. 4.6**, 50 and 51), with a jar (**Fig. 4.6**, 45) producing evidence of ruminant carcass fats. Late Romano-British phase vessels sampled included two oxidised bowls that contained a mix of lipid readings (**Fig. 4.6**, 54, HRN20; and **Fig. 4.6**, 55, HRN19). Notably, the cheese press (**Fig. 4.6**, 57, HRN24) contained evidence of ruminant carcass fats rather than dairy products as observed in other examples. The presence of pig fat was unusual as it has not been commonly encountered as part of recent studies in the area (Dunne and Evershed 2018a; 2018b).

Station Road early Romano-British phase vessels provided evidence for both ruminant carcass and dairy fats. The vessels from late Romano-British phase contexts mostly dated to the 2nd century AD and contained a similar mix, with the majority of vessels containing evidence of carcass fats and a bowl (**Fig. 4.8**, 77) showing evidence of dairy products.

A number of open table ware forms showed signs of lipids. It may be that some of the vessels were used in food preparation (Dunne this volume) or were relegated to such roles, perhaps including use as lids or covers, after their initial period of use (see **Figs 4.3**, 13; **4.4**, 21 and discussion of **4.4**, 22).

A common feature was vessels with pierced bases, most notably a vessel (**Fig. 4.4**, 21) associated with dairy processing, and vessel (**Fig. 4.4**, 23) which had been fashioned into a strainer. Some vessels had a central piercing in the base but without being reworked into a spindlewhorl or a weight. Three vessels from Station Road exhibited this alteration, as well as four from Westfield Farm and five from Humberston Road. Two pierced spindlewhorls or weights were retrieved from Westfield Farm. Evidence of vessel repairs included a mortarium (eg, **Fig. 4.3**, 15) and a beaker with a re-ground rim (**Fig. 4.9**, 90).

The picture emerging from the growing number of ORA studies on pottery from the East Midlands is beginning to show that medium necked jars, particularly in the coarser fabrics, were often being used for boiling up ruminant carcass products. With the expanded range of forms now being sampled, some of the forms regularly used for dairy processing are being recognised. Although the sample size is still small it would appear that some sites (perhaps Humberston Road in particular) may have had a greater focus on dairying, but until the national sample size is expanded with examples from other projects, it is difficult to say this with certainty. The much higher numbers of vessels associated with dairy processing was of interest, as was the presence of some porcine fats, because if the inhabitants of the Immingham and Goxhill sites did keep pigs then they may have sold them on live or cooked them in some other fashion not involving the Dales ware jars used for rendering ruminant fats (Dunne and Evershed 2018a and b).

This sample has thrown up some challenges; for example, some forms that might be expected to be primarily drinking vessels actually in some instances contained high quantities of carcass fats, suggesting that they were used or re-used for processing tasks by modification or re-purposing once they had had been broken or fallen from favour for their original function. The residue analysis process captures evidence of the cooking process but does not record whether any of these vessels were originally used for storing dry goods or drawing water; only their cooking function is preserved within the fabric, so it is possible that a number of such non-cooking vessels finished their life as stew pots. By the time vessels had been extensively used for stewing or rendering fat it is likely that they had become rancid and not suitable for other uses afterwards. Many of the recipes of Apicius and the rabbinical text The Mishnah (Oral Torah) stress the importance of a new or clean vessel for cooking (cf. Grainger 2006; Grocock and Grainger 2006; Peňa 2007). It is clear that earthen ware vessels, once used for stewing or rendering fat, were less likely to be subsequently used for other functions such as storage, where the vessel would be likely to taint the contents.

The increasing evidence that cheese presses from this part of Lincolnshire were utilised for processing carcass fats, both at this site and others (**Fig. 4.6**, 57, cf. Dunne and Evershed 2018a; 2018b), is an important insight as it appears to challenge preconceived ideas of vessel class and function held by Roman pottery researchers (cf. Ferdière and Séguier 2020) and suggests that the inhabitants viewed pottery in a pragmatic way, utilising it as best they could for the tasks at hand.

Discussion

The Iron Age assemblages predominantly consisted of Middle to Late Iron Age types with very limited diagnostic material suggesting earlier Iron Age activity. The broad trends seen at other sites in this area of the Lincolnshire coast would appear to fit the assemblages from the Hornsea Project One scheme. Rock-gritted wares produced using local clays and fire cracked rocks from within the Boulder Clay deposits appear to have been in use as the main fabric in the first half of the first millennium BC (Knight 1994) and into the Middle Iron Age. Although small quantities of shell-gritted wares occur amongst assemblages dated to the Middle Iron Age it was not until the development of Late La Tène II/III 'Dragonby type' wares that they become more common in this area. This suggests greater trade and exchange in northern Lincolnshire in the centuries prior to the Roman conquest, which would fit with patterns observed in eastern Yorkshire and the East Midlands (Didsbury and Vince 2011; Knight 2002; Willis 1996). It possibly suggests that shell-gritted pottery may have been manufactured at specialist production centres in the Late Iron Age prior to the Roman conquest (Knight 2002, 138) with Dragonby itself, or perhaps South Ferriby, being candidates for the supply of pottery to the sites investigated as part of the Hornsea Project One scheme.

The pattern of pottery use in Romano-British northern Lincolnshire has been extensively discussed by Leary (2013) and the sites from this scheme would appear to fit the patterns described and those seen by the authors at other sites on the north-eastern Lincolnshire coast. The early Romano-British sites from the Hornsea Project One scheme cannot be dated with the precision possible for the more developed settlement foci of Dragonby, Sleaford and Lincoln because of the relatively small assemblages with few chronologically distinct fine wares (see Willis 1996). However, the broad transition from handmade Iron Age wares to wheel-made or wheel-finished coarse gritted transitional wares, augmented with small quantities of grey ware and rare non-local table wares in the early Romano-British period was evident on a number of sites. By the Antonine period it appears that locally produced grey wares had largely replaced the transitional wares for most functions, and the sites still only had limited access to table wares from further afield, with little or no evidence of amphora-borne goods.

Some of the sites continued to be occupied into the late 2nd and 3rd centuries AD but others only showed evidence for a small quantity of later pottery from later ditches, perhaps suggesting that the main focus of settlement had moved away from the investigated areas.

Sites with pottery dating to the 4th century AD appear to be fewer in number from this scheme, but more densely settled sites producing large groups of late Romano-British pottery are known from this part of Lincolnshire, such as Glebe Farm, Barton upon Humber (Didsbury nd; Steedman 1993), Poor Farm, Barton upon Humber (Bryant 1994; Rowlandson *et al*. 2010), Able UK AMEP2 site (Rowlandson *et al.* 2017), Brockelsby Interchange, Immingham (Rowlandson and Fiske 2016) and the Stallingborough Old Fleet Drain site (Rowlandson 2011). A number of rural sites such as Deepdale, Barton upon Humber (Whitwell 1983) and Hatcliffe Top on the eastern slope of the Wolds above the Hornsea Project One study area (Rowlandson and Fiske 2020c) also yielded significant groups of late Romano-British pottery. A large proportion of the sites with pottery dating to the 4th century AD along the coastal area of north-eastern Lincolnshire also appear to have evidence of pottery dating from the Iron Age through the Romano-British period, such as Station Road (see above), Able UK AMEP2, Brocklesby Interchange Immingham, Glebe Farm, Barton upon Humber and the major settlement focus at Kirmington (Didsbury nd; Elsdon 1996a, C.12; Rowlandson and Fiske 2019b; 2020a; Rowlandson *et al*. 2015b; Rowlandson *et al.* 2017; and NLM museum collections acc. No. KMAA). There are few sites that appear to begin in the late Romano-British period, with perhaps the enigmatic Stallingborough Old Fleet Drain site (Rowlandson 2011) being one. Many of these sites yielded very large groups of late Romano-British pottery suggesting more intensive consumption of pottery in the later Romano-British period, perhaps as the abundant supply of local grey wares made acquisition of pottery more commonplace or settlement activity began to be focused at a smaller number of sites. As with the early to mid-Romano-British periods, much of the late Romano-British pottery from this project appeared to be from local sources, now largely comprising shell-gritted wares from north-western Lincolnshire, with only the small quantity of late Romano-British coarse wares from eastern Yorkshire that might be expected of a site of this period near to the mouth of the River Humber.

Organic Residue Analysis

Julie Dunne

Introduction

Lipids, the organic solvent-soluble components of living organisms – that is, the fats, waxes and resins of the natural world – are the most frequently recovered compounds from archaeological contexts. They are resistant to decay and are likely to endure at their site of deposition, often for thousands of years, because of their inherent hydrophobicity, making them excellent candidates for use as biomarkers in archaeological research (Evershed 1993; 2008a).

Pottery has become one of the most extensively studied materials for organic residue analysis (Mukherjee *et al.* 2005) as ceramics, once made, are virtually indestructible and thus are one of the most, if not the most, common artefacts recovered from archaeological sites from the Neolithic period onwards (Tite 2008). Survival of these residues occurs in three ways; rarely, actual contents are preserved in situ (eg, Charrié-Duhaut *et al.* 2007) or, more commonly, as surface residues (Evershed 2008b). The last, most frequent occurrence, is that of absorbed residues preserved within the vessel wall, which have been found to survive in more than 80% of domestic cooking pottery assemblages worldwide (Evershed 2008b).

The application of modern analytical techniques enables the identification and characterisation of these sometimes highly degraded remnants of natural commodities used in antiquity (Evershed 2008b). Often, data obtained from the organic residue analysis of pottery or other organic material provides the only evidence for the processing of animal commodities, aquatic products or plant oils and waxes, particularly at sites exhibiting a paucity of environmental evidence. To date, the use of chemical analyses in the reconstruction of vessel use at sites worldwide has enabled the identification of terrestrial animal fats (Evershed *et al.* 1997a; Mottram *et al.* 1999), marine animal fats (Copley *et al.* 2004; Craig *et al.* 2007), plant waxes (Evershed *et al.* 1991), beeswax (Evershed *et al.* 1997b) and birch bark tar (Charters *et al.* 1993a; Urem-Kotsou *et al.* 2002). This has increased our understanding of ancient diet and foodways and has provided insights into herding strategies and early agricultural practices. Organic residue analysis has also considerably enhanced our understanding of the technologies involved in the production, repair and use of ancient ceramics.

Preserved animal fats are by far the most commonly observed constituents of lipid residues recovered from archaeological ceramics. This demonstrates their considerable significance to past cultures, not just for their nutritional value but also for diverse uses such as binding media, illuminants, sealers, lubricants, varnish, adhesives and ritual, medical and cosmetic purposes (Evershed *et al.* 1997a; Mills and White 1977).

Today, the high sensitivities of instrumental methods such as gas chromatography (GC) and mass spectrometry (MS) allow very small amounts of compounds to be detected and identified. Furthermore, higher sensitivity can be achieved using selected ion monitoring (SIM) methods for the detection of specific marine biomarkers (Cramp and Evershed 2013; Evershed *et al.* 2008). The advent of gas chromatography-combustion-isotope ratio mass spectrometry (GC-C-IRMS) in the 1990s introduced the possibility of accessing stable isotope information from individual biomarker structures, opening a range of new avenues for the application of organic residue analysis in archaeology (Evershed *et al.* 1994; 1997a).

This stable carbon isotope approach, using GC-C-IRMS, is employed to determine the $\delta^{13}C$ values of the principal fatty acids (C_{16} and C_{18}) ubiquitous in archaeological ceramics. Differences occur in the $\delta^{13}C$ values of these major fatty acids due to the differential routing of dietary carbon and fatty acids during the synthesis of adipose and dairy fats in ruminant animals, thus allowing ruminant milk fatty acids to be distinguished from carcass fats by calculating $\Delta^{13}C$ values ($\delta^{13}C_{18:0}$ - $\delta^{13}C_{16:0}$) and plotting that against the $\delta^{13}C$ value of the $C_{16:0}$ fatty acid. Previous research has shown that by plotting $\Delta^{13}C$ values, variations in C_3 versus C_4 plant consumption are removed, thereby emphasising biosynthetic and metabolic characteristics of the fat source (Copley *et al.* 2003; Dudd and Evershed 1998).

The Pottery Assemblage

Sixty-three Romano-British sherds were selected for organic residue analysis. Where possible, vessels with external sooting and/or carbonised deposit were selected as these were likely to have been used for cooking. Potsherds were supplied from four sites: Westfield Farm, Keelby Road, Station Road and Humberston Road (**Table 4.28**).

Materials and analytical methods

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (Correa-Ascencio and Evershed 2014). Briefly, roughly 2 g of potsherd were sampled and surfaces cleaned with a modelling drill to remove exogenous lipids. The cleaned sherd powder was crushed in a solvent-washed mortar and pestle and weighed into a furnaced culture tube (I). An internal standard was added (20 µg *n*-tetratriacontane; Sigma Aldrich Company Ltd) together with 5 ml of H_2SO_4/MeOH 2–4% ($\delta^{13}C$ measured) and the culture tubes were placed on a heating block for 1 h at 70°C, mixing every 10 min. Once cooled, the methanolic acid was transferred to test tubes and centrifuged at 2500 rpm for 10 min. The supernatant was then decanted into another furnaced culture tube (II) and 2 ml of DCM extracted double distilled water was added. In order to recover any lipids not fully solubilised by the methanol solution, 2 x 3 ml of *n*-hexane was added to the extracted potsherds contained in the original culture tubes, mixed well and transferred to culture tube II. The extraction was transferred to a clean, furnaced 3.5 ml vial and blown down to dryness. Following this, 2 x 2 ml *n*-hexane was added directly to the H_2SO_4/MeOH solution in culture tube II and whirlimixed to extract the remaining residues, then transferred to the 3.5 ml vials and blown down until a full vial of *n*-hexane remained. Aliquots of the TLEs were derivatised using 20 µl BSTFA, excess BSTFA was removed under nitrogen and the derivatised TLE was dissolved in *n*-hexane prior to GC, GC-MS and GC-C-IRMS. Firstly, the samples underwent high-temperature gas chromatography using a gas chromatograph fitted with a high-temperature non-polar column (DB1-HT; 100% dimethylpolysiloxane, 15 m x 0·32 mm i.d., 0.1 µm film thickness). The carrier gas was helium and the temperature programme comprised a 50°C isothermal followed by an increase to 350°C at a rate of 10°C min^{-1} followed by a 10 min isothermal. A procedural blank (no sample) was prepared and analysed alongside every batch of samples. Further compound identification was accomplished using GC-MS. FAMEs were then introduced by autosampler onto a GC-MS fitted with a non-polar column (100% dimethyl polysiloxane stationary phase; 60 m x 0.25 mm i.d., 0·1 µm film thickness). The instrument was a ThermoFinnigan single quadrupole TraceMS run in EI mode (electron energy 70 eV, scan time of 0.6 s). Samples were run in full scan mode (*m/z* 50–650) and the temperature programme comprised an isothermal hold at 50°C for 2 min, ramping to 300°C at 10°C min^{-1}, followed by an isothermal hold at 300°C (15 min). Data acquisition and processing were carried out using the HP Chemstation software (Rev. C.01.07 (27), Agilent Technologies) and Xcalibur software (version 3.0). Peaks were identified on the basis of their mass spectra and GC retention times, by comparison with the NIST mass spectral library (version 2.0).

Carbon isotope analyses by GC-C-IRMS were also carried out using a GC Agilent Technologies 7890A coupled to an Isoprime 100 (EI, 70 eV, and three Faraday cup collectors m/z 44, 45 and 46) via an IsoprimeGC5 combustion interface with a CuO and silver wool reactor maintained at 850°C. Instrument accuracy was determined using an external FAME standard mixture (C_{11}, C_{13}, C_{16}, C_{21} and C_{23}) of known isotopic composition. Samples were run in duplicate and an average taken. The $\delta^{13}C$ values are the ratios $^{13}C/^{12}C$ and expressed relative to the Vienna Pee Dee Belemnite, calibrated against a CO_2 reference gas of known isotopic composition. Instrument error was ±0.3‰. Data processing was carried out using Ion Vantage software (version 1.6.1.0, IsoPrime).

Results

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (eg, Correa-Ascencio and Evershed 2014; Dudd and Evershed 1998). A total of 63 potsherds were analysed: of these, 13 sherds came from various points on the vessel profile of five vessels, making a total of 55 vessels analysed. The lipid recovery rate for the Hornsea sherds was excellent at 78%, with 49 of the 63 sherds (41 vessels, 75% of total vessels) yielding interpretable lipid profiles. The mean

Table 4.28 Lipid residues

Sample	*Site name*	*Context phasing*	*Context*	*Sherd type*	*Vessel form*	*Form type*	*Vessel fabric*	*Fabric type*	*Lipid concentration ($\mu g\ g^{-1}$)*	*Total lipid in extract (μg)*	$\delta^{13}C_{16:0}$	$\delta^{13}C_{18:0}$	$\Delta^{13}C$	*Attribution*
HRN02	Station Road	Early Romano-British	1103	RIM	JBNK	Jar/bowl necked	GREY1	Reduced fabric 1	436.2	668.9	-28.5	-32.0	-3.5	Ruminant dairy
HRN03	Station Road	Early Romano-British	1104	BASE	JBNK	Jar/bowl necked	GREY1	Reduced fabric 1	371.5	707.8	-28.5	-32.1	-3.6	Ruminant dairy
HRN04	Station Road	Early Romano-British	1107	RIM	JBNK	Jar/bowl necked	GREY1	Reduced fabric 1	257.4	468.4	-29.0	-32.0	-3.0	Ruminant adipose
HRN05	Station Road	Early Romano-British	1109	BS	JBNK	Jar/bowl necked	GREY1	Reduced fabric 1	76.7	114.4	-28.5	-31.9	-3.4	Ruminant dairy
HRN06	Station Road	Early Romano-British	1358	RIM	BFB412	Bead and flange bowl	IAGR4	Iron Age tradition 'Gritty': Site fabric 4	102.9	219.5	-28.3	-30.1	-1.9	Ruminant adipose
HRN08	Station Road	Late Romano-British	1578	RIM	BREED	Bowl with reeded rim	GREY1	Reduced fabric 1	6748.0	7306.0	-28.3	-30.5	-2.2	Ruminant adipose
HRN09	Station Road	Late Romano-British	1644	RIM	J105	Jar – lid-seated; as Rigby and Stead 1976 Roxby form A	IAGR2	Iron Age tradition 'Gritty': Site fabric 2	20872.1	39195.7	-27.1	-29.0	-1.9	Ruminant adipose
HRN10	Station Road	Late Romano-British	1644	RIM	D452	Dish – as Gillam 337 GB Cam 16 copy	GREY3	Reduced fabric 3	227.4	289.7	-28.4	-33.4	-5.0	Ruminant dairy
HRN11	Station Road	Late Romano-British	1644	RIM	B333	Bowl – bifid rim as Gillam 301	GREY3	Reduced fabric 3	11834.0	25296.5	-28.1	-30.7	-2.6	Ruminant adipose
HRN12	Station Road	Late Romano-British	1644	RIM	J105	Jar – lid-seated; as Rigby and Stead 1976 Roxby form A	GREY3	Reduced fabric 3	15058.8	20388.2	-27.8	-29.4	-1.6	Ruminant adipose
HRN13	Station Road	Late Romano-British	1644	RIM	CPN	Jar – native tradition	GREY1	Reduced fabric 1	1859.8	4620.4	-28.4	-30.3	-1.9	Ruminant adipose
HRN14	Station Road	Early Romano-British	1670	RIM	JBEV	Jar/bowl – everted rim	IASH2	Iron Age Shell Gritted: Site Fabric 2	5097.5	15980.0	-27.2	-29.7	-2.5	Ruminant adipose
HRN16	Station Road	Late Romano-British	1714	RIM	B321V	Bowl – as Coppack 1973 Fig. 5.11	GREY3	Reduced fabric 3	4319.3	6805.9	-29.3	-31.4	-2.1	Ruminant adipose
HRN19	Keelby Road	Late Romano-British	2118	RIM	B31	Bowl imitation samian form 31	OX1	Oxidised fabric 1	29.3	70.0	-28.2	-30.5	-2.4	Ruminant adipose
HRN20	Keelby Road	Late Romano-British	2174	RIM	B428	Bowl – as Darling 1999	KMOX	Kirmington 'Swanpool' type	449.0	1013.6	-27.8	-30.3	-2.4	Ruminant adipose
HRN21	Keelby Road	Early Romano-British	2179	RIM	JEV	Jar – everted rim	IAGR1	Iron Age tradition 'Gritty': Site fabric 1	618.2	1182.6	-29.6	-30.4	-0.8	Ruminant/non-ruminant adipose
HRN22	Keelby Road	Early Romano-British	2215	BS	JEV	Jar – everted rim	GREY3	Reduced fabric 3	735.7	1214.6	-28.3	-32.9	-4.6	Ruminant dairy
HRN23	Keelby Road	Early Romano-British	2215	RIM	B	Bowl – unclassified form	GREY	Miscellaneous grey wares	2479.2	3940.4	-27.7	-31.3	-3.5	Ruminant dairy
HRN24	Keelby Road	Late Romano-British	2297	RIM	CHP	Cheese press	GREY3	Reduced fabric 3	13749.9	28965.5	-29.1	-30.0	-0.9	Ruminant/non-ruminant adipose
HRN25	Westfield Farm	Medieval	4302	RIM	DPR	Dish – plain rim	SHEL	Miscellaneous undifferentiated shell-tempered	816.9	1105.5	-28.4	-31.1	-2.6	Ruminant adipose
HRN27	Westfield Farm	4th century AD	4679	RIM	CHP	Cheese press	GREY1	Reduced fabric 1	275.0	631.0	-28.4	-30.9	-2.4	Ruminant adipose
HRN28	Humberston Road	Early Romano-British	7030	RIM	JBNK	Jar/bowl necked	IASH3	Iron Age Shell Gritted; Site Fabric 3	458.9	1359.3	-27.9	-30.8	-2.9	Ruminant adipose
HRN29	Humberston Road	3rd century AD	7055	RIM	BNAT	Bowl – large native tradition bowl, eg, Darling and Precious 2014 no. 700	IAGR2	Iron Age tradition 'Gritty': Site fabric 2	5548.0	16109.0	-29.3	-34.0	-4.7	Ruminant dairy
HRN30	Humberston Road	Void context	7086	RIM	JBNK	Jar/bowl necked	IASH3	Iron Age Shell Gritted; Site Fabric 3	893.7	1764.1	-25.3	-28.4	-3.1	Ruminant dairy
HRN32	Humberston Road	3rd century AD	7136	RIM	BFLL	Bowl – flange-rimmed	IAGR4	Iron Age tradition 'Gritty': Site fabric 4	99.2	295.7	-28.5	-31.2	-2.7	Ruminant adipose

Sample	*Site name*	*Context phasing*	*Context*	*Sherd type*	*Vessel form*	*Form type*	*Vessel fabric*	*Fabric type*	*Lipid concentration* ($\mu g\ g^{-1}$)	*Total lipid in extract* (μg)	$\delta^{13}C_{16:0}$	$\delta^{13}C_{18:0}$	$\Delta^{13}C$	*Attribution*
HRN33	Humberston Road	3rd century AD	7137	BASE	BFLL	Bowl – flange-rimmed	IAGR4	Iron Age tradition 'Gritty': Site fabric 4	56.5	148.4	-28.5	-32.6	-4.1	Ruminant dairy
HRN34	Humberston Road	Early Romano-British	7139	RIM	BFLL	Bowl – flange-rimmed	IAGR4	Iron Age tradition 'Gritty': Site fabric 4	88.8	268.6	-29.4	-31.9	-2.5	Ruminant adipose
HRN37	Humberston Road	Early Romano-British	7358	BASE	JRUST	Jar rusticated	IAGR2	Iron Age tradition 'Gritty': Site fabric 2	1771.1	2882.8	-29.6	-32.7	-3.1	Ruminant dairy
HRN39	Humberston Road	Early Romano-British	7358	RIM	JEV1	Jar – everted rim	GREY1	Reduced fabric 1	806.3	633.0	-29.1	-30.8	-1.7	Ruminant adipose
HRN40	Humberston Road	Early Romano-British	7358	RIM	BWM1	Bowl – large, wide-mouthed; Darling and Precious 2014 no. 1225-7	GREY1	Reduced fabric 1	5233.5	7731.9	-28.7	-33.8	-5.1	Ruminant dairy
HRN41	Humberston Road	Early Romano-British	7358	RIM	BWM1	Bowl – large, wide-mouthed; Darling and Precious 2014 no. 1225-7	GREY1	Reduced fabric 1	1763.3	3670.0	-27.9	-33.6	-5.8	Ruminant dairy
HRN42	Humberston Road	Early Romano-British	7359	RIM	BKEV	Beaker – everted rim	GREY3	Reduced fabric 3	5107.8	8244.5	-29.4	-31.6	-2.2	Ruminant adipose
HRN43	Humberston Road	Early Romano-British	7402	RIM	J105	Jar – lid-seated; as Rigby and Stead 1976 Roxby form A	IAGR4	Iron Age tradition 'Gritty': Site fabric 4	2259.6	3422.3	-27.8	-31.5	-3.7	Ruminant dairy
HRN45	Humberston Road	Early Romano-British	7403	RIM	B37	Bowl – hemispherical possibly imitating samian 37	GREY3	Reduced fabric 3	6361.0	12718.9	-29.4	-32.5	-3.2	Ruminant dairy
HRN46	Humberston Road	Early Romano-British	7416	RIM	J105	Jar – lid-seated; as Rigby and Stead 1976 Roxby form A	IAGR1	Iron Age tradition 'Gritty': Site fabric 1	10339.4	6349.4	-28.7	-31.0	-2.3	Ruminant adipose
HRN47	Humberston Road	Furrow	7420	RIM	J105	Jar – lid-seated; as Rigby and Stead 1976 Roxby form A	IAGR4	Iron Age tradition 'Gritty': Site fabric 4	1470.2	1303.6	-27.6	-30.3	-2.7	Ruminant adipose
HRN48	Humberston Road	Late Iron Age/early Romano-British	7445	RIM	JNK	Jar necked	IASH5	Iron Age Shell Gritted; Site Fabric 5	633.4	992.7	-28.6	-31.2	-2.6	Ruminant adipose
HRN49	Humberston Road	Late Iron Age/early Romano-British	7450	RIM	JNK	Jar necked	IASH5	Iron Age Shell Gritted; Site Fabric 5	1594.3	3242.6	-28.8	-31.0	-2.3	Ruminant adipose
HRN50	Humberston Road	3rd century AD	7458	RIM	C33	Cup – imitation samian 33	OX1	Oxidised fabric 1	244.1	432.3	-27.2	-31.0	-3.8	Ruminant dairy
HRN51	Humberston Road	3rd century AD	7458	RIM	B36	Bowl – copy of samian form 36	GREY3	Reduced fabric 3	962.5	1006.7	-27.3	-31.6	-4.3	Ruminant dairy
HRN53	Humberston Road	3rd century AD	7458	RIM	JDW1	Jar – Dales ware, as Gillam 157	GREY1	Reduced fabric 1	2788.7	3071.2	-28.6	-30.3	-1.8	Ruminant adipose
HRN54	Humberston Road	3rd century AD	7458	RIM	JEVC	Jar – everted rim, curved as Gillam type 135	GREY1	Reduced fabric 1	226.7	195.4	-28.3	-29.6	-1.3	Ruminant adipose
HRN56	Humberston Road	Early Romano-British	7480	RIM	B334	Bowl – carinated jar/bowl (flat cordon as Darling and Precious 2014, 1157-9)	GREY1	Reduced fabric 1	5472.7	7613.6	-28.7	-31.3	-2.5	Ruminant adipose
HRN57	Westfield Farm	2nd century AD	8000	RIM	DGR	Dish – grooved rim	GREY1	Reduced fabric 1	1762.4	2458.3	-28.6	-31.4	-2.8	Ruminant adipose
HRN58	Westfield Farm	4th century AD	8176	RIM	B38	Bowl – imitation samian 38	OX1	Oxidised fabric 1	700.6	728.5	-27.1	-32.3	-5.2	Ruminant adipose
HRN59	Westfield Farm	Post-medieval	8206	RIM	JTR	Jar – triangular rim	GREY1	Reduced fabric 1	1103.1	2632.5	-28.6	-31.0	-2.3	Ruminant adipose
HRN61	Westfield Farm	Post-medieval	8208	RIM	L	Lid – unclassified form	OX1	Oxidised fabric 1	178.4	361.8	-29.2	-31.3	-2.1	Ruminant adipose
HRN62	Westfield Farm	Post-medieval	8208	RIM	JTR	Jar – triangular rim	GREY1	Reduced fabric 1	1098.5	1482.6	-28.4	-30.0	-1.6	Ruminant adipose
HRN63	Westfield Farm	Late Romano-British	8210	RIM	B405	Bowl – as Darling and Precious 2014, no. 389	CR	Roman cream wares (various)	217.5	424.4	-28.3	-30.3	-1.9	Ruminant adipose

lipid concentration from the sherds (**Table 4.28**) was 3.0 mg g^{-1}, with a maximum lipid concentration of 20.9 mg g^{-1} (HRN09). A further 12 potsherds contained high concentrations of lipids (HRN08, 6.7 mg g^{-1}, HRN11 11.8 mg g^{-1}, HRN12, 15.0 mg g^{-1}, HRN14, 5.1 mg g^{-1}, HRN16, 4.3 mg g^{-1}, HRN24, 13.7 mg g^{-1}, HRN29, 5.5 mg g^{-1}, HRN40, 5.2 mg g^{-1}, HRN42, 5.1 mg g^{-1}, HRN45, 6.4 mg g^{-1}, HRN46, 10.3 mg g^{-1} and HRN56, 5.5 mg g-1, **Table 4.28**), demonstrating excellent preservation. This likely indicates that these vessels were subjected to sustained use in the processing of high lipid-yielding commodities. The lipid extracts comprised lipid profiles dominated by free fatty acids, palmitic (C_{16}) and stearic (C_{18}), typical of a degraded animal fat (**Figs 4.10a–d**; Berstan *et al.* 2008; Evershed *et al.* 1997a).

Extracts from 11 sherds (HRN08, HRN09, HRN11, HRN13, HRN14, HRN16, HRN23, HRN29, HRN37, HRN51 and HRN57) include a series of long-chain fatty acids (in low abundance), containing C_{20} to C_{26} carbon atoms (**Fig. 4.10a and b**). It is thought these LCFAs likely originate directly from animal fats, incorporated via routing from the ruminant animal's plant diet (Halmemies-Beauchet-Filleau *et al.* 2013; 2014).

Also present in potsherds HRN02, HRN03, HRN04, HRN05, HRN20, HRN22, HRN40, HRN41, HRN45, HRN48, HRN49, HRN50 and HRN62 (nine vessels) are a series of even-numbered long-chain fatty acids ranging from C_{20} to C_{28} carbon atoms (**Fig. 4.10c and d**, HRN03 and HRN50). These exhibit a different profile from those discussed above, maximising at C_{24}. These LCFAs are strongly indicative either of an origin in leaf or stem epicuticular waxes (Bianchi 1995; Kolattukudy *et al.* 1976; Kunst and Samuels 2003; Tulloch 1976) or, possibly, suberin (Kolattukudy 1980; 1981; Pollard *et al.* 2008; Walton 1990), an aliphatic polyester found in all plants. Although primarily found on the surface of plant leaves, sheaths, stems and fruits, epicuticular waxes are also found associated with other plant organs, mainly seed oils and coats, flowers, bark and husks (Bianchi 1995). Long-chain fatty acids can also be found in plant oils, for example, groundnut oil comprises 4–7% of C_{20}, C_{22} and C_{24} saturated and monoene acids. However, these LCFAs are not diagnostic to families of plants and so cannot be used as anything other than a general indicator for plant processing. Also present in vessel HRN50 (cup: imitation samian 33) is the C_{29} *n*-alkane (**Fig. 4.10d**) and the C_{24} and C_{26} *n*-alcohol are also seen in vessels HRN22, HRN41 and HRN49, (Jar – everted rim, Bowl – large, wide-mouthed and Jar – necked, respectively), and possibly others, at low concentrations.

Long-chain *n*-alkanes are common components of leaf waxes, usually occurring in low concentrations (Koch and Ensikat 2008), in the range C_{25} to C_{35} (Chibnall *et al.* 1934), with an odd-over-even predominance (Eglinton and Hamilton 1967). The dominant chain lengths vary across plant taxonomic groups but the C_{27}, C_{29}, C_{31} and C_{33} homologues usually predominate (Diefendorf *et al.* 2011). Aliphatic long-chain *n*-alkanols are also often major components of plant leaf waxes, in the range C_{20} to C_{34}, with even-number homologues predominating (Bianchi 1995). The alcohols commonly have three or four major homologues, although in numerous plants a single component dominates, eg, C_{28} in several *Triticum* species, C_{32} in maize and C_{26} in barley, rye and oats. The presence of even-numbered long-chain fatty acids, odd-numbered *n*-alkanes and even-numbered *n*-alcohols strongly suggests the processing of leafy plants within at least nine of the vessels analysed (discussed further below).

GC-C-IRMS analyses were carried out on the sherds (*n*=49; 41 vessels, **Table 4.28**) to determine the $\delta^{13}C$ values of the major fatty acids, $C_{16:0}$ and $C_{18:0}$, and ascertain the source of the lipids extracted, through the use of the $\Delta^{13}C$ proxy. The $\delta^{13}C$ values of the $C_{16:0}$ and $C_{18:0}$ fatty acids from the lipid profiles are plotted onto a scatter plot along with the reference animal fat ellipses (**Fig. 4.11a**). It has been established that when an extract from a vessel plots directly within an ellipse, for example, ruminant dairy, ruminant adipose or non-ruminant adipose, then it can be attributed to that particular source. If it plots just outside the ellipse then it can be described as predominantly of that particular origin. However, it should be noted that extracts commonly plot between reference animal fat ellipses and along the theoretical mixing curves, suggesting either the mixing of animal fats contemporaneously or during the lifetime of use of the vessel (Mukherjee 2004; Mukherjee *et al.* 2005).

Of the 63 potsherds supplied, 13 came from different parts of five vessels (ie, rim or base). These are shown in **Table 4.28** as sherds with the same object number. It should be noted that only one sherd from each of these five vessels is plotted in **Fig. 4.11** (HRN02 HRN30, HRN32, HRN48 and HRN59), making a total of 41 vessels plotted.

Five of the lipid residues (HRN10, HRN22, HRN29, HRN40 and HRN41) plot within the dairy reference ellipse (**Fig. 4.11a**), suggesting these vessels were solely used to process dairy products, with vessel HRN58 plotting quite close to the dairy ellipse. Five vessels plot within the ruminant carcass products ellipse (HRN16, HRN39, HRN42, HRN46 and HRN61; **Fig. 4.11a**), with a significant number (*n*=18) plotting just outside the ellipse (eg, HRN06, HRN08, HRN11, HRN13, HRN19, HRN21, HRN24, HRN25, HRN27, HRN32, HRN37, HRN45, HRN48, HRN53, HRN56, HRN57, HRN59 and HRN63), suggesting they were specialised for processing ruminant products (from cattle, sheep or goat). Several of the remaining vessels (HRN02, HRN23, HRN43 and HRN51) plot between the ruminant dairy and carcass ellipses, although vessels HRN09, HRN12, HRN14, HRN20, HRN30, HRN47, HRN50 and HRN54 plot between these ellipses

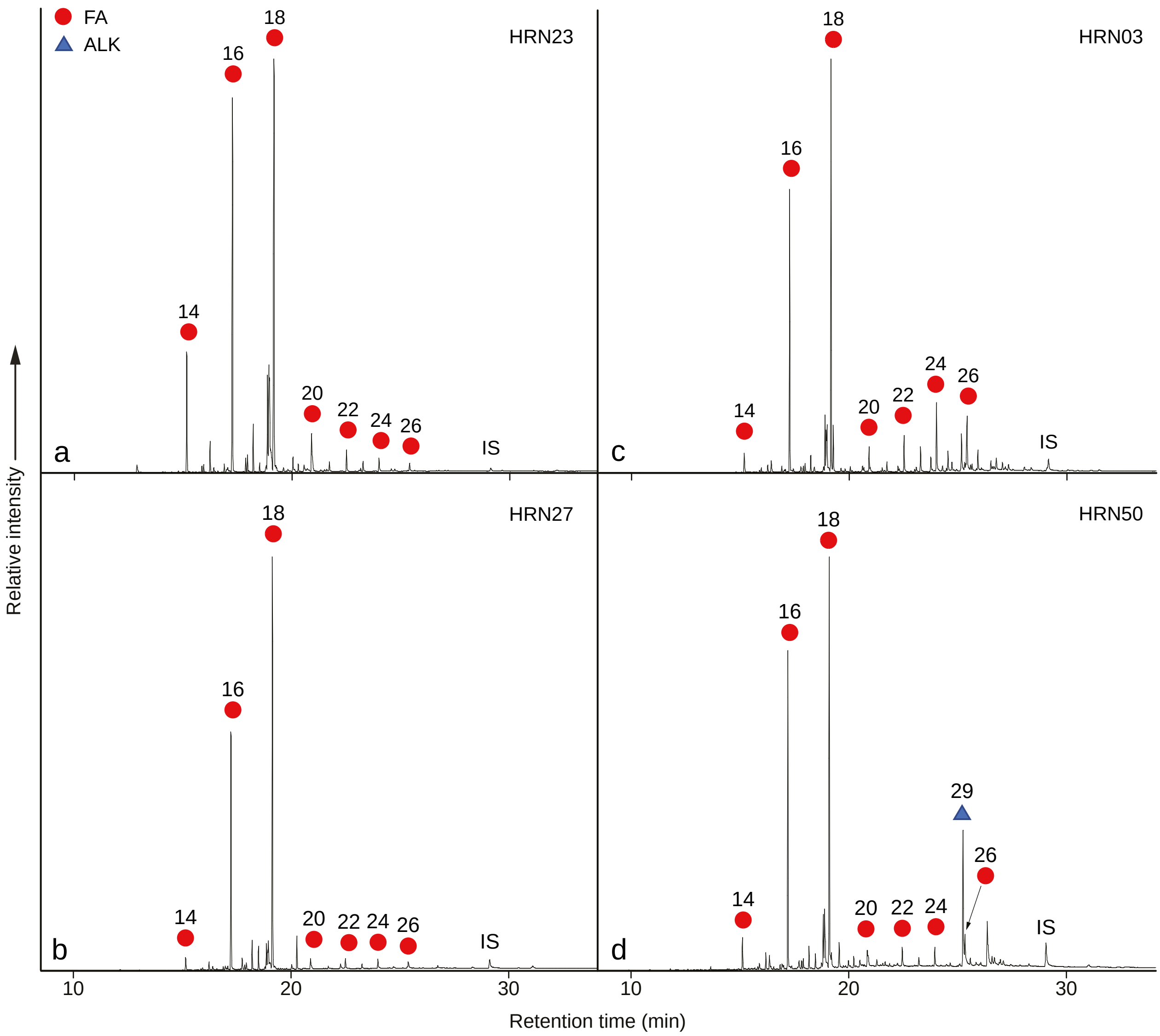


Figure 4.10 Partial gas chromatograms of trimethylsilylated FAMEs from Hornsea pottery extracts of a. early Romano-British bowl, b. Romano-British cheese press, c. early Romano-British Jar/Bowl necked and d. imitation Samian cup; red circles, n-alkanoic acids (fatty acids, FA); blue triangle, n-alkanes (ALK); IS, internal standard, C_{34} n-tetratriacontane. Numbers denote carbon chain length

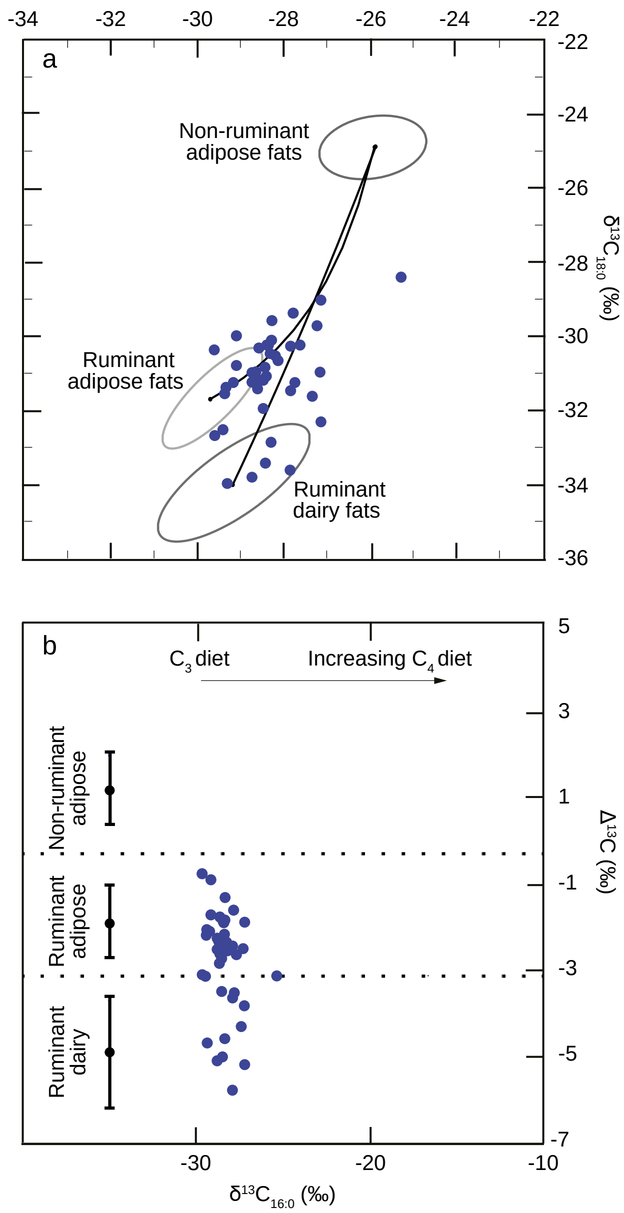


Figure 4.11 Graphs showing: a. $\delta^{13}C$ values for the $C_{16:0}$ and $C_{18:0}$ fatty acids extracted from Romano-British ceramics, with P=0.684 confidence ellipses for animals raised on a strict C_3 diet in Britain (Copley et al. 2003); b. the $\Delta^{13}C$ ($\delta^{13}C_{18:0}$–$\delta^{13}C_{16:0}$) values. The ranges represent the mean ±1 s.d. of the $\Delta^{13}C$ values for global modern reference animal fats (Dunne et al. 2012; Dudd and Evershed, 1998; Outram et al. 2009; Spangenberg et al. 2006; Gregg et al. 2009)

and the non-ruminant ellipse, albeit much closer either to the ruminant dairy or carcass (aside from HRN30), suggesting the possible addition of minor amounts of pig fats (**Fig. 4.11a**), either contemporaneously or during the lifetime of use of the vessel.

Ruminant dairy fats are differentiated from ruminant adipose fats when they display $\Delta^{13}C$ values of ≥-3.1‰, known as the universal proxy (Dunne *et al.* 2012; Salque 2012). Significantly, lipid residues from 14 of the 41 (34%) lipid-yielding vessels (HRN02, HRN10, HRN22, HRN23, HRN29, HRN30, HRN37, HRN40, HRN41, HRN43, HRN45, HRN50, HRN51, HRN58) plot within the ruminant dairy region (**Fig. 4.11b**) with $\Delta^{13}C$ values -3.5, -5.0, -4.6, -3.5, -4.7, -3.1, -3.1, -5.1, -5.8, -3.7, -3.2, -3.8, -4.3, -5.2 ‰, respectively, confirming that these vessels were used to process mainly secondary products, such as milk, butter and cheese. However, it should be noted that five vessels (HRN02, HRN23, HRN30, HRN37 and HRN45) plot at the extent of the boundary (with $\Delta^{13}C$ values of -3.5, -3.5, -3.1, -3.1 and -3.2 ‰, respectively), suggesting some mixing with ruminant carcass fats during the lifetime use of the vessel.

Vessels HRN06, HRN08, HRN09, HRN11, HRN12, HRN13, HRN14, HRN16, HRN19, HRN20, HRN21, HRN24, HRN25, HRN27, HRN32, HRN39, HRN42, HRN46, HRN47, HRN48, HRN53, HRN54, HRN56, HRN57, HRN59, HRN61 and HRN63 with $\Delta^{13}C$ values of -1.9, -2.2, -1.9, -2.6, -1.6, -1.9, -2.5, -2.1, -2.4, -2.4, -0.8, -0.9, -2.6, -2.4, -2.7, -1.7, -2.2, -2.3, -2.7, -2.6, -1.8, -1.3, -2.5, -2.8, -2.3, -2.1, and -1.9 ‰, respectively (n=27, 66%), plot within the ruminant adipose region (**Fig. 4.11b**), confirming these vessels were used to process ruminant (cattle, sheep and goat) carcass products. Two of these plot at the extent of the range (HRN21 and HRN24, everted-rim jar and cheese press) suggesting these vessels were used to process both ruminant and non-ruminant (pig) products.

As noted, of the 63 potsherds supplied, 13 came from different parts of five vessels (ie, rim or base). Two rim and two base sherds were supplied from a necked jar/bowl (HRN02, HRN03, HRN04 and HRN05, object number D6), two rims and a base come from a flanged rim bowl (HRN32, HRN33 and HRN34, object number D63), two rims from a necked jar (HRN48 and HRN49, object number D93) and two rims from a jar with a triangular rim (HRN59 and HRN62, object number D43). Of these, the $\Delta^{13}C$ values of sherds HRN48/HRN49 from object number D93 (-2.6 and -2.3 ‰, respectively) and HRN59/62 from object number D43 (-2.3 and -1.6 ‰, respectively) confirm each was used to process ruminant carcass products. The lipid concentrations were uniform for vessel HRN59/62 at 1.1 and 1.0 mg g^{-1} but less so for vessel HRN48/HRN49 at 0.6 and 1.6 mg g^{-1}.

The four sherds from vessel HRN02, HRN03, HRN04 and HRN05 (object number D6) yielded $\Delta^{13}C$ values of -3.5, -3.6, -3.0 and -3.4 ‰, respectively. These all plot at the extent of the dairy boundary except for sherd HRN04, which plots just within the ruminant adipose region. This suggests this vessel was used to process mainly dairy products although with some mixing of ruminant carcass products, either contemporaneously or during the lifetime use of the vessel. Lipid concentrations in the two base sherds are 0.4 mg g^{-1} (HRN03) and 0.08 mg g^{-1} (HRN05), lower than the two rim sherds at 0.4 and 0.3 mg g^{-1} (HRN02 and HRN04, respectively), which implies the heating of milk close to the rim of the vessel. The two sherds HRN28 and HRN30 (from object D60) yielded $\Delta^{13}C$ values of -2.9 and -3.1 ‰ respectively, with HRN28 plotting in the ruminant carcass region and HRN30 in the ruminant dairy region. Again, both plot at the extent of the boundary of the ranges, suggesting the mixing of ruminant carcass and dairy products, either contemporaneously or during the lifetime use of the vessel. Both were rim sherds with lipid concentrations of 0.5 and 0.9 mg g^{-1} so no comparisons could be made between base and rim sherds. Sherds HRN32, HRN33 and HRN34 (from object D63) yielded $\Delta^{13}C$ values of -2.7 -4.1 and -2.5 ‰, respectively. Lipid concentrations were low overall in this vessel (0.1, 0.06 and 0.09 mg g-1) suggesting it had not seen sustained use. The two rim sherds indicated processing of ruminant adipose products, whereas the base sherd was indicative of ruminant dairy processing. This suggests this vessel may have been used for processing carcass products but its last uses were for storage or serving of dairy products, such as butter.

Comparison between early and late Romano-British vessels

Comparison was made between sherds thought to originate from early and late Romano-British phases (see **Fig. 4.12**; **Table 4.28**). Five vessels (HRN25, HRN30, HRN47, HRN59 and HRN61) were not included as these were not found in context.

There does not seem to be any significant change in subsistence practices between the early and late Romano-British periods, although in the later period (**Fig. 4.12c** and **d**) there is little mixing of ruminant dairy and ruminant carcass products, unlike in the early phase (**Fig. 4.12a** and **b**), suggesting more vessel specialisation.

Discussion

Lipid recovery from the site was good at 78% with 49 of the 63 sherds (41 vessels, 75% of total vessels) yielding interpretable lipid profiles, and with many vessels containing extremely high concentrations of lipids, suggesting they were subjected to sustained use in the processing of high lipid-yielding commodities. Lipid recovery was comparable to that at the East Midlands Gateway (EMG) project (77%), which lies between Loughborough and Derby, in the Trent Valley in North Leicestershire, and higher than that at Highfields Farm, Derbyshire (53%). Recent organic residue analysis of two Iron Age/Romano-British sites in Lincolnshire (Goxhill and Immingham) also yielded high lipid recovery rates at 86% and 85% respectively (Dunne, unpublished data).

Diet and subsistence in the Romano-British period along the Hornsea Project One route

Meat and milk

Of the 41 Romano-British vessels analysed, one-third (34%) were used to process ruminant dairy products and two-thirds to process ruminant carcass products (66%) (**Table 4.28**). Previous research has demonstrated the importance of dairy products at the Iron Age sites of Maiden Castle, Danebury Hillfort, Yarnton Cresswell Field and Stanwick, where up to 56% of the extracts (237 vessels, equivalent to 22% of all of the sherds), contained dairy products (Copley *et al.* 2005). Similarly, recent analysis of pottery from the East Midlands Gateway (EMG) project, Leicestershire, showed that 71% of Iron Age vessels were used to process dairy products (unpublished data). These findings suggest a stronger preference for dairy products by native Britons, as observed by Caesar (Book 5.14).

However, lipid results from recent analysis of Romano-British potsherds from the site of Highfields Farm, Derbyshire, some 20 miles away from the EMG site (Dunne, unpublished data) found that 56% of vessels were used to process dairy products, in

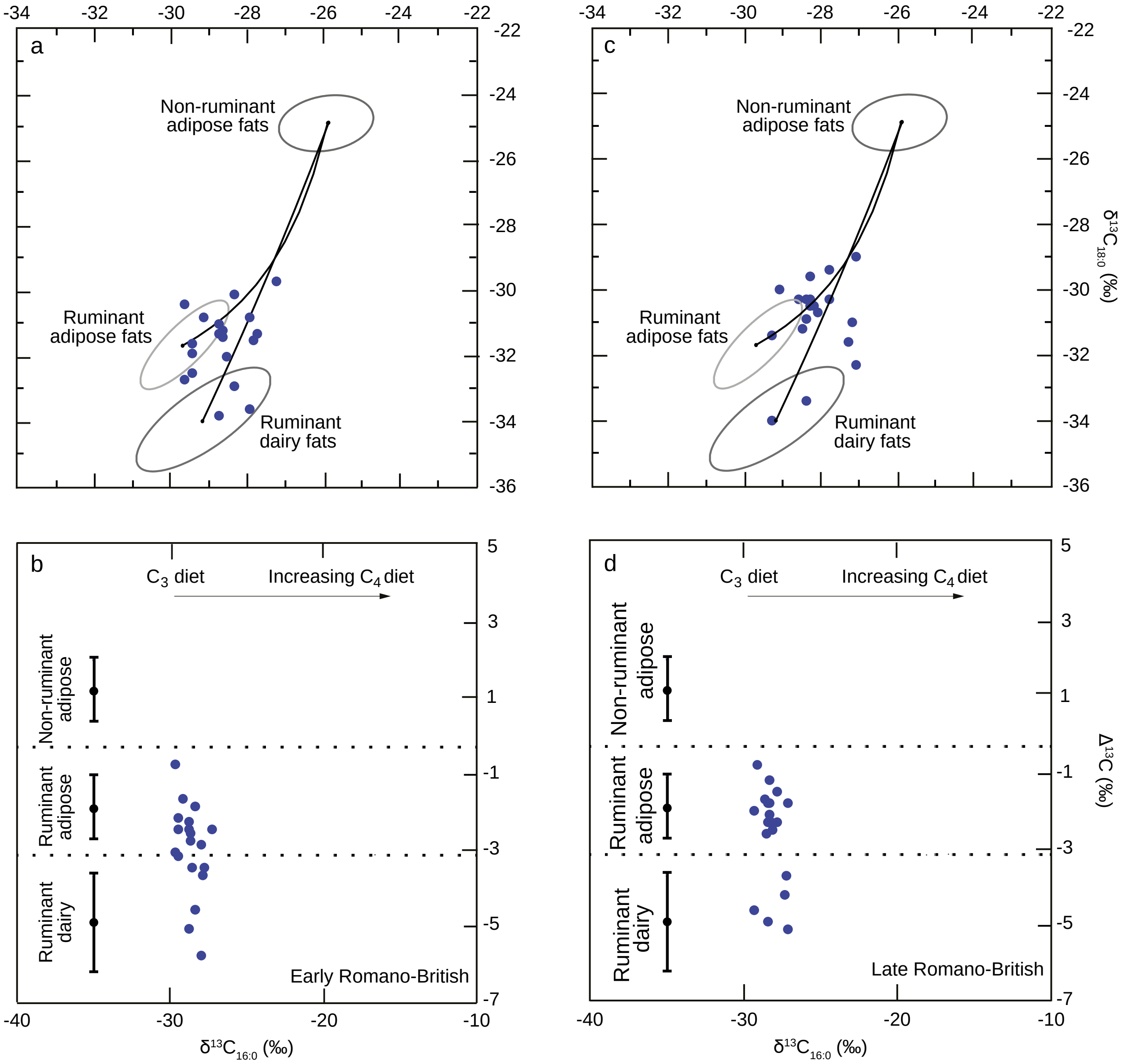


Figure 4.12 Graphs showing $\delta^{13}C$ and $\Delta^{13}C$ values for the $C_{16:0}$ and $C_{18:0}$ fatty acids from early and late Romano-British ceramics

contrast to the 25% of Romano-British vessels at EMG, suggesting dairying was of greater importance at EMG in the Iron Age, reducing in the Romano-British period. The results from Hornsea seem more comparable to those from EMG, which suggest that, whilst dairying is an important component of Romano-British farming practices, producing ruminant animals for their carcass products was more important at those sites. This may suggest that there was call for dairy products from inhabitants of the fort and civilian settlement (Strutts Park and Little Chester, Derby) located some 5 km from the Highfields Farm site, and they may have been produced for market. The sites at EMG and Hornsea are not close to major settlement centres, so agricultural production there may not have been geared towards as much milk production. Analysis of the faunal assemblage suggested significant use of cattle for traction and sheep for wool (or milk).

The results from Hornsea Project One stand in direct comparison to analysis of cooking vessels at an Iron Age/Romano-British rural site around 1.5 km west of the cable route at the A160/A180 Port of Immingham Improvement Scheme, Lincolnshire (Cavanagh in prep.). At the latter site, the majority of cooking vessels (90%), across all phases, vessel and fabric types, were used to process ruminant carcass products, with little evidence for dairying (Dunne, unpublished data). Interestingly, virtually all the potsherds from

Immingham contained very high concentrations of lipids, likely indicating that these vessels were subjected to sustained use in the processing of high lipid-yielding commodities. The presence of significant amounts of domesticated animal bones, dominated by cattle, sheep and goat, together with possible animal pens/enclosures, may suggest some form of specialised activity at the site. The presence of strainer vessels, including cheese presses, might indicate that this activity was related to rendering fat, possibly to use in cooking, as an illuminant or to soften animal skins. It is interesting that supposed 'cheese presses' at both Hornsea and Immingham were not used to process dairy products (ie, make cheese) but were rather used to strain fats from ruminant carcass products, and in the case of one Hornsea cheese press (HRN24), both ruminant and non-ruminant fats. Residue analysis of vessels at another Iron Age/Romano-British rural site in North Lincolnshire (Goxhill), found that 21% were used to process solely dairy products, but the majority were used primarily to process ruminant carcass products, with a number of vessels being used to process mixtures of both (Dunne, unpublished data). However, recent work on pottery from rural Romano-British sites in southern Britain found processing of both dairy and ruminant carcass products.

There is very little evidence for porcine product processing in vessels at Hornsea (although pig bones were found in the faunal assemblage), aside from possible mixing of ruminant and non-ruminant fats in two vessels, which correlates well with the results from EMG, where only one vessel was used to process pig products, and Highfields Farm, where there was no evidence for pig product processing. This is also analogous to the low levels of absorbed pig fats found in pottery at the Iron Age sites of Maiden Castle, Danebury Hillfort, Yarnton Cresswell Field and Stanwick (Copley *et al.* 2005). This also compares well with the low abundances of pig bones found at Iron Age sites in general (Cunliffe 1991; Hambleton 1999).

The absence of pork fats is interesting as consumption of pork and bacon is known to be a distinctly Roman trait, both from literary sources and the bone assemblages of central Italy (King 1999). There, pig bones dominate over cattle, sheep and goat remains, from the late Republic and into the early/middle Empire. This appears in part due to the agricultural conditions of the period, but mainly due to cultural preference, and it is thought that pork, particularly young pork and suckling pig, was considered to be a desirable and high-status dietary element (King 1999). However, in Roman Britain, pig bones are found at military and urban sites, but are less common in rural assemblages. For example, at Vindolanda, pork products (pork fat, young pig and ham) are mentioned in the accounts relating to the praetorium and the household of the commanding officer (Bowman and Thomas 1994), and pig neonate bones have been found in towns such as Lincoln, Silchester and Dorchester (Dobney *et al.* 1996; Fulford *et al.* 1997; Woodward *et al.* 1993), suggesting they were bred in towns.

Overall, this inter-site (and inter-regional) comparison is interesting, suggesting that, although dairying is clearly important in rural Romano-British economies in the Midlands (Leicester and Derbyshire) and North Lincolnshire, its importance may vary at different sites, possibly indicating specialised animal husbandry practices.

Plant processing

As noted, the presence of even-numbered long-chain fatty acids, odd-numbered *n*-alkanes and even-numbered *n*-alcohols, likely originating from plant epicuticular waxes, strongly suggests the processing of leafy plants within at least nine of the vessels analysed (22%).

Aside from the imitation samian cup, both jars (n=4) and bowls (n=4) were used to process plants. Of all nine vessels, including the cup, six were used to process dairy products and three to process ruminant adipose products.

A detailed review of archaeobotanical records from Roman Britain revealed that some 50 new food plants (mostly fruits, herbs and vegetables) were introduced into the country during the Romano-British period (van der Veen *et al.* 2008), although the import of some of these foods likely began in the Late Iron Age, as evidenced by one record of fig from the Late Iron Age port at Hengistbury Head (Cunliffe 2000). These new plant foods include cereals (millet, einkorn), pulses (lentil, bitter vetch), fruits (eg, fig, grape, olive, peach, date, apple, pear, pomegranate, peach, plum, cherry), vegetables (eg, leaf beet, cabbage, rape, turnip, leek, cucumber, carrot, parsnip, lettuce), oil-rich seeds (eg, sesame, hemp, poppy, black mustard), nuts (eg, walnut, pine nut, almond, chestnut) and condiments (eg, black pepper, coriander, dill, celery, fennel, parsley, marjoram, mint, black cumin, lovage). The most commonly found food is fig, found in 14% of all records, followed by coriander (in 12%), poppy (in 11%) and grape (in 10%), although it should be noted there would likely be a preservation bias against leafy plants, such as lettuce and leek, which rarely survive in the archaeological record (van der Veen *et al.* 2008).

It seems likely that some of the new leafy plants introduced by the Romans, such as cabbage, leek or lettuce, may have been processed in the vessels displaying plant lipid profiles, possibly making stews or pottages.

As van der Veen *et al.* (2008) note, the introduction of these plants represents a major diversification of fruits, herbs and vegetables available to indigenous Britons, adding considerably to their diet both in terms of variety and providing important nutrients. Their consumption and use would likely have been a means of indicating cultural identity and expressing social status.

Vessel use and specialisation

Bowls

Various bowl types were analysed (*n*=15), including one with a bead and flange rim (HRN06), a reeded rim (HRN08), a bifid rim, as Gillam 1976, 301 (HRN11), as Coppack 1973, fig 5.11 (HRN16), as Darling 1999 (HRN20), of unclassified form (HRN23), large, of native tradition, eg, Darling and Precious 2014, no. 700 (HRN29), flanged rim (HRN32, 33 and 34), two large, wide-mouthed examples, as Darling and Precious 2014, nos 1225–7 (HRN40 and 41), hemispherical possibly imitating samian 37 (HRN45), copy of samian form 36 (HRN51), carinated jar/bowl with flat cordon, as Darling and Precious 2014, nos 1157–9 (HRN56), imitation samian 38 (HRN58), and as Darling and Precious 2014, no. 389 (HRN63). Of these, six bowls were used to process ruminant dairy products and eight were used to process ruminant carcass products. However, from the remaining vessel, comprising three sherds (HRN32, 33 and 34, object number D63), two rim sherds suggested processing of ruminant adipose products, whereas the base sherd was indicative of ruminant dairy processing. This suggests this vessel may have been used for multiple purposes, processing carcass and dairy products.

It is assumed that the processing of dairy products in jars implies the heating of milk, possibly to make cheese, whereas the use of more specialised vessels, such as bowls, in the Romano-British period suggests milk/dairy products were being used or processed differently. As an example, BBW flanged bowls were argued by Gillam (1976) to be a development from the flat-rimmed bowl, and thought to have been used as a lid as well as a dish. Flat-rimmed dishes were known to be placed on top of flat-rimmed bowls and used as ‘casseroles’ for placing within the fire or ovens. The addition of a flange to the dish-shaped vessel means that the lid would fit better and be less likely to fall or be pushed off. These work equally well inverted.

However, it has also been suggested that these bowls could have been used for baking bread or cakes or roasting meat or vegetables, through a process the Romans called *sub testu*, where the item to be baked is placed on the hearth, inside a bowl-shaped vessel, and a (previously heated) cover placed over it. This is then buried in hot ash, creating a miniature (portable) oven inside the fire (David 1977; Cubberley *et al.* 1988; Hartley 1954). The covers, known as *clibanus* and *testum*, are mentioned so frequently in the literary record that there can be little doubt that they were a fundamental element of the Roman kitchen at many levels of society (Cubberley *et al.* 1988). *Clibanus* or *testum* covers (bell or dome-shaped clay shapes) have been found in Britain (Williams and Evans 1991) and some of the larger bowls may have been used in this way, with the flanges useful in manipulating the hot cover at the end of cooking (Cool 2006).

It is interesting that all bowls used to process dairy products contained very high lipid concentrations, with HRN23, HRN29, HRN40, HRN41, HRN45 and HRN51 having lipid concentrations of 2.5, 5.5, 5.2, 1.8, 6.4, 1.0 mg g^{-1} respectively (**Table 4.28**). This suggests these bowls could have been the bases of either casseroles or baking 'ovens'. Certainly, vessels placed directly within a fire (and subject to prolonged direct heat) provide optimal conditions for the mobilisation and transfer of animal fat lipids into the fabric of the vessel wall (Evershed 2008a). Interestingly, Cato, in his *De Agri Cultura* ('Concerning Agriculture', written in 160 BC), includes a recipe for *libum*, a kind of cheesecake. This recipe recommends macerating two pounds of cheese in a mortar, adding one pound of wheat flour, then mixing in an egg and kneading together. The dough should then be patted into a loaf shape and baked slowly on a warm hearth under a crock. Regular use of dishes/bowls for this purpose could well have resulted in concentrated dairy lipid signals. Interestingly, analysis of Black Burnished ware dishes and bowls from Highfields Farm, Derbyshire and EMG, Leicestershire, yielded very similar results, making a specialised use for these vessels very likely. Further analysis of similar vessels from other sites would help confirm this. Alternatively, these vessels could have been used as dishes to store or serve butter (or other dairy products) although, without hot processing to aid in the penetration of lipids into ceramic walls, it is not clear whether this would result in such a high lipid signal.

Eight bowls were used to process ruminant carcass products, HRN06, HRN08, HRN11, HRN16, HRN20, HRN56, HRN58 and HRN63, yielding lipid concentrations of 0.1, 6.7, 11.8, 4.3, 0.4, 5.5, 0.7, 0.2 mg g^{-1}, respectively (**Table 4.28**). Four of the bowls, with reeded rim (HRN08, 6.7 mg g^{-1}), with bifid rim, as Gillam 1976, 301 (HRN11, 11.8 mg g^{-1}), as Coppack 1973, fig 5.11 (HRN16, 4.3 mg g^{-1}), and carinated jar/bowl with flat cordon, as Darling and Precious 2014, nos 1157–9 (HRN56, 5.5 mg g^{-1}), had very high lipid concentrations. These vessels were subjected to sustained use in the processing of high lipid-yielding commodities and, if used for cooking *sub testu*, were likely used to roast or bake meat. The remaining bowls, with much lower lipid concentrations, may have seen less sustained use as cooking vessels or may have been used to serve food, although it should be noted these may be a feature of preservational differences.

Dishes

Three dishes were analysed, HRN10, as Gillam 1976, 337 GB Cam 16 copy, HRN25 plain rim and HRN57 grooved rim. Of these, HRN10 was used to process ruminant dairy products with a $\Delta^{13}C$ value of -5.0 ‰ and a lipid concentration of 0.2 mg g^{-1}, whereas HRN25 and HRN57 were used to process ruminant carcass products with $\Delta^{13}C$ values of -2.6 and -2.8 ‰, respectively and higher lipid concentrations of 0.8 and 1.8 mg g^{-1}, suggesting these may have been used more frequently than the dish used to process or serve dairy products.

Jars

There were 17 jars analysed (**Table 4.28**), of various types comprising necked jar (HRN48/49), two necked jars/bowls (HRN02–05 and 28/30), five lid-seated jars, as Rigby and Stead 1976, Roxby form A (HRN09, 12, 43, 46 and 47), three everted rim jars (HRN21, 22 and 29), everted rim jar/bowl (HRN14), everted rim, curved as Gillam 1976, 135 (HRN54), triangular rim (HRN59/62) , native tradition (HRN13), rusticated (HRN37) and Dales ware, as Gillam 1976, 157 (HRN53).

Of these vessels, the necked jar/bowl (HRN02–05), an everted rim jar (HRN22), the rusticated jar (HRN37) and a lid-seated jar, as Rigby and Stead 1976, Roxby form A (HRN43) were used to process dairy products (*n*=4, 34% of jars), with lipid concentrations of 0.3 (average of HRN02–05), 0.7, 1.8 and 2.3 mg g^{-1} respectively, with the remaining vessels being used to process ruminant carcass products (*n*=13, 66% of jars). These jars (HRN09, HRN12, HRN13, HRN14, HRN21, HRN28/30 average, HRN39, HRN46, HRN47, HRN48/49 average, HRN53, HRN54 and HRN59/62 average) yielded generally high or very high lipid concentrations (20.9, 15.0, 1.9, 5.1, 0.6, 0.7, 0.8, 10.3, 1.5, 1.1, 2.8, 0.2 and 1.1 mg g^{-1}, respectively), suggesting that these jars saw sustained use in the cooking of ruminant carcass products, likely in the form of stews.

Miscellaneous vessels including 'cheese presses'

Two 'cheese presses' (HRN24, GREY3, Grey wares reduced fabric 3, and HRN27, GREY1, Grey wares reduced fabric 1) were both used to process ruminant carcass products (with $\Delta^{13}C$ values of -0.9 and -2.4 ‰, respectively). As these vessels were clearly not used to make cheese then it seems likely they were used as strainer vessels, to strain animal fat. Interestingly, vessel HRN24 plots at the extent of the boundary between ruminant and non-ruminant carcass products, suggesting it may have been used to strain fats from both ruminant (cattle, sheep and goat) and non-ruminants (pig). This vessel (HRN24, 13.7 mg g^{-1}) displays markedly different (and very high) lipid concentrations from 'cheese press' HRN27 (0.3 mg g^{-1}), suggesting it was subjected to sustained use in the processing of these high lipid-yielding commodities.

The imitation samian cup (HRN50) was used to process dairy products, with a $\Delta^{13}C$ value of -3.8‰. Lipid concentration was quite low (at 0.2 mg g^{-1}), suggesting the vessel may have been used to drink milk as opposed to heating/cooking milk or other dairy products. Certainly, vessels used for cold-processing of foodstuffs (as opposed to heating/cooking) are less likely to absorb similar quantities of lipid to cooking pots, since heat is known to mobilise, and hence facilitate, the absorption of lipid components into the vessel fabric (Charters *et al.* 1993b; Cramp *et al.* 2011; Evershed 2008a). An everted rim beaker (HRN42) was used to process ruminant adipose products, with a $\Delta^{13}C$ value of -2.2‰. Lipid concentration was very high, at 5.1 mg g^{-1}, suggesting it was subjected to sustained use in the processing of high lipid-yielding commodities.

Vessel HRN61 is a lid, of unclassified form, with a diameter of 200 mm. This would be larger than many of the medium necked jars but might fit on some of the bowls which typically have the same diameter. Lipid concentration from the lid was 0.18 mg g^{-1}, and it yielded a ruminant carcass product signal (-2.1‰). The lid may have had fat applied as a post-firing treatment to seal it, or it may be that fat accumulated in the vessel lid through splashing during its use in cooking, raising the question as to how much lipid would be absorbed in a lid during cooking. Experimental roasting of meat showed that, as cooking progressed, the fat liquefied from the meat accumulated, with considerable amounts of water, mostly on the base of the vessel, although some was seen to splash up the sides. This pattern of lipid distribution differed from that of boiling foodstuffs in that greater amounts of lipid were present in the lower parts of the vessel. However, high concentrations of lipid in the upper parts of the vessels from roasting was unexpected and probably resulted from the combination of capillary action through the vessel fabric and spitting/splashing during cooking (Charters 1996; Charters *et al.* 1993b; Evershed 2008a).

Conclusion

Organic residue analysis was carried out on 55 Romano-British pottery vessels (63 sherds). The results, determined from GC, GC-MS and GC-C-IRMS analyses, demonstrate that one-third (34%) of vessels were used to process ruminant dairy products, two-thirds to process ruminant carcass products (66%), with very minor evidence (two vessels) for the exploitation of pig products. Evidence for plant processing was found in just over one-fifth of vessels (22%). Overall, the results provide valuable information on farming practices and animal management in Romano-British northern Lincolnshire, with inter-regional comparisons with sites from Leicestershire, Derbyshire and Lincolnshire suggesting that there may be a degree of specialisation at farms, with some focusing more on dairy production and others on carcass processing.

Vessel specialisation seems to be clearly indicated, with jars mainly used to cook ruminant products, likely stews, and bowls being used as the bases of either casseroles or baking 'ovens', and often used to cook dairy-based meals in this manner. Interestingly, vessels described as standard as 'cheese presses' do not seem to be used for making cheese, but rather for straining carcass fats.

Chapter 5
Earlier Prehistoric and Post-Roman (Anglo-Saxon to Modern) Pottery

Earlier Prehistoric Pottery

Matt Leivers

Introduction

Only 36 sherds weighing 614 g date to periods before the Iron Age. With the exception of a single vessel deposit comprising 15 of these sherds (331 g), and two groups of three sherds possibly from the same pot (see below), no vessel is represented by more than one sherd. Each sherd (or group of sherds) is represented by its own fabric (grog-tempered, sandy, rock-tempered, with organics, or various mixtures of the four: **Table 5.1**), suggesting that for the most part the assemblage merely represents the redeposited residue of earlier prehistoric activity. Condition is mostly poor, with eroded surfaces and margins and no signs of fresh breaks, except for one group of sherds which may be Neolithic and are markedly better-preserved. Even the single vessel deposit is in a rather poor condition, although in this instance the damage may have occurred post-deposition.

Table 5.1 Earlier prehistoric pottery fabrics

Fabric code	*Description of fabric*
G1	Sparse coarse grog in a silty matrix
G2	Sparse medium grog in a silty matrix
G3	Moderate medium grog in a silty matrix
O1	Burnt-out organics in a fine silty matrix
R1	Moderate well-sorted coarse to very coarse angular dark rock; sand with very sparse mica; rare poorly sorted very coarse quartzite probably natural
S1	Fine sandy matrix with no obvious temper
S2	Sand, no obvious temper, not as fine as fabric S1
S3	Quartz sand, sparse fine rounded quartz grains probably natural
S4	Sparse poorly sorted fine to very coarse angular crushed calcined flint in fine sand
S5	Sparse well-sorted fine sub-angular ?quartzite in fine sand
S6	Quartz sand, sparse to moderate fine rounded quartz grains probably natural
SG1	Sparse moderate grog in fine sand
SO1	Occasional burnt-out organics in sand with sparse detrital material

Early Neolithic and Possible Early Neolithic

Three sherds from the subsoil (461) at Laceby Beck are variously probably and possibly Early Neolithic. The most convincing is a small fragment of a simple, in-turned, flattened rim from a closed vessel in fabric R1 (**Fig. 5.1**, 1). Two body sherds in fabrics S4 and S5 may derive from plain bowls.

Six sherds (two groups of three joining sherds) in fabric S6 came from Anglo-Saxon pit 493 (fill 494) at Laceby Beck. Three join to form a portion of a gentle shoulder, burnished on and above the angle, while three join to form part of the wall, not noticeably curved but too thin to be a base. These sherds may all derive from one vessel. It is possible that a Late Bronze Age date would be appropriate, but in the absence of diagnostic features it is impossible to be certain.

Peterborough Ware (Middle Neolithic)

A single sherd from a fill of Anglo-Saxon ditch 21022 (837; **Fig. 5.1**, 2) at Laceby Beck came from the rim of a Peterborough Ware vessel. The sherd is a grog-tempered (fabric G1) fragment of either a very short Fengate collar or an in-turned Mortlake rim, more likely the latter. The rim top is decorated with a fine twisted cord chevron. The exterior has a line of short, diagonal, twisted cord impressions above a line of incised chevrons above a line of longer diagonal incisions.

Grooved Ware (Late Neolithic)

A single abraded sherd from a fill of Anglo-Saxon ditch 21003 (627) at Laceby Beck came from the rim of a Grooved Ware vessel of Durrington Walls type. The sandy rim (fabric S1) is simple, pointed and in-turned with at least four horizontal lines of twisted cord on the interior. The exterior has nine horizontal grooves below the rim, then at least four more interrupted by a diagonal incised line (**Fig. 5.1**, 3).

Beaker (Late Neolithic/Early Bronze Age)

Two very small sherds (weighing only 4 g together) came from the fill of an otherwise undated pit 646 (647) and a third, larger sherd in a similar fabric with evenly oxidised surface and unoxidised interior came from Anglo-Saxon feature 493 (494), all at Laceby Beck. The two from 647 are in sandy fabric S2. One is a fragment from a simple plain rounded rim; both have oxidised surfaces and unoxidised interiors. The third sherd in fabric S3 is undecorated. In each case the wall thickness, fabric and firing are suggestive of Beaker.

Early Bronze Age

The remaining sherds are likely to date to the Early Bronze Age. In two instances the plain body sherds are grog-tempered (fabrics G3 and G2 respectively). These are a sherd from Brigsley parish (from root disturbance 184), and a sherd from the fill of Anglo-Saxon ditch 21002 (821) at Laceby Beck. Two sherds from the fill of Iron Age ditch 955 (956) at Habrough have burnt-out organics (fabric O1). All have oxidised exteriors, are unoxidised elsewhere, and lack any particularly diagnostic features. They are not certainly Early Bronze Age.

More definite is a single large thin-walled sherd (21 g) from the fill of Romano-British or later gully 807 (808; **Fig. 5.1**, 4) at Laceby Beck, tempered with sand and grog (fabric SG1). It has five slight horizontal ridges with diagonal impressions between (the sherd is too abraded to be certain if they were made with the end of a small bone or cord). The sherd derives from a Food Vessel.

The remaining 15 sherds (331 g) from subsoil 272 in Laceby parish are in a sandy fabric with some burnt-out organics (fabric SO1). Seven of the sherds join and derive from the rim and upper body of a jar probably belonging to Burgess's 'Standropp Rigg' style (1995, 145). The rim is pointed, upright, and has a slight bevel (**Fig. 5.1**, 5). The slightly convex body has a zone of stab decoration consisting of irregular horizontal lines of varied vertical and diagonal fingernail impressions extending 800 mm from the rim. Burgess considers the type to date to the late Early Bronze Age.

Discussion

In general, the quantities of material recovered are too small to allow for meaningful discussion, indicating nothing beyond that activity of some (presumably domestic) nature was taking place throughout the earlier prehistoric periods. The concentration (if such it can be called) of material of Neolithic, Beaker and Early Bronze Age date around Laceby Beck may be significant in terms of the identification of locations preferred at those times, but the amounts of material in each instance are vanishingly small.

Over half the assemblage by weight came from a single vessel findspot in Laceby parish south of the Laceby Beck site. The presence of what may originally have been a single large sherd from one vessel is suggestive of a meaningful deposit, rather than casual loss or redeposition, but the unstratified context of recovery and the absence of contemporary features makes understanding of its meaning opaque. An undated ditch and cropmarks known from aerial photographs suggest wider occupation, but these are not necessarily contemporary.

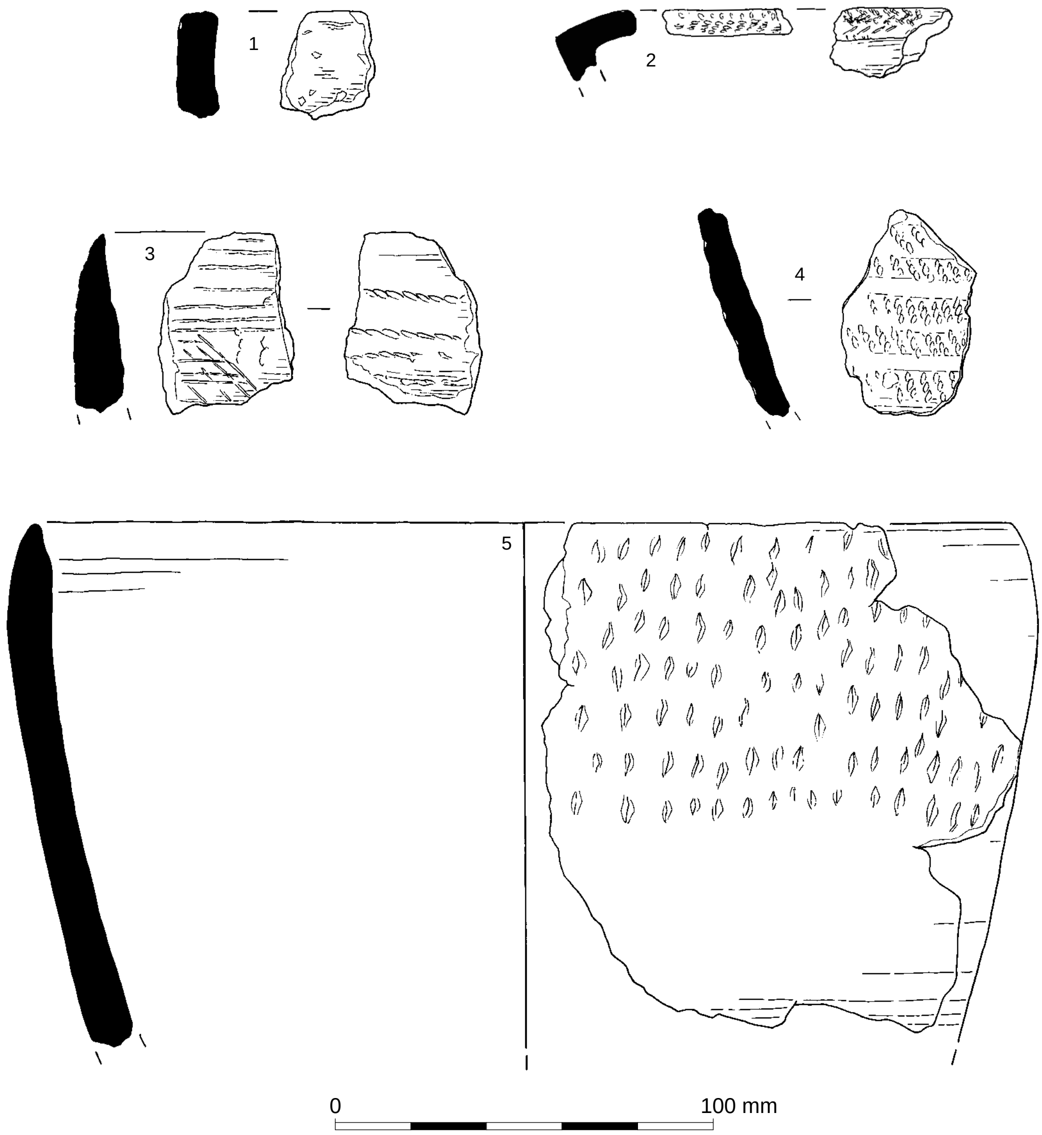


Figure 5.1 Earlier prehistoric pottery

Illustrated vessels

Figure 5.1

Early Neolithic and Possible Early Neolithic

1. Simple, in-turned, flattened rim from a closed vessel. Fabric R1, subsoil 461

Middle Neolithic

2. Rim. *Fabric G1, ditch 21022, fill 837*

Late Neolithic

3. Rim, simple, pointed and in-turned with twisted cord on interior and horizontal grooves and diagonal incision on exterior. *Fabric S1, ditch 21003, fill 627*

Early Bronze Age

4. Thin-walled Food Vessel with horizontal ridges and diagonal impressions. *Fabric SG1, gully 807, fill 808*
5. Pointed, upright and slightly bevelled rim of 'Standropp Rigg'-style jar with a zone of stab decoration 800 mm from rim. *Fabric SO1, subsoil 272*

Post-Roman (Anglo-Saxon to Modern) Pottery

Jane Young with C G Cumberpatch

Introduction

This report is in the main based on 1219 sherds of certain post-Roman date and a further four sherds of uncertain Roman or post-Roman date. The assemblage represents no more than 679 vessels and weighs a combined 22.127 kg. A further 250 sherds, representing 177 vessels, recovered during the evaluation stage by PCAS Archaeology (Irving 2013; RPS 2013e) are also considered here. However it was not possible to re-examine all of the evaluation assemblage and the quantification of material recovered by PCAS has not been included in the tables or as part of the period-by-period text of this report. Some 71 post-Roman ware types and four sherds of uncertain Roman or post-Roman date were identified (**Table 5.2**). The 71 post-Roman wares include local and regionally imported types with no continental imports recovered.

The recovered assemblages add greatly to our knowledge of post-Roman ceramic sequences and fabric types found along the scheme. In some instances the material has confirmed previous assumptions, whilst in others it has revealed new fabrics and forms. One of the surprising aspects is the presence of new shell-tempered Late Saxon types in the Killingholme area. These have also been noted more recently at sites in Ulceby, and potentially in Stallingborough, suggesting a wider ceramic zone of influence.

The pottery was recovered from a series of sites along the scheme. Overall, the greater number of recovered vessels are of Saxo-Norman to early medieval date, probably belonging to the period between the mid-12th and early/mid-13th centuries. A large group of handmade Anglo-Saxon vessels were recovered from Laceby Beck, with only single sherds of this period being found elsewhere, in Brigsley parish and in evaluation trench 97 (RPS 2013e). Blow Field was the only site from the whole scheme to produce vessels of Late Saxon date. Medieval pottery, mostly of 13th- to mid-14th-century date, was a common find on several sites. Few sites yielded sherds of late medieval to early modern date.

Methodology and Terminology

The pottery recovered from Hornsea Project One was catalogued by ware (common name) and fabric type using mnemonic codenames (**Table 5.3**) based on those used for the Lincoln Fabric Type Series (Young *et al.* 2005). These have been expanded for use across the county (Jennings 2019, sections 13.4 and 13.5). Post-medieval and early modern types were identified visually; earlier fabrics were identified using a x20 binocular microscope. The North and North East Lincolnshire (Boyle and Young 2008,

Table 5.2 Post-Roman pottery summarised by ware type and ceramic period with sherd and vessel count

Codename by ceramic period	*Total sherds*	*Total vessels*
RLSAX	3	3
RMED	1	1
Uncertain total	4	4
CHARNT	46	24
ECHAF	85	10
ERRA	8	7
ESAXLOC	44	24
ESAXSH	1	1
ESGS	18	12
NELASCQC	39	15
NELMQC	14	14
NLSCQRC	1	1
SST	6	6
Anglo-Saxon total	262	114
LKT	6	6
NELLKT	5	4
NELLSS	2	2
TORK	3	2
TORKT	1	1
WLSG	2	2
Late Saxon total	19	17
LFS	302	109
NLFS	4	4
NLQS	4	2
SNLOC	2	1
ST	3	2
YG	13	4
Saxo-Norman total	328	122
DST	1	1
BEVO1	105	66
BEVO1T	19	17
ELQC	6	6
EMX	1	1
HEMGG	4	2
LEMS	92	44
NGR	1	1
NLBEVOT	1	1
NLCBEVOT	15	3
NLCQC	14	11
NLEMS	5	3
NLQC	16	14
WEMS	2	2
Early medieval total	282	172
BEVO2	110	90
BEVO2T	7	6

revised Collyer 2018) and Lincolnshire County Type Series were consulted, and three new Anglo-Saxon ware types and one medieval type were added to the North and North East Lincolnshire Type Series.

The assemblage was quantified within each context by ware and where possible a fabric type, with three measures: number of sherds, estimated vessel count using sherds obviously belonging to a single vessel, and weight. Estimated vessel equivalent by percentage of rim present (REVE) was not considered suitable as few rim diameters could be accurately measured. Every effort was made to reconstruct cross-context vessels and these have been numbered in the archive as Vessels 1–13. The ceramic data including attributes such as decoration, condition and usage was entered on a Microsoft Access Database using ceramic codenames, and a copy of this is available in the archive. Recording of the assemblage was in accordance with the guidelines laid out in Slowikowski *et al.* (2001) and the PCRG, SGRP, and MPRG guidelines (2016). Vessel forms were identified using the Medieval Pottery Research Group's guide to the classification of forms (MPRG 1998; 2001). The assemblage from the initial evaluation stage (RPS 2013e) was originally recorded at a more basic level. As it was not possible to re-examine the complete assemblage all references to the pottery made in this report are taken from the original assessment report (Irving 2013) unless stated.

The pottery types are summarised here by ceramic period with individual site-based fabric descriptions available in the archive. Because of Covid-19 constraints it was not possible to visit several type series to directly compare the unidentified regional imports; however, Dr C G Cumberpatch has kindly examined and commented on these.

Romano-British/Post-Roman

Four abraded wheel-thrown sherds of uncertain type recovered from Blow Field may be of Romano-British or post-Roman date but are in too poor a condition to identify with any confidence. Three reduced sherds in variable quartz-tempered fabrics are of Romano-British or Late Saxon date (RLSAX) and a small and very abraded sherd in a fine oxidised sandy fabric is potentially of Romano-British or medieval date.

Anglo-Saxon

A group of 262 handmade Anglo-Saxon sherds representing no more than 114 vessels was recovered. With the exception of a single sherd (ESAXLOC) recovered from bioturbation area 184 (fill 185) in Brigsley parish, all of the material was found at Laceby Beck. For the purpose of assessment, the pottery has been

Codename by ceramic period	Total sherds	Total vessels
HUM	41	38
HUMB	4	4
LSWV	3	3
MEDLOC	5	2
MEDX	10	8
NLCS	4	3
NLFMSW	3	3
NLST	17	5
POTT	1	1
Medieval total	205	163
LMX	3	1
TOYII	2	2
Late medieval total	5	3
BERTH	15	8
BL	5	4
CIST	1	1
GRE	27	17
LHUM	8	5
PMLOC	3	3
RGRE	1	1
SLIP	1	1
STMO	3	3
STSL	5	3
Post-medieval total	69	46
BERTH	1	1
BL	1	1
BS	7	2
CREA	1	1
ENGS	4	4
ENPO	1	1
LERTH	5	3
NCBW	1	1
NOTS	1	1
PEARL	5	5
REFR	2	2
SWSG	2	2
TPW	9	5
WHITE	9	9
Early modern total	49	38
Totals	1223	679

divided into 10 'ware types', each subdivided into loosely grouped site-based fabrics. These divisions were made at x20 binocular magnification by the author (where possible with a freshly broken edge) but are somewhat subjective.

Handmade pottery of Anglo-Saxon type was manufactured throughout the Anglo-Saxon period in England. Although it continued to be produced in certain parts of the country until at least the mid-/late 9th century, in Lincolnshire it is usually confined to the period between the 5th and 8th centuries. The vessels recovered from Laceby Beck are most likely to date to between the 5th and 6th centuries, although individually most vessels without decoration or heavy external burnishing can only be assigned to the period between the 5th and 8th centuries with absolute certainty. The presence of decorated sherds, the use of heavy external burnishing and the complete absence of the shell-tempered vessels (which dominate Middle Saxon groups in Lincolnshire) characterise the group. The East Midlands Anglo-Saxon Pottery Project (Vince and Young 1991; 1994), mainly carried out in the 1990s and early 2000s, identified a range of types in the county. Those found in North and North East Lincolnshire have subsequently been revised and refined by Perry (2009a; 2009b). Many of the sherds recovered from Laceby Beck fall into already established groupings, but three new mixed groups have been established for the purpose of this report (NELASCQC, NELMQC and NLSCQRC). Sherds in these three ware groupings contain a mixed quartz sand of mainly medium (NELMQC) or coarse grain size (NELASCQC and NLSCQRC) and a variable density of grains of chalk together with a wide range of other inclusions. The division between these groups and others such as ESAXLOC and CHARNT on this site was often subjective due to the inability even at microscopic level to see all of the inclusions present in a break. Some vessels have evidence for use in the form of external soot residues, internal carbonised deposits and internal attrition or leaching.

If the three North and North East Lincolnshire mixed gravel fabric groupings are considered together they form the most common type to occur by sherd and vessel count, with 54 sherds representing 30 vessels. They by no means dominate the Anglo-Saxon assemblage though, as vessels of Charnwood type (46 sherds from 24 vessels) and local sand fabrics (44 sherds from 24 vessels) are also well represented. The recovered assemblage is too small and scattered to determine any chronological patterns within the ware groupings, although it is noticeable that all of the decorated sherds are in the mixed gravel-tempered or local fabric groups. The complete absence of shell-tempered Middle Saxon types strongly suggests that, overall, the recovered material is likely to pre-date the 8th century. Elsewhere in Lincolnshire, however, examples of all of the previously recorded fabric groups have been found stratified in 8th-century contexts, so a later date for individual isolated sherds cannot be completely ruled out.

Table 5.3 Ceramic codenames summarised by ware type with sherd count, vessel count and weight in grams

Codename	*Full name*	*Earliest date*	*Latest date*	*Total sherds*	*Total vessels*	*Total weight*
BERTH	Brown-glazed earthenware	1550	1800	16	9	378
BEVO1	Beverley Orange ware Fabric 1	1100	1230	105	66	1636
BEVO1T	Beverley Orange-type ware Fabric 1	1100	1230	19	17	278
BEVO2	Beverley Orange ware Fabric 2	1230	1350	110	90	1461
BEVO2T	Beverley Orange-type ware Fabric 2	1230	1350	7	6	68
BL	Black-glazed wares	1550	1750	6	5	225
BS	Brown Stoneware	1680	1850	7	2	328
CHARNT	Charnwood ware	450	800	46	24	698
CIST	Cistercian-type ware	1480	1650	1	1	19
CREA	Creamware	1770	1830	1	1	1
DST	Developed Stamford ware	1150	1230	1	1	5
ECHAF	Early to mid-Anglo-Saxon Vegetal-tempered ware	450	800	85	10	1934
ELQC	East Lincolnshire Quartz and Chalk fabrics	1100	1220	6	6	44
EMX	Non-local early medieval fabrics	1150	1230	1	1	35
ENGS	Unspecified English Stoneware	1750	1900	4	4	57
ENPO	English Porcelain	1743	2000	1	1	5
ERRA	Erratic-tempered	450	800	8	7	113
ESAXLOC	Early Anglo-Saxon Local wares	450	800	44	24	1530
ESAXSH	Anglo-Saxon Shell-tempered fabrics	450	800	1	1	10
ESGS	Early to mid-Anglo-Saxon Greensand quartz-tempered	550	800	18	12	375
GRE	Glazed Red Earthenware	1500	1650	27	17	660
HEMGG	Humber Early Medieval Glazed Gritty ware	1130	1230	4	2	269
HUM	Humberware	1250	1550	41	38	1500
HUMB	Humber Basin fabrics	1250	1500	4	4	46
LEMS	Lincolnshire Early Medieval Shelly	1130	1230	92	44	2080
LERTH	Late earthenwares	1750	1900	5	3	26
LFS	Lincolnshire Fine-shelled ware	970	1200	302	109	3850
LHUM	Late Humber-type ware	1550	1750	8	5	302
LKT	Lincoln Kiln type	850	1000	6	6	91
LMX	Late medieval non-local fabrics	1350	1550	3	1	287
LSWV	Lincoln Glazed Sandy ware Variant Fabric	1200	1500	3	3	50
MEDLOC	Medieval local fabrics	1150	1450	5	2	123
MEDX	Non-local medieval fabrics	1150	1450	10	8	126
NCBW	Nineteenth-century Buff ware	1800	2000	1	1	44
NELASCQC	North East Lincolnshire Anglo-Saxon Coarse Quartz and Chalk	400	800	39	15	1095
NELLKT	North East Lincolnshire Lincoln Kiln type	880	1000	5	4	51
NELLSS	North East Lincolnshire Late Saxon Shell-tempered	880	1000	2	2	55
NELMQC	North East Lincolnshire Mixed Quartz and Chalk	400	800	14	14	356
NGR	Northern Gritty ware	1180	1450	1	1	15
NLBEVOT	North Lincolnshire Beverley type	1100	1230	1	1	11
NLCBEVOT	North Lincolnshire Calcareous Beverley type	1100	1230	15	3	282
NLCQC	North Lincolnshire Coarse Quartz and Chalk	1050	1220	14	11	177
NLCS	North Lincolnshire Coarse Sandy ware	1175	1400	4	3	37
NLEMS	North Lincolnshire Early Medieval Shelly	1130	1230	5	3	58
NLFMSW	North Lincolnshire Fine to Medium Sandy ware	1150	1450	3	3	33
NLFS	North Lincolnshire Fine-shelled ware	970	1200	4	4	47
NLQC	North Lincolnshire Quartz and Chalk-tempered ware	1050	1220	16	14	131

Codename	Full name	Earliest date	Latest date	Total sherds	Total vessels	Total weight
NLQS	North Lincolnshire Quartz and Shell Fabrics	950	1220	4	2	27
NLSCQRC	North Lincolnshire Saxon Coarse Quartz and Rounded Chalk	450	750	1	1	29
NLST	North Lincolnshire Shell-tempered	1180	1450	17	5	120
NOTS	Nottingham stoneware	1690	1900	1	1	24
PEARL	Pearlware	1770	1900	5	5	20
PMLOC	Post-medieval local fabrics	1450	1700	3	3	85
POTT	Potterhanworth-type ware	1250	1500	1	1	22
REFR	Refined Red Earthenware	1730	1800	2	2	21
RGRE	Reduced glazed red earthenware	1600	1850	1	1	21
RLSAX	Roman or Late Saxon	50	1000	3	3	28
RMED	Roman or medieval	50	1500	1	1	4
SLIP	Unidentified slipware	1650	1750	1	1	6
SNLOC	Saxo-Norman local fabrics	870	1150	2	1	9
SST	Early to Mid-Saxon sandstone-tempered	550	800	6	6	192
ST	Stamford Ware	970	1200	3	2	9
STMO	Staffordshire/Bristol mottled-glazed	1690	1800	3	3	33
STSL	Staffordshire/Bristol slipware	1680	1800	5	3	37
SWSG	Staffordshire White Salt-glazed stoneware	1700	1770	2	2	20
TORK	Torksey ware	850	1100	3	2	27
TORKT	Torksey-type ware	850	1100	1	1	5
TOYII	Toynton Late Medieval ware	1450	1550	2	2	156
TPW	Transfer printed ware	1770	1900	9	5	27
WEMS	Wheel-thrown Early Medieval Shell-tempered	1050	1220	2	2	20
WHITE	Modern whiteware	1850	1900	9	9	71
WLSG	Lincoln-type Wheel-thrown Late Saxon Greyware	900	1030	2	2	45
YG	Yorkshire Gritty ware	1050	1250	13	4	67
Totals				1223	679	22127

Acid igneous rock group (CHARNT)

Forty-six sherds representing 24 vessels have been grouped as of Charnwood type. Superficially these fabrics are similar to those produced in the Charnwood Forest area of Leicestershire, but the grains of acid igneous rock contained in the fabric are more likely to be of local origin (Ixer and Vince 2009; Williams and Vince 1997). Visually, seven different 'fabrics' were noted but these are likely to represent a spectrum within the type rather than seven different sources. Other inclusions present include sub-angular to angular quartz grains, aggregated sandstone grains, muscovite mica, rounded chalk and carbonised vegetal matter in varying combinations. Some sherds with very mixed fabrics are visually similar to mixed fabrics found in North Lincolnshire defined as SSTNL (Perry 2009a). Most of the CHARNT vessels recovered from this site are reduced with thin external oxidised or irregularly fired surfaces, whilst a few also have thin internal oxidised surfaces or margins. Five vessels have all-over or partially burnished external surfaces, and a further two vessels have a smoothed but unburnished surface. All identifiable forms appear to be jars of mixed small, medium and large size. Certainly the four recovered rims are all from jars. Three of the four rims present are of simple rounded type, with the two that are from necked jars being slightly out-turned (**Fig. 5.2**, 1). A third rounded rim comes from a jar with an in-turned or biconical profile (**Fig. 5.2**, 2). The other rim is also out-turned but has been finger-flattened on the top (**Fig. 5.2**, 3). Such rims are more common in the Middle Saxon period but are not unknown at an earlier date. Part of an annular loom weight in Fabric group 3 is described alongside worked bone textile tools in Chapter 6.

Local Anglo-Saxon fabrics (ESAXLOC)
A group of 44 sherds representing 24 vessels are in four sandy fabrics that mainly contain locally available quartz sands and a few other inclusions likely to be of non-local origin. The six vessels in Fabric 1 are from four jars or bowls and two identifiable jars, of which one has a simple rounded upright rim and horizontal burnished lines on the shoulder (**Fig. 5.2**, 4). This slightly unusual jar has been rejected as a prehistoric vessel and could belong to a slightly different phase of Saxon occupation (the external carbonised deposit may be suitable for radiocarbon dating). Eleven of the vessels are in a finer Fabric group 2, including two decorated small jars. One of these jars has a highly burnished external surface and the edge of a set of three vertical tool-burnished grooves. The other jar has a tightly curved profile and is also externally burnished (**Fig. 5.2**, 10). It is decorated with two incised body grooves having an incised two-grooved rising chevron above. Other vessels in this fabric grouping include 20 sherds found in subsoil 461 from a large necked jar with an uneven upright rim that has been finger-flattened and smoothed on top (Vessel 11, **Fig. 5.2**, 8). The jar is thick walled, has a small vertical pinching on the shoulder and a few burnished lines around the neck. Two medium-sized jars in this group are of necked type (**Fig. 5.2**, 5 and 6), whilst a small jar appears to be of in-turned or biconical type (**Fig. 5.2**, 12). The five vessels in Fabric group 3 include two jar or bowl bases of which one has a slight footring or recess (**Fig. 5.2**, 7). A large jar with a burnished external surface has a simple rounded rim (**Fig. 5.2**, 9), as does the small jar in this group (**Fig. 5.2**, 11). A single basal sherd from a jar or bowl with external burnishing is in Fabric group 4.

Shell-tempered group (ESAXSH)
A single sherd found in pit 493 (fill 494) with a high shell component to the fabric is from a jar or bowl. The shell inclusions have been leached from the internal surface only, suggesting that this is due to vessel usage rather than burial conditions.

Greensand quartz-tempered (ESGS)
Eighteen sherds from 12 vessels contain a high proportion of Greensand quartz grains within the fabric. Sparser grains are visible in many of the other fabrics found on the site, but in these vessels they form the greater part of the quartz grains present. The sherds have been divided into three groupings, with Fabric 2 having visible calcareous grains (probably chalk) and the five sherds from a single jar in Fabric 3 containing some acid igneous grains. The seven vessels in Fabric group 1 include four basal sherds from jars or bowls, of which two are heavily burnished. The only rim in the group comes from a large jar or bowl with a simple rounded rim that has been slightly finger-flattened on top (**Fig. 5.2**, 13). Four vessels in Fabric group 2 include two large jars and a small necked jar with a simple rounded rim and heavily burnished external surface (**Fig. 5.2**, 14). The source of these vessels is likely to be within the Lincolnshire Wolds.

North East Lincolnshire mixed gravel groups (NELASCQC, NELMQC and NLSCQRC)
These three groups are formed of sherds containing a range of inclusions that mainly comprise medium (NELMQC) or coarse (NELASCQC and NLSCQRC) quartz grains, chalk, and to a lesser degree small flint fragments in variable proportions, together in some vessels with some vegetal temper. The mixed nature of the inclusions is similar to that of the Chalk and Flint Gravel Group (CHFLGVL) found in East Yorkshire where, when investigated, it was considered that this gravel has been added as a deliberate temper, resulting in markedly visually different fabrics (Perry 2013). Firing for the three fabric groups from this site is mostly reduced with vessels mainly having thin external oxidised or irregularly fired surfaces.

Some 39 sherds come from 15 vessels in one of the coarser groupings (NELASCQC), with the few identifiable vessel forms being jars of small, medium and large size. Four vessels have burnished external surfaces to varying degrees. The group was divided into three sub-fabric groups, with Fabric group 1 containing 10 vessels including the two decorated examples, Fabric group 2 containing four vessels, and two sherds from a single large jar or bowl with a leached internal surface being assigned to Fabric group 3. In Fabric group 1, a simple upright rounded rim came from a large necked jar (**Fig. 5.3**, 18), whilst another large vessel in this fabric with a simple rounded rim (Vessel 10, **Fig. 5.2**, 16) could be a cylindrical jar or bowl. A large necked jar in Fabric 2 (**Fig. 5.2**, 17) has a simple out-turned rim. Two decorated NELASCQC sherds were recovered from ditch 21008 (fill 485) and pit 493 (fill 494). The sherd found in ditch 21008 is from a jar with a single row of incuse stamps around the shoulder (**Fig. 5.2**, 15). It is unclear due to the nearness to a broken edge whether this decoration was situated above a cordon. This jar has heavy all-over burnishing to the external surface. The other decorated sherd is from a small jar with a tool-grooved two-line pendant chevron (**Fig. 5.3**, 19). This vessel is also burnished externally. A single rim sherd from a necked jar (**Fig. 5.3**, 31) is in a similar fabric that contains abundant rounded grains of quartz (NLSCQRC). A body sherd from a jar or bowl in this fabric was also recovered from PCAS evaluation trench 97 at Blow Field.

Fourteen sherds, representing 13 or 14 separate vessels, are in the less coarsely tempered grouping (NELMQC). Eight sherds are identifiable as coming from jars of small (three sherds), medium (four sherds) or large (one sherd) size. The vessels were subdivided into three fabric groups, with Fabric group 1 containing five vessels, Fabric group 2 seven vessels and two sherds that might actually be from the same vessel being assigned to Fabric group 3. In Fabric group 1 there are two simple rounded rims from medium-sized jars of differing type. One of the jars has a slightly restricted neck and a heavily burnished external surface (**Fig. 5.3**, 23). The other jar is unburnished and is either of biconical or sharp-shouldered type (**Fig. 5.3**, 21). A body sherd from a large jar with a semi-burnished external surface is decorated with two vertical thumbed grooves (**Fig. 5.3**, 24). The other decorated sherd in this fabric is from a small, possibly biconical jar with burnished lower neck grooves and seven vertical tool grooves in a close row set on shoulder (**Fig. 5.3**, 27). The only recovered rim in Fabric group 2 is from a medium-sized necked jar with a slightly out-turned rim (**Fig. 5.3**, 22). The external surface of the jar is highly burnished and this burnishing continues over onto the internal surface of the rim. Two of the seven vessels in Fabric group 2 are decorated. A small thin-walled jar with a highly burnished external surface is decorated with two incised upper shoulder grooves and three thumbed vertical grooves below (**Fig. 5.3**, 26). The other decorated sherd is from the neck of a jar with neck grooves (**Fig. 5.3**, 20). A small highly burnished sherd is from a tiny globular jar or bowl. The other sherds are from jars or bowls. The two sherds in Fabric 3 may be from the same vessel but it is not possible to be certain and as they are in different deposits they have not been grouped together. The rim sherd is from a small globular necked-jar with an external burnished surface (**Fig. 5.3**, 25). The other sherd is from the body of a small burnished globular jar or bowl with an internal carbonised deposit.

Sandstone group (SST)
This grouping comprises six sherds whose fabric includes a significant amount of aggregated quartz grains derived from sandstones. The sherds have been subdivided into four fabric groups. A basal sherd in Fabric 1 could be from a small jar or a bowl, as could a body sherd in Fabric 3. The basal sherd in Fabric 3, however, is most probably from a small jar. An unusual thick-walled body sherd in an oxidised Fabric 2 has a highly burnished external surface and is from a jar (**Fig. 5.3**, 28). The two sherds in Fabric 4 are from jars or bowls, one of which has a smoothed external surface.

Erratic rock group (ERRA)
The eight sherds in this group are characterised by the presence of visible fragments of erratic rock inclusions at x20 magnification. The fabrics are extremely variable even within a single sherd so only two sherds have been grouped together as Fabric 1. It is possible that investigation at a higher magnification would add further vessels to this grouping. The two identified vessels in Fabric 1 comprise a small jar (**Fig. 5.3**, 29) and a small globular jar or bowl (**Fig. 5.3**, 30) with an all-over burnished external surface. Another five sherds in the erratic grouping come from a jar with an internal carbonised deposit and jars or bowls.

Vegetal-tempered group (ECHAF)
This type produced the greatest number of sherds to be found in any ware grouping (85 sherds), although they represent only 10 vessels in total. This is often typical of primarily vegetal-tempered vessels, which are usually low-fired and fragment easily. This grouping includes six identified fabrics, each with a high proportion of added organic, mainly vegetal, material. Visible carbonised grass or straw and the common flattened vegetal voids suggest the addition of grass, straw or dung to the fabrics. Four of the fabrics (Fabrics 3–6) are represented by single instances of vessels identifiable as small, medium- and large-sized jars or bowls. Of note are four laminated sherds in Fabric 5 from a single large thick-walled vessel with what appears to be external vegetal wiping. Most of the recovered sherds are in Fabric Group 2 and mainly come from a single large jar (Vessel 9, **Fig. 5.3**, 32) from subsoil 461. The vessel has a reduced core, thin oxidised internal surface and an irregularly fired external surface. The necked jar has an upright rim that has been finger-flattened and a rounded base. The sherds are heavily leached and laminated. The other two vessels in this fabric comprise a finger-flattened rounded rim from a jar or bowl with burnishing around the rim top and a small and very abraded sherd from an unidentifiable form. The eight sherds in Fabric 1 are from three jars or bowls, two of which have internal carbonised deposits.

Late Saxon

A total of 19 sherds from 17 vessels of Late Saxon type were recovered from Blow Field. Most of these sherds come from wheel-thrown shell-tempered vessels of late 9th- to 10th-century type (LKT, NELLKT and NELLSS), but five vessels are in reduced quartz-tempered fabrics (TORK, TORKT and WLSG). Six sherds from four small jars and two large bowls are of Lincoln Kiln type (LKT). This ware was produced at several sites in Lincoln between the mid-/late 9th and late 10th centuries (Young 1989; Young *et al.* 2005). All of the material is typical of pre-late 10th-century production, with the hammerhead bowl dating to between the late 9th and mid-10th centuries and an in-turned-rim bowl with diamond roller-stamping around the rim specifically dating to the early/mid-10th century.

Five sherds from three wheel-thrown jars and a jar or bowl of probable late 9th- to 10th-century Lincoln type are in a newly identified shell-tempered fabric (NELLKT). Vessels in similar fabrics are found on several 10th-century sites in East Lincolnshire, but in the main appear to be of slightly different manufacture and firing. These were first identified on a site in Kirton near Boston, Lincolnshire (Young 2006), where they were classified as Wheel-thrown Late Saxon Shell-tempered (WLSS). Isolated finds of similar type have been found in North and North East Lincolnshire over the last few years, where they were given the WLSS coding. Examination of the Late Saxon assemblage recovered from a few recent sites (Young and Daubney 2020; Young *et al.* 2020) suggests, however, that the northern Lincolnshire vessels may represent a different, possibly earlier industry, so these have now been grouped as North East Lincolnshire Lincoln Kiln type (NELLKT). Examination using a x20 binocular microscope shows that the fossil shell on the surfaces of the recovered NELLKT vessels has a different patterning than that of the Lincoln-produced LKT. Abundant fine crushed shell fragments are visible, appearing between the common larger inclusions (up to 2.5 mm) typical of the main Lincoln productions. The fossil shell inclusions also appear thinner and more fragile than those of the Lincoln-produced wares. Manufacture of the NELLKT vessels is competent, and form and rim shapes generally follow LKT. There are, however, some differences, such as slightly kicked-out bases on the bowls, a band of knife trimming or turning above the basal edge of some of the smaller jars and slightly ridged bodies on the jars. The four vessels recovered from the site under consideration here can only be dated to between the late 9th and 10th centuries, but the industry may have ceased by the mid-10th century.

Two sherds from small wheel-thrown jars in a fine shell-tempered fabric (NELLSS) may be products of kilns in North or North East Lincolnshire. The vessels are of early Lincoln type, probably dating to between the late 9th and early 10th centuries. The fossil shell in one of the jars has decomposed as the vessel has either been over-fired or subjected to a heat source above the optimum firing temperature. The appearance of this sherd, with its uneven firing colours, is similar to LKT wasters found at Silver Street in Lincoln (Young 1989).

Three sherds are from Torksey ware jars (TORK). The two sherds from a small jar found in ditch 300076 (fill 300007) appear to be of early type, probably dating to between the late 9th and early/mid-10th centuries, whereas a single sherd from a jar found residually in sump 4240 (fill 4185) is of late 10th- to mid-11th-century type. An abraded sherd from a jar or bowl is in a Torksey-type fabric (TORKT). Two other sherds from wheel-thrown vessels are in reduced grey quartz-tempered fabrics that are more typical of Thetford or Lincoln production (WLSG). A basal sherd is from a small jar, whilst a rim sherd is from an in-turned rim bowl of early/mid-10th- to early/mid-11th-century date. Neither of these vessels falls within the range for North Lincolnshire Late Saxon Greyware fabrics.

Saxo-Norman

Some 328 sherds representing 122 vessels are of Saxo-Norman type, mainly dateable to between the late 10th and late 12th centuries. Most of these vessels (113) are shell-tempered Lincolnshire Fine-shelled ware (LFS) or North Lincolnshire Fine-shelled ware (NLFS) jars or bowls (**Figs 5.3** and **5.4**, 33–37). Many of the LFS and NLFS sherds can only be individually dated to between the late 10th and late 12th centuries, but a few can be directly identified as of post-conquest type. Unusually, jars of small and miniature size dominate the recovered material. Overall, a high proportion of the vessels have external soot residues or are obviously heat-affected, suggesting that their primary use was for cooking rather than storage.

Two sherds from a shell-tempered jar or bowl of Lincolnshire production (SNLOC) are of potential 10th- to mid-13th-century date. Four other shell-tempered sherds are from two jars or bowls of potential late 10th- to early/mid-13th-century date in North Lincolnshire Quartz and Shell-tempered fabrics (NLQS).

The three Saxo-Norman-type Stamford ware sherds (ST) recovered come from two glazed jars or pitchers in Fabric B of mid-/late 11th- to 12th-century date. Thirteen sherds from four jars or bowls are of Yorkshire Gritty ware type (YG). None of the sherds are chronologically significant and the vessels belong to the period between the late 11th and mid 13th centuries.

Early Medieval

A total of 282 sherds representing 172 vessels in 14 ware groupings are of 'early medieval type'. The term 'early medieval' is used here to indicate the early part of the post-conquest medieval period. Typically these industries developed between the late 11th and mid-12th centuries and most commonly declined by the early/mid-13th century in favour of 'medieval' types, but occasionally continuing until the mid-13th century. Most early medieval types can be divided into those whose primary function was as kitchen coarsewares (mainly handmade fossil shell or coarse quartz and chalk-tempered wares) and fineware industries, whose main product was a jug or pitcher (mainly fine to medium quartz-tempered wheel-thrown urban-based wares). Some coarseware industries also produced a few glazed jug forms, and increasingly by the mid-12th century jars and bowls became a significant part of fineware potters' repertoires. Overall, in the recovered assemblage, products of the primarily fineware producers outnumber those from early medieval-type coarseware productions. This, however, does not take into account the potential for most of the Saxo-Norman-type Lincolnshire Fine-shelled ware vessels to be of early medieval date.

Beverley 1 (BEVO1) and Beverley 1-type (BEVO1T) vessels are the most common wheel-thrown fineware type of early medieval date to have been recovered, and almost always dominate mid-12th- to early/mid-13th-century groups in north-eastern Lincolnshire. Those vessels coded as BEVO1 follow Watkins (1991) and Didsbury and Watkins (1992), having fabrics similar to vessels thought to have been produced in Beverley, whilst those with variant inclusions that were possibly produced at other centres are recorded as BEVO1T. A total of 105 sherds representing 66 vessels in BEVO1 were recovered. Most of the sherds come from small (**Fig. 5.4**, 39) or medium-sized undecorated jugs, but two small jugs have roller-stamped decoration on the shoulder. A single jar and a single bowl were identified, although a small number of sherds could be from jars, jugs or bowls. Where glazed, most vessels have a suspension-type glaze indicating a mid-/late 12th-century or later date, but 10 vessels have earlier splashed-type glazes. A jug with a square rim and heavily ridged shoulder (**Fig. 5.4**, 38) found at Habrough and a similar rim found at Blow Field are of pre-mid-/late 12th-century date (Didsbury and Holbrey 2009). The majority of vessels, however, have thin and even walls and where a glaze is present it is of suspension type, suggesting a date in the last quarter of the 12th century or the earlier part of the 13th century (Didsbury and Watkins 1992; Watkins 1991, 80). A total of 19 sherds from 17 BEVO1T vessels may have been produced outside of Beverley or may be in previously unrecorded Beverley fabrics. A similar range of variant fabrics was found at Cartergate in Grimsby (Rowe 2010; Young 2010a). Most of these vessels were recovered from Blow Field. Five vessels have obvious splashed-type glazes, suggesting that they are of pre-mid-/late 12th-century date, whilst other unglazed sherds seem to come from jugs of similar type. Eleven vessels are identifiable as small or medium-sized jugs and two as jars. The other sherds could have come from jugs or jars.

A small group of vessels recovered from moat 4059 (fill 20046) at Blow Field is in two newly defined Beverley types (NLBEVOT and NLCBEVOT). Their definition as North Lincolnshire types by no means asserts that they were produced there, rather that so far examples have only been recovered from deposits in North and North East Lincolnshire. Investigation by Vince on the Beverley pottery recovered from St Peter's, Barton on Humber (Boyle *et al.* 2011), suggested that some production might be local. Visually, these ware types (especially NLCBEVOT) are similar to medieval Humberware 1 (Watkins 1993), and this may account for previous misidentified occurrences of early 'Humberware'. Fifteen sherds from three jugs or pitchers are in a calcareous-rich fabric (NLCBEVOT). Sherds are oxidised with a light reduced core (unless very thin, when they are fully oxidised) in a similar hue range to that of Humberware. The hard-fired fabric contains common mixed sub-round quartz grains of mainly 0.3 mm to 0.6 mm diameter (but occasionally larger) together with sparse to moderate calcareous grains (occasionally coarse), sparse to moderate iron-rich grains up to 2 mm and rare aggregated fine sandstone grains. Manufacture is competent with some vessels having exceptionally thin walls. Where glaze is present, the vessels mainly have dark reduced green bleeding to brown splashed-type glazes. The vessels appear to be of the shouldered type with slightly ribbed bodies. Eight of the sherds recovered from this site come from a single jug or pitcher with an unusual, collared rim (**Fig. 5.5**, 44). Typologically, the rim is of mid-12th-century or earlier date. Similar rims have been found at Hedon in East Yorkshire, which is a possible production source for the type. A vessel found at Barton Upon Humber (Young and Daubney 2020) is the first confirming that pitchers are being produced in this industry. The pitcher has a deep internally lid-seated rim and a short, applied spout. Similar rims with narrow strap handles applied to the lower rim flange were also recovered. The change of production from spouted pitchers to jugs generally takes place in the early/mid- to mid-12th century in Yorkshire and most of the East Midlands. The other new type (NLBEVOT) is fully oxidised, except for occasionally at the thicker parts of vessels, and is lower-fired than NLCBEVOT. The fabric contains abundant mixed round to sub-round quartz grains of mainly 0.2 mm to 0.6 mm diameter but occasionally larger, rare to sparse calcareous grains, sparse iron-rich grains and rare instances of flint, erratic rock and fine flakes of muscovite. Similar fabrics have been recovered from production waste at Alford (Young 2010b), but no sherds in this fabric were available for direct comparison. The recovered sherd from this site could come from a jug or pitcher.

Few other glazed early medieval fineware sherds were recovered. Four sherds come from two Humber-type Early Medieval Glazed Gritty ware jugs (HEMGG). The type was first identified in late 12th- to early 13th-century deposits in North Lincolnshire (Boyle and Young 2008) with most sherds coming from wheel-thrown jugs with a thick 'splashed-type' glaze. A single sherd of Developed Stamford ware (DST) comes from a jug or jar of mid-12th- to early/mid-13th-century date recovered from Blow Field. This site also yielded a jug with narrow handle of thin wheel-thrown strap type from an unknown regional centre (EMX). The jug has a thin patchy pocked, splashed or possibly misfired suspension glaze. The fabric suggests a possible East Yorkshire source.

Some 92 sherds are from 44 vessels in Lincolnshire Early Medieval Shelly ware (LEMS). A further five sherds representing a jar, a large bowl and a jar or bowl are in a higher-fired, harder variant fabric often found in North Lincolnshire (NLEMS). Thirteen vessels are identifiable as small, medium- or large-sized jars, usually the most common form to be found in the area, but four large dishes (**Figs 5.4** and **5.5**, 40–43) and one medium-sized dish were also noted. The other sherds could come from jars, bowls or dishes. This ware type is first found in mid-12th century deposits in Lincoln but does not become common until the late 12th century, dying out by the end of the first quarter of the 13th century.

Two other shell-tempered sherds are from a large dish and an unknown form, probably of late 11th- to early 13th-century date in Wheel-thrown Early Medieval Shelly ware (WEMS). A small number of sherds are in three mixed quartz and chalk-tempered fabrics. The 16 sherds representing 14 vessels in North Lincolnshire Quartz and Chalk-tempered fabrics (NLQC) include four medium-sized, six small and one miniature jar. The other sherds are undiagnostic and could come from jars or bowls. This is the main coarseware type in use in North Lincolnshire during the 12th century (Boyle *et al.* 2011), and in North and North East Lincolnshire the type is generally found in deposits of late 11th- to mid-13th-century date. Some 14 sherds representing 11 vessels in a coarser variant fabric (NLCQC) were recovered from Blow Field. This type has not previously been noted in Lincolnshire and may be a fairly local product. The sherds come from six small and two medium-sized jars, a large bowl and a jar or bowl. Six sherds are of East Lincolnshire Quartz and Chalk-tempered type (ELQC). This type dates to between the 12th and early/mid-13th centuries and may be partially glazed. A single Northern Gritty ware (NGR) sherd from a large bowl is stylistically of mid-12th- to mid-13th-century date.

Medieval

A total of 205 sherds representing 163 vessels are of medieval type. In North East Lincolnshire the medieval ceramic types often have a complex chronological interaction, with each industry having a differing starting and ending date. This can make discussion of individual types and their relationship to other wares difficult, especially as one of the main types recovered (Humberware) spans the period between the late 13th and mid-16th centuries.

There are 110 sherds from 90 vessels of Beverley 2 type (BEVO2). The vessels are mainly identifiable as jugs of small, medium, large and miniature size in Fabric B (Didsbury and Watkins 1992), but four jars also in Fabric B were noted, and a few vessels in Fabrics A/B, B/C and C are present in the assemblage. Fabric B spans the life of the ware type from the 13th century until at least the early/mid-14th century. Vessels in Fabrics B/C and C are likely to date to between the late 13th and mid-14th centuries. Seven of the Fabric B jugs are decorated. The two jugs with horizontal rows of square roller-stamping on the shoulder are likely to be early in the sequence, certainly dating to the first half of the 13th century, as are the two jugs with notched vertical applied strips. The other three jugs are decorated with applied scale and/or strip decoration. Seven sherds from four jugs and two jugs or jars found at Blow Field are in variant fabrics (BEVO2T). These vessels may have been produced within Lincolnshire.

The second most common medieval type to be recovered is Humberware (HUM) with 41 sherds representing 38 vessels. Humberware was produced at several centres in East Yorkshire (Watkins 1987, 98; Watkins 1993, 76–90), in York at Blue Bridge Lane (Vince and Steane 2005) and may also have been made in North Lincolnshire. The ware first appears in late 13th-century deposits and remained in production until about the middle of the 16th century, with single undiagnostic sherds proving hard to closely date. With one exception all the vessels are of the type defined as Humber 1 by Watkins (1987, 98–104). Most sherds appear to come from medium or large jugs, although three sherds could come from jugs or jars, and two internally glazed sherds are likely to be from jars or bowls. Few chronologically distinct vessels occur, although two jugs are of 15th- to mid-16th-century type and one dates to between the late 13th and late 14th centuries. A single large jug sherd is of purple-glazed Humber Type 4, dating to between the mid-15th and mid-16th centuries. Two jug sherds are of Humber-type but are obviously not products of known East Yorkshire kilns (HUMB). Two other similar sherds are from a jug or jar and an internally glazed jar or bowl of 15th- or 16th-century date.

A small number of other medieval glazed finewares were recovered. Three of these sherds are from two jugs and a small jug or jar in North Lincolnshire Fine–Medium Sandy Ware (NLFMSW). These vessels are products of 13th- or 14th-century kilns in North Lincolnshire. Recently a kiln producing this type was found at Appleby, about 5 km north-east of Scunthorpe, although it is likely that the type was also produced at other villages in the area. Four sherds recovered from Blow Field are from two jugs of possible local manufacture (MEDLOC). The jugs are likely to date to the 13th or 14th centuries. Three jugs are of Lincoln Glazed ware type but are unlikely to be products of kilns in Lincoln itself (LSWV). The jugs probably date to between the mid-13th and late 14th centuries. Ten quartz-tempered sherds are from six jugs, a jug or jar and a small jar or bowl of unattributed non-local production (MEDX). These vessels are most likely to date to the 13th or 14th centuries, with one handle possibly being of early to mid-13th-century date. Three of the vessels containing medium to coarse quartz grains can be grouped by fabric type. These sherds are visually similar to the coarse splash-glazed HEMGG vessels but have a suspension glaze. Two vessels are fully oxidised, whilst one has a reduced core. Dr C Cumberpatch (pers. comm.) comments that the vessels are similar to Hallgate A type (Buckland *et al.* 1979; Cumberpatch *et al*. 1998–99), but that the fabric does not contain the small red iron-rich grains or the more common finer quartz grains found in Hallgate wares. Two jugs are visually similar to Late Medieval Toynton ware but have different fabrics. Visually similar vessels have been noted in Doncaster where they are referred to as 'Reduced Sandy ware' with a possible Doncaster source (C Cumberpatch pers. comm.). Of the other three unidentified regionally imported vessels, a small jar or bowl with an internal glaze is visually similar to late medieval vessels found in North Yorkshire (C Cumberpatch pers. comm.) and a jug with calcareous inclusions may be an East Yorkshire product.

A small number of fossil shell or quartz-tempered coarseware sherds were recovered. A single shell-tempered Potterhanworth sherd (POTT) is from a large jar of 13th- to 15th-century date. Seventeen other coarsely shelled sherds are from five North Lincolnshire Shell-tempered vessels (NLST) of mid-12th- to 14th-century date. Ten sherds are from a single large jar or bowl that appears to have been crushed. Five sherds are from two large jars and one medium-sized jar with external soot residues. Two other sherds are from a small squat jar of typical 13th-century type. The four recovered North Lincolnshire Quartz-tempered sherds (NLCS) come from a small jar and two jars or bowls of late 12th to 14th-century date.

Late Medieval to Early Post-Medieval

Only five sherds representing three vessels are of late medieval to early post-medieval type, although at least three of the medieval-type Humberware vessels (see above) are of late date (15th to mid-16th century). An oval strap handle recovered from a furrow at Keelby Road is from a jug of Late Medieval Toynton type (TOYII) dating to between the mid-15th and mid-16th centuries. A similar ribbed handle was found at Blow Field. Three sherds from a single squat jug found at Habrough (**Fig. 5.5**, 44) are of non-local late medieval type (LMX). The jug is likely to date to between the mid-15th and 16th centuries and may be a product of unknown kilns in East Yorkshire or Lincolnshire (C Cumberpatch pers. comm.). The jug has some small firing cracks and suffers from bloating similar to late medieval products from kilns in Toynton All Saints in Lincolnshire, but the rim and squat Humber-like shape of this jug are unknown there.

Post-Medieval

There are 69 sherds from 46 vessels in 10 post-medieval ware types. Three sherds recovered from Blow Field are from unidentified production sites within Lincolnshire (PMLOC). The sherds are similar to Toynton/Bolingbroke products of 16th- to mid-17th-century date and comprise a jar, a large jug or jar and a handled jar or chamber pot.

Some 27 Glazed Red Earthenware sherds (GRE) from 17 vessels are likely to have been manufactured within Lincolnshire between the mid-16th and 18th centuries. Vessel forms include jars, bowls, a small jar or cup and a possible chamber pot. A single Reduced Glazed Earthenware (GRE) sherd from a jug or jar is of similar date and would have been produced at the same centres as the GRE vessels.

Four sherds found at Tetney Lock Road are from two Late Humberware (LHUM) vessels of mid-16th- to 18th-century type. The sherds come from a large jar with internal wear marks and a jug or jar. A further four sherds found at Blow Field come from two large jars and a large bowl. Most vessels of this type were produced in East Yorkshire but kilns in Grimsby and Boston produced similar fabrics.

Twenty-two post-medieval iron-glazed sherds (BERTH and BL) and a late Cistercian ware cup of probable late 16th- to mid-17th-century type (CIST) were recovered. A single sherd recovered from Habrough is from a large, Brown-glazed Earthenware cylindrical jar (BERTH) of 17th- or 18th-century date. Fourteen other brown-glazed sherds from seven vessels found at Blow Field are mainly from vessels including jars and drinking vessels of mid-16th- to mid-17th-century date, although two sherds are from a large jar and a jug of 17th- or 18th-century date. The fine oxidised fabric suggests that they were manufactured in East Yorkshire or along the eastern Lincolnshire coast. Two Black-glazed Earthenware sherds (BL), one found at Tetney Lock Road and the other at Habrough, are from Staffordshire- or Derbyshire-type cups of mid-17th- to early 18th- and mid-17th- to 18th-century type. Three sherds found at Blow Field are from two jars of 17th- to 18th- and late 17th- to 18th-century types. These two jars are in similar fabrics to the Brown-glazed Earthenwares found on the site.

Nine slipware sherds fall into three ware types. A small sherd from a slipware (SLIP) cup decorated with brown trailed decoration on a yellow ground is of probable late 17th- to 18th-century date. The vessel is not obviously of Staffordshire type. Five other fine slipware sherds of Staffordshire-type are from three further cups. The two decorated cups are likely to date to between the late 17th and 18th centuries, but the two undecorated sherds from a single cup appear to be of earlier mid-17th- to early-18th-century type. Three Staffordshire-type Mottled ware sherds of late 17th- to 18th-century date are from a cup, a cup or mug and a small bowl.

Early Modern

There are 49 sherds from 38 vessels and two pantiles (PANT) of early modern 18th- to 20th-century date. Most of the sherds come from industrial finewares (CREA, ENPO, PEARL, REFR, SWSG, WHITE and TPW), but a few domestic stonewares (BS, ENGS and NOTS) and earthenwares (BERTH, BL and LERTH) also occur.

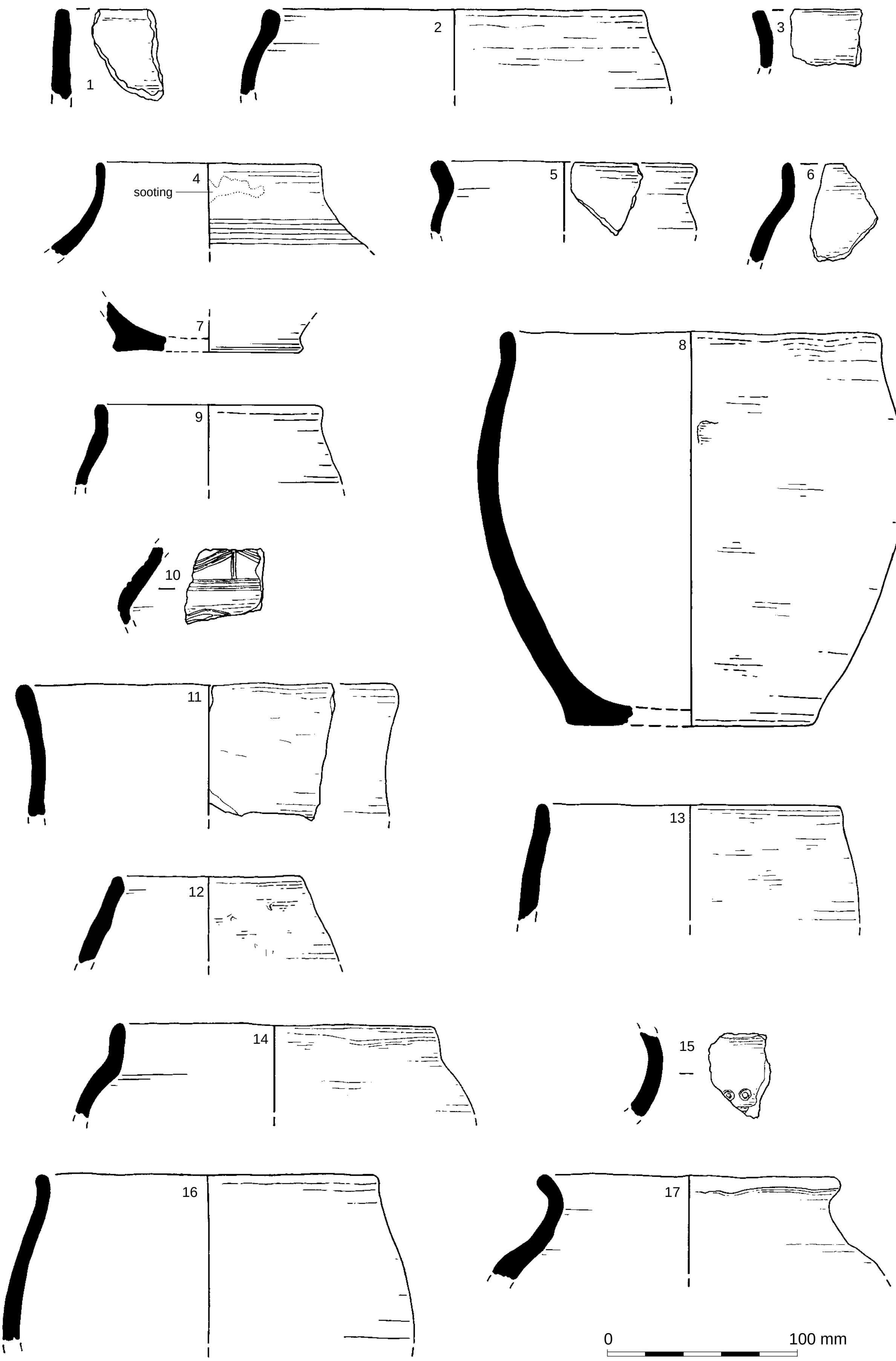


Figure 5.2 Anglo-Saxon pottery (1–17)

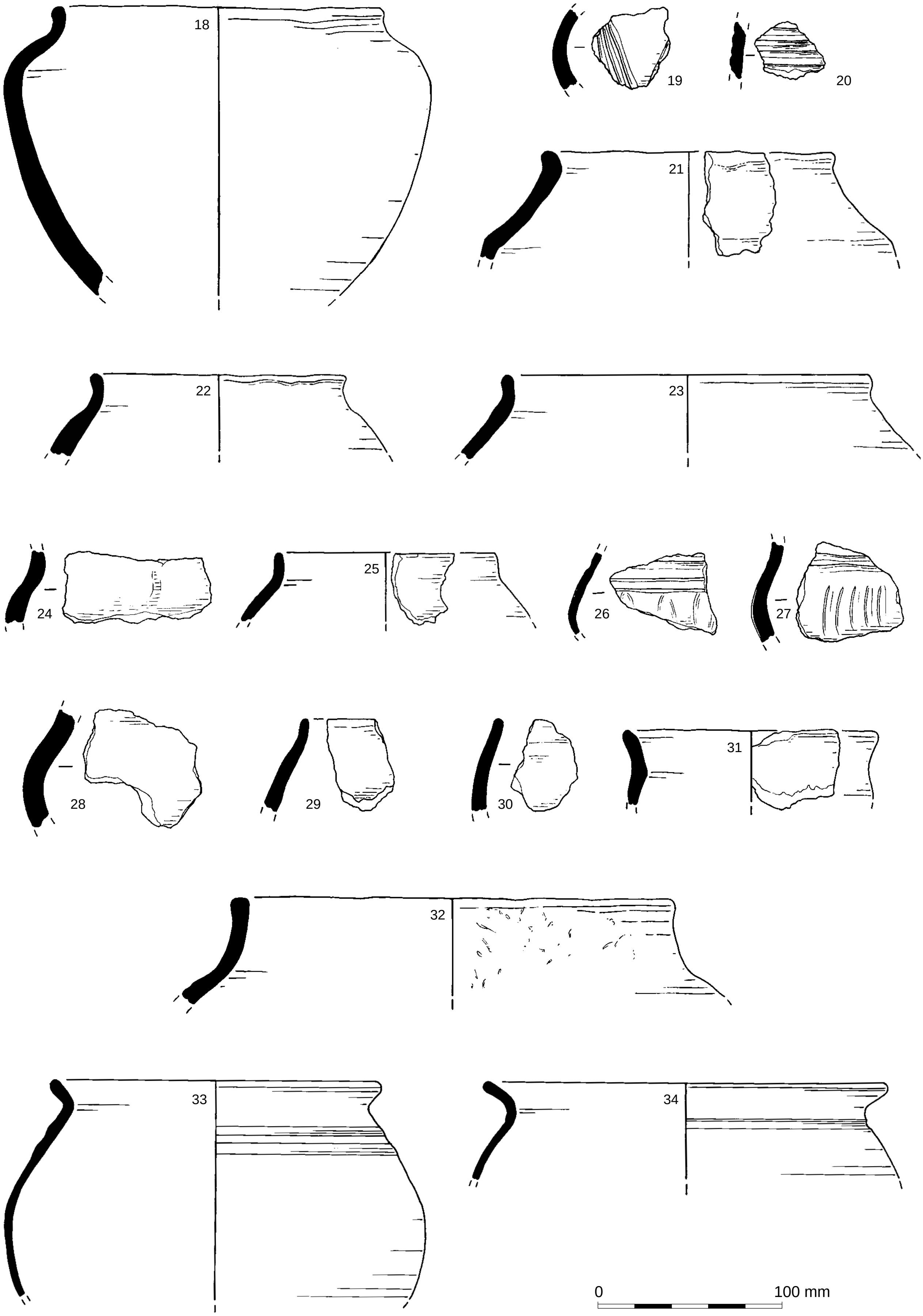


Figure 5.3 Anglo-Saxon (18–32) and Saxo-Norman pottery (33–34)

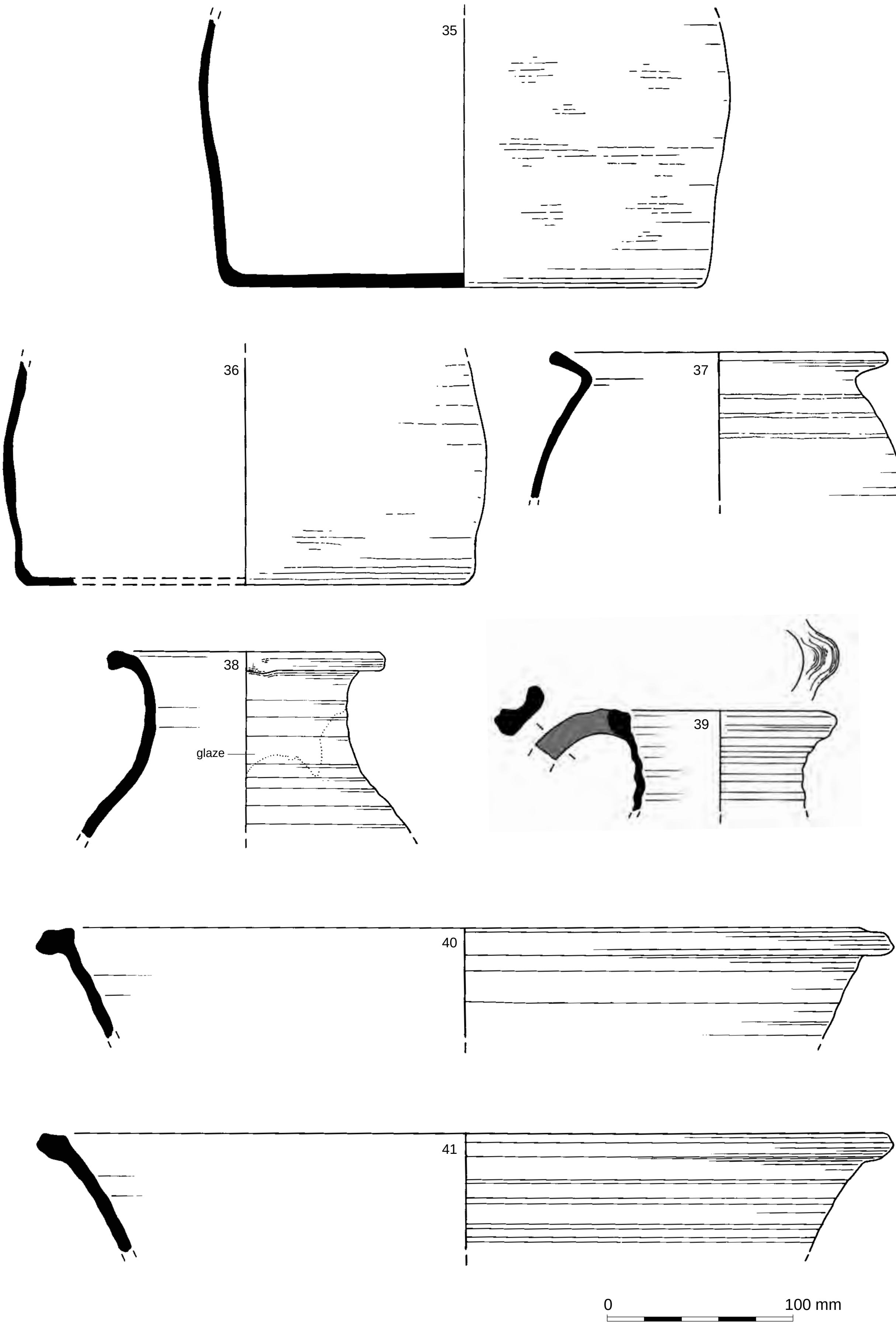


Figure 5.4 Saxo-Norman (35–37) and early medieval pottery (38–41)

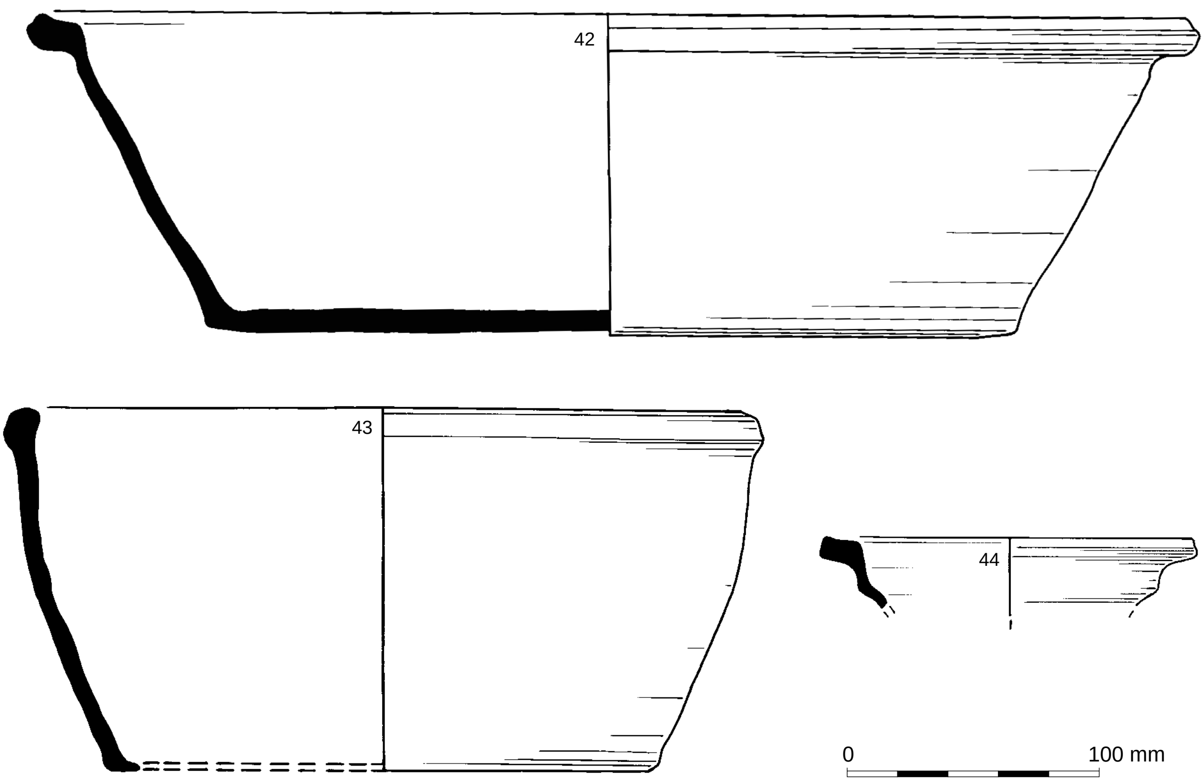


Figure 5.5 Early medieval and late medieval to early post-medieval pottery (42–44)

Illustrated sherds

Figs 5.2–5.5

Acid igneous rock group

1. Jar. *Fabric CHARNT, pit 21020, fill 498*
2. Jar. *Fabric CHARNT, subsoil 461*
3. Small jar. *Fabric CHARNT, pit 493, fill 494*

Local Anglo-Saxon fabrics

4. Jar. *Fabric ESAXLOC, spread 21021, fill 823*
5. Jar. *Fabric ESAXLOC, subsoil 461*
6. Jar. *Fabric ESAXLOC, subsoil 461*
7. Jar or bowl. *Fabric ESAXLOC, subsoil 461*
8. Large jar. *Fabric ESAXLOC, subsoil 461*
9. Large jar. *Fabric ESAXLOC, pit 493, fill 494*
10. Small decorated jar with incised body grooves and incised rising chevron above. *Fabric ESAXLOC, pit 493, fill 494*
11. Small jar. *Fabric ESAXLOC, pit 493, fill 494*
12. Small jar. *Fabric ESAXLOC, subsoil layer 461*

Greensand quartz-tempered

13. Large jar or bowl. *Fabric ESGS, ditch 21008, fill 485*
14. Small jar. *Fabric ESGS, spread 21020, fill 498*

North East Lincolnshire mixed gravel groups

15. Decorated jar with single row of incuse stamping around shoulder. *Fabric NELASCQC, ditch 21008, fill 485*
16. Large cylindrical jar or bowl. *Fabric NELASCQC, subsoil layer 461*
17. Large jar. *Fabric NELASCQC, pit 493, fill 494*
18. Large necked jar. *Fabric NELASCQC, subsoil layer 461*
19. Small decorated jar with grooved pendant chevron. *Fabric NELASCQC, pit 493, fill 494*
20. Jar with neck grooves. *Fabric NELMQC, pit 493, fill 494*
21. Jar. *Fabric NELMQC, ditch 21008, fill 486*
22. Jar. *Fabric NELMQC, pit 493, fill 494*
23. Jar. *Fabric NELMQC, pit 493, fill 494*
24. Large decorated jar with vertical thumbed grooves. *Fabric NELMQC, pit 493, fill 494*
25. Small globular jar. *Fabric NELMQC, pit 21020, fill 498*
26. Small decorated jar with incised upper shoulder grooves and vertical thumbed grooves below. *Fabric NELMQC, pit 493, fill 494*

27. Small decorated jar with burnished lower neck grooves and vertical tool grooves on shoulder. *Fabric NELMQC, pit 493, fill 494*

Sandstone group

28. Jar. *Fabric SST, pit 493, fill 494*

Erratic rock group

29. Small jar. *Fabric ERRA, pit 493, fill 494*
30. Small globular jar or bowl. *Fabric ERRA, pit 493, fill 494*

North East Lincolnshire mixed gravel groups

31. Jar. *Fabric NLSCQRC, pit 493, fill 494*

Vegetal-tempered group

32. Large jar. *Fabric ECHAF, subsoil 461*

Saxo-Norman

33. Small jar. *Fabric LFS, gully 3037, fill 3035*
34. Small jar. *Fabric LFS, gully 3037, fill 3035*
35. Jar. *Fabric LFS, gully 3037, fill 3035*
36. Small jar. *Fabric LFS, gully 3037, fills 3035 and 3036*
37. Small jar. *Fabric LFS, gully 3037, fills 3035 and 3036*

Early Medieval

38. Jug. *Fabric BEVO1, pit 3160, fill 3152*
39. Small jug. *Fabric BEVO1, ditch 3069, fill 3070*
40. Large dish. *Fabric LEMS, pit 3031, fill 3032*
41. Large dish. *Fabric LEMS, pit 3031, fill 3032*
42. Large dish. *Fabric LEMS, ditch 3069, fill 3070*
43. Large dish. *Fabric LEMS, ditch 3069, fill 3070*

Late Medieval to Early Post-Medieval

44. Jug. *Fabric LMX, moat 3324, fills 3325*

Site Sequences

The post-Roman pottery discussed here was recovered from eight sites and six other locations (**Table 5.4**). The pottery recovered during trial trench evaluation, although not included in the quantification within this report, is also considered where appropriate. The largest groups of material were recovered from the moated sites at Habrough (357 sherds from 138 vessels), and Blow Field (499 sherds from 336 vessels), and at Laceby Beck (266 sherds from 118 vessels).

Westfield Farm

Two sherds from a small Yorkshire Gritty ware jar of late 11th- to mid-13th-century date came from early Romano-British gully 8276 (fill 4821). This material may have been introduced during later agricultural activity on the site.

Keelby Road

The mainly Romano-British site at Keelby Road yielded a small group of post-Roman pottery, comprising 11 sherds of early medieval to early modern date typical for the Stallingborough area.

Six sherds, each from a separate vessel, were recovered from five deposits. An abraded handle sherd from a mid-15th- to mid-16th-century Late Medieval Toynton ware jug came from the upper fill (2043) of late Romano-British pit 2030. Another late Romano-British ditch (2054) yielded an abraded intrusive sherd from a large Beverley 2 jug of late 13th- to early/mid-14th-century date. Furrow 843 yielded two early modern sherds of 19th- or 20th-century date (WHITE) and a residual sherd from a miniature medieval BEVO2 jug, while furrow 2034 yielded a single abraded sherd from a small medieval jug or jar (NLFMSW) of 13th- or 14th-century date.

Two unstratified sherds (registered as 2401 and 2403) were the rim of a large Lincolnshire Early Medieval Shelly ware jar of mid-12th- to early/mid-13th-century date, the other an unusually shaped rim from a jar with a ridged shoulder that is probably from a 12th- to early/mid-13th-century East Lincolnshire Quartz and Chalk-tempered type.

Table 5.4 Post-Roman pottery summarised by site and ceramic period with vessel count

Period	Westfield Farm	Keelby Road	Humberston Road	Tetney Lock Road	Laceby Beck	Blow Field	Habrough			Brooklands	GWB Area B	GWB Area D Brigsley parish findspot	GWB Area E	GWB Area F	TWB Area 1	TWB Area 17	Totals
							SMR6	SPE3	GWB area AF								
Uncertain	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
Anglo-Saxon	0	0	0	0	113	0	0	0	0	0	0	1	0	0	0	0	114
Late Saxon	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0	17
Saxo-Norman	0	0	0	0	0	66	1	55	0	0	0	0	0	0	0	0	122
Early medieval	2	2	0	0	1	118	8	33	0	8	0	0	0	0	0	0	172
Medieval	0	3	0	1	2	89	16	12	0	38	0	0	1	0	0	1	163
Late medieval	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
Post-medieval	0	1	1	4	1	29	5	0	0	1	0	0	1	0	0	3	46
Early modern	0	2	0	0	1	12	4	0	3	2	1	0	1	8	1	3	38
Totals	2	9	1	5	118	336	35	100	3	49	1	1	3	8	1	7	679

GWB = general watching brief, TWB = targeted watching brief, U/S = unstratified

Romano-British enclosure 2320 (fill 204) contained four sherds from a single Glazed Red Earthenware jar of mid-16th- to mid-18th-century date.

In addition, evaluation trench 68 (RPS 2013e) yielded two sherds from a 13th- or 14th-century North Lincolnshire Fine-medium Sandy ware jug or jar (found in deposit 68008) and a Late Medieval Toynton ware jug of mid-15th- to mid-16th-century date (from deposit 68021).

Station Road

Two evaluation trenches (RPS 2013e) excavated at the Iron Age/Romano-British site at Station Road yielded a small group of 15 sherds representing 11 vessels of potential Anglo-Saxon to medieval date. The two medieval sherds from trench 37 have been reassessed but those from trench 38 were not located. The assessment report (Irving 2013) identified pottery of potential Anglo-Saxon or Middle Saxon date. Two sherds from a jar or bowl found in pit 38011 (fill 38012) were tentatively identified as being of 8th- to mid-9th-century Ipswich ware. An alternative identification as a North Lincolnshire Late Saxon Grey ware of late 9th- to mid-11th-century date is given in the archive list. Ditch 38035 (fills 38032, 38038 and 38039) yielded shell-tempered sherds of potential Anglo-Saxon to Middle Saxon date. The identification of three of these vessels is questioned in the archive, probably because of the small size and condition of the sherds. More recently a number of similar shell, fossil shell and iron-rich fabrics of Late Saxon date have been identified in the region, but without being able to revisit the assemblage the original identification should stand.

Humberston Road

This mainly Romano-British site yielded post-Roman pottery from a single late deposit. A sherd recovered from ditch 7631 (fill 7413) is from a Staffordshire Mottled ware cup or mug of late 17th- to 18th-century date.

Tetney Lock Road

A small amount of post-Roman pottery was recovered from Tetney Lock Road, suggesting that a field system was infilled in the 17th century.

Seven post-Roman sherds came from five vessels found in five deposits. Pottery from ditch 9547 was recovered from four fills (9503, 9505, 9507 and 9537). Cross-context joining sherds (between fills 9503 and 9537) of a Late Humberware jar of mid-16th- to 18th-century date may suggest infilling of several sections of the ditch with the same material. The other vessels recovered from this ditch comprise a Late Humberware jug or jar, a Staffordshire/Derbyshire Black-glazed Earthenware cup of mid-17th- to 18th-century date and a residual medieval jug (MEDX). The recovered sherds suggest that the ditch remained a feature in the landscape until at least the mid-17th century. A single sherd from a Cistercian ware cup of probable late 16th- to mid-17th-century cylindrical type was recovered from ditch 9549 (fill 9543).

Evaluation trench 22 (RPS 2013e) also contained five sherds from a single North Lincolnshire Shell-tempered jar or bowl of mid-12th- to mid-14th-century date, recovered from deposit 22016.

Laceby Beck

There are 268 sherds representing 118 vessels of mainly handmade Anglo-Saxon type from Laceby Beck, with most of the sherds being recovered from subsoil 461 or pit 493. Few of the sherds are decorated and, with one exception, this is limited to the simple use of incised, grooved or burnished techniques. The only stamped vessel (**Fig. 5.2**, 15) has a single row of simple incuse stamps, of the type made with a hollow bird bone, around the shoulder of the jar. This decorative technique is found in Lincolnshire on vessels of Romano-British to early medieval date and, although occurring early in the sequence on the Anglo-Saxon urns from Cleatham (Leahy 2007), is not in itself a reliable date indicator. The lack of decoration on other vessels, or indeed the presence of more complex stamped motifs, could be due to the fragmentary nature of the recovered pottery, or could accurately reflect the nature of the assemblage. None of the decorated vessels have traces of use but many of the undecorated sherds have soot residues, carbonised deposits, internal attrition or internal surfaces that have been leached of their calcareous inclusions, indicating the domestic nature of the assemblage (Perry 2011; 2014).

In Lincolnshire, handmade vessels of Anglo-Saxon type were in use between the 5th and 8th centuries, with few of the ware types found being confined to either the Anglo-Saxon or Middle Saxon period. Individually most handmade vessels without decoration or heavy external burnishing can only be assigned to the period between the 5th and 8th centuries with absolute certainty. With the exception of the three new mixed quartz and chalk gravel-tempered wares (NELMQC, NELASCQC and NLSCQRC), all of the fabric groups are found on other sites in North or North East Lincolnshire, including some of the cremation cemeteries such as Cleatham, South Elkington and Elsham (Leahy 2007; Perry 2009b). Ten ware groupings were found on this site, with the diversity potentially indicating a long period of occupation; however, all 10 groups were found stratified together in fills 494 and 496 of pit 493, suggesting that they were in contemporaneous use. This is the only large, stratified group to be recovered from the site. The presence of seven decorated jars and the commonality of heavy external burnishing suggests a mid-5th- to early/mid-6th-century date based on current dating in North Lincolnshire (*ibid.*).

Subsoil 461 yielded a group of 145 sherds, representing about 33 vessels, recovered from 27 findspots. The layer was subdivided into smaller blocks and recording by individual area shows cross-joining sherds between several findspots (see archive list). The latest sherd recovered is from a 19th- to mid-20th-century stoneware jar. Two sherds are from large Humberware jugs of mid-14th- to mid-16th- and 15th- to mid-16th-century types and one sherd is from a Glazed Red Earthenware cup or small jar, otherwise the pottery recovered is all of handmade Anglo-Saxon type, although two sherds could be of earlier date. Eight different ware types are represented, with most of the sherds being in local (ESAXLOC) or Charnwood-type (CHARNT) fabrics. Several of the sherds are in a fairly fresh condition whereas other sherds are quite fragmentary. Most of the identifiable vessel forms are medium- (**Fig. 5.2**, 2, 5 and 6) and large-sized (**Fig. 5.2**, 8 and 16; **Fig. 5.3**, 18 and 32) necked jars. A few sherds are from small vessels (**Fig. 5.2**, 12).

Ditch 21002 (fill 789) yielded an abraded and leached sherd from a mid-12th- to early/mid-13th-century Lincolnshire Early Medieval Shelly ware jar.

Some 20 sherds from nine handmade Anglo-Saxon vessels were recovered from two fills of ditch 21008 (fills 485 and 486). A conjoin exists between the two fills. The vessels are in six ware types and include a jar with a single row of simple incuse stamps around the shoulder (**Fig. 5.2**, 15). This simple stamping, done with a hollow tube (often a bird bone), is used throughout the Saxon period. Identifiable forms include small, medium- (**Fig. 5.3**, 21) and large-sized (**Fig. 5.2**, 14) jars or bowls.

Ditch 21012 (fills 470 and 474) yielded two small handmade sherds from Anglo-Saxon jars or bowls.

Two handmade Charnwood-type sherds were recovered from feature 706 (fill 707).

Pit 21020 (fill 498) yielded five handmade sherds from four vessels of Anglo-Saxon date. The group includes two small jars with heavily all-over burnished external surfaces (**Figs 5.2**, 14 and **5.3**, 25) and a medium-sized jar of in-turned or biconical type (**Fig. 5.2**, 2). These vessels are of Anglo-Saxon 5th or 6th century date.

Pit 21021 (fill 823) contained a single sherd from a medium-sized jar in a local fabric (ESAXLOC). The jar has horizontal burnished lines on the shoulder (**Fig. 5.2**, 4) and a thick external carbonised deposit. Again, a 5th or 6th century date is favoured.

Several other cut features yielded handmade Anglo-Saxon pottery sherds. Three small sherds from jars or bowls were recovered from pit 471 (fill 472). Five Greensand-tempered sherds with internal attrition were found in pit 489 (fill 490) the sherds coming from a single jar. Root disturbance 491 (fill 492) yielded three sherds from jars or bowls, whereas pit 571 (fill 572) contained a single sherd from a jar or bowl.

A group of 75 sherds representing about 61 vessels was recovered from two fills of pit 493 (fills 494 and 496). The lower fill 496 contained four vegetal-tempered sherds (ECHAF) from a single large jar or bowl. The larger group found in fill 494 includes handmade Anglo-Saxon vessels in a wide range of fabrics. This group includes seven vessels that are decorated with either grooved (**Fig. 5.2**, 3; **Fig. 5.3,** 19–20, 24 and 27) or incised decoration (**Figs 5.2**, 10 and **5.3**, 26). This form of decoration occurring on its own is considered to be early (Hamerow 1993, 45; Myres 1969, 30–31), possibly dating to between the mid-5th and early/mid-6th centuries (Leahy 2007, 25). Certainly, at both Cleatham (Leahy 2007, 72 and 105–6) and South Elkington (Perry 2009b, 18–19 and 24–25), urns with unstamped grooved and incised linear decoration occur early in the sequences. It must, however, be noted that the vessels recovered from pit 493 are incomplete and could potentially be stamped elsewhere on the vessel and, therefore, be of potentially later date. Many of the sherds recovered from the pit have fully burnished external surfaces. A high proportion of the recovered vessels in a range of fabrics are of small size (**Figs 5.2**, 11 and **5.3**, 29–30), including four of the five decorated vessels. Jars of medium (**Fig. 5.3**, 22–23, 28 and 31) and large size (**Fig. 5.2**, 8) also occur in the group.

Blow Field

Some 499 sherds representing 336 vessels were recovered from 92 deposits at Blow Field. Most of the pottery from this site is of Saxo-Norman and early medieval type, although a small group of Late Saxon date and pottery of medieval to early modern date was also found.

The presence of a small group of Late Saxon material (at least 19 sherds from 17 vessels) suggests local occupation between the late 9th and late 10th centuries, with vessels of early/mid-10th-century and late 9th- to mid-10th-century date being identified. The only possible contemporary groups, however, are small and come from ditch 300076 and its partial recut ditch 300202.

Drainage features yielded pottery of Saxo-Norman and early medieval date, with the majority of these features containing pottery that dates to between the mid-/late 12th and early/mid-13th centuries (ditches/drains 4271, 8260 and 8247), but few features contained closely dateable vessels. Gully 8251 yielded a small group of vessels possibly deposited in the second half of the 12th century, and what may be a redeposited group of early/mid- to mid-12th century date was recovered from cut 20045 of moat 4059.

There were 89 vessels of medieval type recovered overall, although few groups were from after the early/mid-13th century. Pit 4269 contained a small and mixed group of vessels, with at least three of the decorated Beverley 2 jugs dating to the first half of the 13th century; other undecorated jugs in the group are of general 13th-century date. Moat 4059, investigated at several points, yielded little pottery but much of what was found is of 13th- to early/mid-14th-century date; single vessels of late 13th- to 14th-century and early modern date also occur.

Feature 300204 yielded medieval pottery of similar 13th- to early 14th-century date, but the fills contained very mixed groups that also include post-medieval and early modern vessels. Medieval pottery was also recovered residually from pond 300013.

Overall, the medieval pottery recovered from the site suggests that occupation, or at least the disposal of ceramic rubbish, had decreased dramatically by the late 13th century and may have been most intensive in the 12th century. Apart from a few decorated jug sherds there is nothing to suggest that the early medieval and medieval pottery found associated with this moated site differs from other medieval assemblages recorded in the local area.

A small number of vessels of post-medieval and early modern date were recovered, with material of this date coming from feature 300204 and pond 300013, indicating that these features were open until a late date.

A further 191 sherds from 138 vessels were recovered from four trenches of the PCAS evaluation (Irving 2013). Not all of this assemblage was available for re-assessment, so this summary is partly based on a reinterpretation of the group and partly on the original archive record. In trench 95, ditch 95004 (intervention 95005, fill 95006) yielded a small residual group of Late Saxon pottery including a bowl of late 9th- to mid-10th-century date, together with a sherd from a 13th-century Beverley 2 jug. Other sherds from this trench date to between the Saxo-Norman and late medieval periods. Most of the pottery recovered from trench 96 is of late 12th- to mid-13th-century date, whilst that from trench 97 is more mixed, with pottery of Late Saxon and Saxo-Norman type occurring residually. Most of the features in trench 97 yielded sherds of 12th- to early/mid-13th-century date, with few vessels likely to post-date this period, although the original assessment report notes the presence of two perhaps intrusive mid-15th- to 16th-century Bourne ware vessels in drain 8247 (cut 97027, fill 97045) that otherwise appears to have been of early medieval date. A single undecorated sherd found residually in deposit 97061 is of Anglo-Saxon date (NLSCQRC). The largest assemblage was recovered from trench 98. Reassessment of much of the pottery shows that most of the sherds described as being of Early to Middle Saxon type are in fact in Unglazed Greensand fabrics (UNGS) of Late Saxon to Saxo-Norman date. In summary, the vast majority of sherds recovered from this trench are of Saxo-Norman to early medieval type, but there are a small number of Late Saxon vessels and a few medieval sherds, the latest of which is a Humberware jug or jar of 14th- to mid-16th-century date.

The post-Roman pottery from the excavation is briefly described below, ordered by feature type and broadly by chronology.

Boundaries

Ditch 4483 (fill 4484) yielded a small group of four mixed coarseware vessels and a Beverley 1-type (BEVO1T) jug of probable early to late 12th-century date.

A sherd recovered from ditch 4485 (fill 4486) is from a small 11th- or 12th-century Lincolnshire Fine-shelled ware jar.

A single basal sherd from a small Lincolnshire Fine-shelled ware jar of 11th- or 12th-century date was recovered from ditch 8213.

Ditch 8248 (fill 4201) yielded eight sherds from seven vessels, the latest of which is from a 13th-century Beverley 2 jug.

A single sherd from an 11th- or 12th-century Lincolnshire Fine-shelled ware jar was recovered from ditch 8309 (fill 4220).

Ditch 8311 (fills 4278 and 4361) yielded three sherds of pottery, the latest of which is likely to date to between the mid-12th and early/mid-13th centuries.

Two basal sherds from Lincolnshire Early Medieval Shelly ware jars or bowls of mid-12th- to early/mid-13th-century date were recovered from ditch 8314.

Ditch 8322 (fills 4246, 4262 and 4363) yielded a small mixed group of thirteen post-Roman sherds. The latest vessel is probably a Beverley 2 jug of 13th-century date, although the jug may be contemporary in the first quarter of the 13th century with at least two of the Beverley 1 jugs.

Linear feature 300032 (fill 300031) cut by moat 300020/300024 contained a single sherd from a wheel-thrown shell-tempered jar (WLSS) of probable late 9th- to 10th-century date.

Ditch group 300202 contained two sherds from small Lincoln Kiln-type jars of late 9th- to 10th-century date (fill 300072). Ditch 300076 (fill 300075), pre-dating this ditch, yielded a further three Late Saxon sherds from two small jars. One jar is of shell-tempered Lincoln Kiln type whilst the other is a Torksey ware product. The two vessels appear early in the typological sequence and probably date to between the late 9th and early/mid-10th centuries.

Ditch group 300203 (fill 300117) yielded three sherds from two vessels of medieval date. The later of the two vessels dates to the 13th century. The two shell-tempered sherds (SNLOC) found in ditch 300111 (fill 300112) come from a jar or bowl of 10th- to mid-13th-century date. A single sherd from a small Beverley 2 jug or jar of 13th- to early/mid-14th-century date was recovered from posthole 300088.

Three sherds from two vessels were recovered from gully group 300201 (fills 300039 and 300043). Two sherds are from a Brown-glazed Earthenware drinking vessel of mid-16th- to mid-17th-century date (fill 300043) and one is from a large, decorated Lincoln Kiln-type in-turned rim bowl of mid-/late-10th-century date (fill 300039).

Four ditches (300015, 300018, 300033 and 300103) and a pit (300051) yielded groups of post-Roman pottery that included mainly post-medieval material. Ten sherds from three post-medieval vessels of mid-17th- to 18th-century type were recovered from ditch 300015 (fill 300017). Ditch terminal 300018 yielded three Glazed Red Earthenware vessels of mid-16th- to 18th-century date and a possibly residual sherd from a Humber Basin jug or jar of 14th- to 16th-century date. A sherd from a large 17th- or 18th-century Brown-glazed Earthenware jar and a residual medieval Humberware sherd were recovered from ditch 300033 (fill 300034). The terminal of ditch or gully 300102 (fill 30013) yielded two tiny Glazed Red Earthenware sherds of mid-16th- to 18th-century date and the rim of a large Lincoln Kiln-type bowl of late 9th- to mid-10th-century date. The two sherds found in pit 300050 (fill 300051) come from a small, Brown-glazed Earthenware vessel of mid-16th- to mid-17th-century date and a Late Medieval Toynton ware jug of mid-15th- to mid-16th-century date.

Parish boundary ditch 8263 yielded three undecorated sherds from a Staffordshire-type Slipware cup of mid-17th- to mid-18th-century date.

A rim sherd from a small early Staffordshire White Salt-glaze Stoneware dish of probable early/mid- to mid-18th-century date was recovered from ditch 8320 (4276).

Drains

Sump 4225 (fill 4185) in feature group 4240 yielded six sherds of mixed date. The earliest sherd is from a Torksey ware jar of post-late-10th-century date. Four sherds are from Lincolnshire Fine-shelled ware vessels of potential late-10th- to 12th-century date and one is from a Beverley 1 jar or bowl of 12th- to early/mid-13th-century date. Gully 4085 (fill 4086) in this feature group contained a single sherd from a North Lincolnshire Coarse Quartz and Chalk-tempered jar of mid-11th- to early/mid-13th-century date.

Drain 4167 (fill 4168) yielded two sherds from Beverley 1 jugs and a Lincolnshire Fine-shelled ware jar or bowl. The handle from one of the jugs suggests a mid-/late 12th- to early 13th-century date.

Six sherds of mixed Saxo-Norman and early medieval type came from drain 4271 (fills 4218 and 4237), which also contained an inhumation. The two Beverley 1 jugs suggest a mid-/late 12th- to early/mid-13th-century date.

A small group of seven sherds was recovered from feature 8235 (fill 8236). The group includes five Beverley 2 jugs of 13th-century date. One of the jugs has a conjoin to fill 8240 in feature 8239. Feature 8239 (fill 8240) yielded seven sherds from five vessels, the latest of which are likely to date to the 13th century.

Drain 8245 (fill 4034) contained an abraded basal sherd from a Lincolnshire Fine-shelled ware jar or bowl of late-10th- to 12th-century date.

Drain 8247 (fills 4037, 4038, 4040 and 4108) yielded a small group of 35 sherds representing 17 vessels. Seven of the vessels are in Beverley 1 Fabric A and include jugs and jars. The pocked suspension glaze found on two of the jugs suggests a mid-/late 12th- to early 13th-century date. A small suspension-glazed sherd in a non-local fabric is from a jug of potential late 12th- to 13th-century date. The other sherds in this group are quartz and shell-tempered coarsewares typically found in mid-11th- to early 13th-century deposits in the region. A single abraded Lincolnshire Fine-shelled ware sherd from a small jar of late 10th- to 12th-century date was recovered from ditch 8247 (fill 4047).

Drain 8249 (fill 4026) yielded a single sherd from a small mid-11th- to early/mid-13th-century North Lincolnshire Coarse Quartz and Chalk-tempered jar and a glazed Stamford ware jar or pitcher of 12th-century date.

Drain 8251 yielded 21 sherds from 11 vessels found in three fills (4061, 4063 and 4416). The group comprises coarseware jars and bowls in a number of ware types. The presence of three sherds from a large Lincolnshire Early Medieval Shelly ware bowl suggests a deposition date post-dating the mid-12th century. None of the vessels post-date the mid-13th century and the composition of the group may suggest a deposition date in the second half of the 12th century.

Fifteen sherds representing five vessels recovered from two fills (4126 and 4136) of drain 8253 are from Lincolnshire Fine-shelled ware vessels of probable 11th- to 12th-century date. They include three small jars.

A small group of 10 shell-tempered sherds representing three jars was recovered from drain 8258 (fill 4017). The two small Lincolnshire Fine-shelled ware jars are of general 11th- or 12th-century date whereas the Lincolnshire Early Medieval Shelly ware jar dates to between the mid-12th and early/mid-13th centuries.

Two fills (4190 and 4350) of drain 8260 yielded post-Roman pottery. One sherd is from a splashed-glazed ware Beverley 1 jug of early to mid-/late 12th-century date whilst the other, abraded, sherd comes from a Lincolnshire Early Medieval Shelly ware jar or bowl of mid-12th- to early/mid-13th-century date.

Drain 8261 yielded a group of post-Roman pottery from four fills (4144, 4166, 4172 and 4192). The recovered 19 sherds come from 16 vessels of mixed date. The latest vessels are 13th-century Beverley 2 jugs.

Moat

Several investigations into moat 4059 yielded post-Roman pottery. Intervention 4050 (fill 4051) yielded a tiny sherd from a small Beverley 2 jug of 13th- to early/mid-14th-century date. Eight sherds from seven vessels of mixed date were recovered from fill 4111 of intervention 4118 (fills 4111 and 4119). Four of the vessels are Beverley 2 jugs, the latest of which is likely to date to between the late 13th and mid-14th centuries. The latest sherd, however, is from a Humberware jug of mid-14th- to mid-16th-century type. Fill 4119 contained six sherds from five Beverley 1 jugs of early type. These jugs are splash-glazed and probably date to the middle part of the 12th century. Intervention 20045 (fill 20046) yielded a large group of 70 sherds representing 41 vessels. The group is mixed and contains an intrusive early modern sherd but does appear to contain the core of an early/mid- to mid-12th-century ceramic group. Other than the early modern sherd, the latest identifiable vessel is a Humberware jug of potential late 13th- to 14th-century date.

Moat 300200 contained only three medieval sherds (fills 300084, 300086 and 300093). The latest dateable sherd comes from a large Humberware jug of mid-14th- to mid-16th-century date.

Pits

Pit 4233 (fill 4234) yielded a sherd from a mid-12th- to early/mid-13th-century Lincolnshire Early Medieval Shelly ware jar or bowl.

There were 60 sherds representing 37 vessels recovered from pit 4269 (fill 4210). The group is mixed, with the latest dateable vessels being Beverley 2 jugs. Decoration on three of the jugs suggests that they pre-date the mid-13th century. Pit 4270 (fills 4216 and 4254) contained seven vessels, the latest of which is a decorated Beverley 2 jug of 13th-century date. Eight sherds from a jug in fill 4254 are of probable early to early/mid-13th-century date.

A single sherd from a small Beverley 2 jug of 13th- to early/mid-14th-century date was recovered from pit 4439 (fill 4441).

Pit 8215 (fill 8216) yielded a single sherd from a Yorkshire Gritty ware jar or bowl of mid-11th- to mid-13th-century date.

Miscellaneous

Feature 300204 (fills 300057, 300066, 300068 and 30101) yielded a small group of 38 sherds from 32 vessels of mixed medieval, post-medieval and early modern date. The latest material is of 19th- to 20th-century date, although most of the pottery is of probable mid-16th- to 17th-century date.

A small group of 13 sherds from 11 vessels was recovered from pond 300013 (fills 300014, 300041, 300045 and 300060). The pottery mainly comprises mixed medieval and post-medieval sherds, but the group does include a Late Saxon greyware in-turned rim bowl (WLSG) of early/mid-10th- to early/mid-11th-century date (fill 300060). The latest sherds come from vessels of probable mid-16th- to mid-17th-century date.

Two animal burials (300026 and 300113) yielded pottery. The 10 sherds recovered from burial 300026 (fills 30025 and 30027) are from eight vessels of very mixed date. The latest sherds come from early modern vessels of 19th- or 20th-century date, but the group also includes two small shell-tempered jars (NELLSS) of potential late 9th- to early 10th-century date and a sherd from a reduced Roman or Late Saxon greyware jar (RLSAX). The single sherd found in burial 300113 (fill 300115) is from a Transfer-printed plate of mid-19th- to 20th-century date.

Three sherds from a single large Transfer-printed bowl of mid-19th- to 20th-century date were recovered from an area of root disturbance (300077, fill 300078). A small English Stoneware bottle of 19th- to mid-20th-century date was recovered from topsoil/plough soil layer 300001. A small group of unstratified pottery found whilst metal detecting the spoil heap includes two Late Saxon shell-tempered jars of late 9th- to 10th-century date.

Land drain 8232 (fill 8233) contained a mixed residual group of 11 sherds of Saxo-Norman to post-late 13th-century medieval type.

Habrough

A total of 361 sherds representing 138 vessels were recovered from Habrough. Most of the material (319 sherds from 100 vessels) came from set piece excavation 3 (SPE3), with the majority of the remainder (35 sherds from 35 vessels) coming from the subsequent strip, map and record (SMR6). The profile of the pottery found in the two stages is markedly different. The assemblage recovered from the excavation is biased towards vessels of Saxo-Norman and early medieval types with little medieval pottery, whereas that from the SMR is mostly of medieval or later date (**Table 5.4**). No pottery of conclusive pre-conquest date was recovered, although there is the potential for some of the undiagnostic Lincolnshire Fine-shelled ware (LFS) sherds to date to as early as the late 10th century.

A single early feature, drainage gully 3037, contained the only group of closely dateable pottery that might be considered to represent a contemporary group of primary or disturbed primary deposition. The group of 211 sherds representing five vessels is, with the exception of a single glazed Humber-type Early Medieval Glazed ware jug, made up of fossil shell or quartz and chalk-tempered coarseware jars and bowls (**Figs 5.3**, 33–34 and **5.4**, 35–37). Carbonised and soot deposits found on these vessels points to their primary use as cooking vessels. The diagnostic rims and forms present indicate a mid-/late to late 12th-century date for the group, and although this may not be the actual date of deposition it does provide a *terminus post quem* for the infilling of the gully.

Pits across the site yielded small groups of early medieval to medieval sherds, with most of the vessels pre-dating the early/mid-13th century. It is highly probable that these sherds had been moved around several times before their final deposition, but it does suggest that the peak of rubbish disposal in the immediate vicinity of the site took place between the mid-12th- and early/mid-13th centuries. A similar pattern exists in the medieval pottery from linear features and also the excavated sections of infilled moat. The few vessels of later medieval type found on the site can in the main only be dated to between the 13th and early/mid-14th centuries, or in the case of Humberware, to between the late 13th and mid-16th centuries. The occurrence of post-medieval pottery of late 17th- to 18th-century date in parts of the moat backfill indicate that the feature was not fully infilled until at least this period. The pottery recovered from the site is unremarkable and mirrors the pattern found on other sites in the surrounding parishes. It has not been possible to directly compare the assemblage from this site to that found in 1991 at the south Habrough moat (Didsbury 1995). There the emphasis is on later medieval and post-medieval material; however, the report suggests that the medieval pottery recovered is mainly of Beverley and Humberware types.

The post-Roman pottery is briefly described below, ordered by feature type and broadly by chronology.

Boundaries and drains

Ditch 3069 (fill 3070) yielded a small group of 55 sherds in fairly fresh condition from five vessels of early medieval type. The group includes three Beverley 1 vessels and two large Lincolnshire Early Medieval Shelly ware dishes (**Fig. 5.5**, 42–43). These two vessels are likely to date to between the mid-/late 12th and early/mid-13th centuries, whilst the two small, glazed Beverley 1 jugs and a bowl suggest a mid-/late 12th-century date.

Ditch 3080 (fill 3079) yielded a single minute sherd from a Lincolnshire Fine-shelled ware vessel of late-10th to 12th-century date.

Three early medieval sherds were recovered from ditch 3169 (fill 3201). The two Beverley 1 vessels are of mid-/late 12th- to early/mid-13th-century date.

Drain group 3206 (fills 3051 and 3089) yielded three Beverley 1 sherds of probable mid- to late 12th-century date. The sherds come from a small jug, a small jar and a large bowl.

A large group of 211 sherds from 55 vessels was recovered from gully 3037 (fills 3035 and 3036). Six conjoins between the two fills suggest that they may have been contemporaneous. With the exception of three vessels, all of the sherds come from Lincolnshire Fine-shelled ware jars or bowls. The few chronologically diagnostic vessels are of mid-/late 12th-century to late 12th-century date. A Humber Early Medieval Glazed Gritty ware jug is the only glazed vessel in the group. This jug dates to between the mid-12th and early/mid-13th centuries.

A minute sherd from a Lincolnshire Fine-shelled ware vessel of 11th- or 12th-century date was recovered from ring gully 3316 (fill 3313).

Linear feature 3209 (fill 3107) yielded four sherds from a small jug and an internally glazed jar or bowl in Beverley 1. The sherds are of mid-/late 12th- to early/mid-13th-century type.

Moat

The north side of the moat (3324; fills 3325 and 3326) contained a group of 14 mainly abraded sherds representing 11 vessels. The latest sherd comes from a large 17th- or 18th-century Brown-glazed Earthenware cylindrical jar. Eight vessels are Humberware jugs, jars or bowls of mixed but probably mainly late type with a large Humberware 4 jug dating to between the mid-15th and mid-16th centuries. Three sherds from a small squat jug (LMX, **Fig. 5.5**, 44) are likely to be of a similar date. Eight sherds from seven vessels of mixed date and type were recovered from moat recut 3327 (3328). The latest sherd is from a small Humberware jug or jar of late 13th- to mid-16th-century date.

Pits

Nine sherds representing five vessels were recovered from pit 3031 (fill 3032). Three sherds are from two small jars and a jug or jar in Beverley 1 Fabric A and six sherds are from two Lincolnshire Early Medieval Shelly ware dishes (**Fig. 5.4**, 40–41). The vessels are likely to date to between the mid-/late 12th and early/mid-13th centuries.

Five sherds from a single splashed-glazed Beverley 1 jug found in pit 3048 (fill 3049) date to the mid-12th century. Pit 3052 (fill 3053) yielded two sherds of North Lincolnshire Quartz and Chalk-tempered pottery dating to between the mid-11th and early/mid-13th centuries. Five sherds from three Beverley 1 jugs and two Lincolnshire Early Medieval Shelly ware vessels were recovered from pit 3118 (fill 3119). The vessels date to between the mid-/late 12th and early/mid-13th centuries.

Pit 3142 yielded a single sherd from a small 13th-century Beverley 2 jug. Seven sherds from five vessels were recovered from three fills of pit 3160 (fills 3152, 3153 and 3154). The latest sherd, found in fill 3154, is from a 13th-century Beverley 2 jar. Fill 3152, however, contained three sherds in a fresh condition from an early Beverley 1 jug (**Fig. 5.4**, 38) of probable mid-12th-century date.

Pit 3318 (also recorded as 3085, fill 3086) yielded eight sherds each representing a single vessel. The group comprises four Beverley 2 jugs, three Humberware jugs or jars and a Humber Basin jug. The latest vessels probably date to between the late 13th and mid-14th centuries.

Pit 3320 (fill 3321) yielded a single sherd from a small Beverley 2 jug of probable 13th-century date.

Miscellaneous
Posthole 3126 (fill 3127) yielded a single sherd from a Lincolnshire Fine-shelled ware jar of 11th- or 12th-century date. A minute fragment from a mid-12th- to early/mid-13th-century Lincolnshire Early Medieval Shelly ware vessel was recovered from posthole 3322 (fill 3323).

Penannular feature 3205 (fill 3174) yielded three sherds from a jar and a jar or bowl in mid-12th- to early/mid-13th-century Lincolnshire Early Medieval Shelly ware.

A single rim sherd from a Beverley 1 jug of mid-12th-century type was recovered from area of bioturbation 3047 (fill 3046).

Five furrows in this plot (20105, 20129, 20131, 20144 and 20146) contained post-Roman pottery, mainly of 18th- to mid-19th-century date.

Brooklands
From Brooklands there are 49 post-Roman sherds representing 49 vessels, these recovered from 15 deposits in 11 features associated with salt production and subsequent agricultural boundaries. A few sherds can be dated to between the early/mid- and late 12th century and there are a small number of post-medieval and early modern sherds, but otherwise the assemblage falls between these periods. The predominant medieval type present is Beverley 2 or Beverley 2 type, with glazed jugs of 13th- to early/mid-14th-century type being the most common form found, although a few jugs of Cowick-type Humberware (HUM), Humber Basin (HUMB), North Lincolnshire (NLCS and NLFMSW) and Lincoln type (LSWV) were also recovered. This ceramic pattern is typical of most parishes along the coastal strip of north-eastern Lincolnshire for the 13th and earlier part of the 14th century. The paucity of Humberware vessels suggests that activity in the area ceased or diminished by the early/mid-14th century. There is nothing within the recovered material to suggest a direct link with salt production and although the only coarseware sherd from a jar or bowl (NLCS) is heat-affected this would not be unusual for the type. Perhaps unusually, the assemblage is biased towards glazed jugs, but it is too small to draw any conclusions from this fact.

The post-Roman pottery from the excavation is briefly described below, ordered by feature type and broadly by chronology.

Saltmaking features
Brine pit 9095 (fill 9121) yielded a single small sherd from a Beverley 2 jug of 13th- to early/mid-14th-century date.

Pottery was recovered from three deposits forming medieval saltern mound 9390 (fills 9166, 9225 and 9226). The 36 sherds represent 34 vessels of medieval date. The earliest four sherds come from Beverley 1 jugs of mid-/late 12th- to early/mid-13th-century date, but most of the vessels are in 13th- to early/mid-14th-century BEVO2. Sherds mainly come from small or medium-sized undecorated jugs, but at least one jar is present in the group and two of the jugs are decorated. A large Humberware jug handle is potentially the latest vessel in the group dating to between the late 13th- and mid-16th centuries, but it could easily fit with a late 13th- to early/mid-14th-century deposition date.

A basal sherd from a small Lincoln-type Glazed ware (LSWV) jug of probable mid-13th- to late 14th-century date was recovered from saltern mound 9346 (fill 8354).

Saltern mound 9388 (fill 9341) yielded a single fragment from a small Beverley 1 jug with a splashed-type glaze probably dating to between the early and mid-/late 12th century.

In evaluation trench 10 (RPS 2013e), where a few fragments of briquetage including a pedestal fragment were recovered, a small sherd from a Beverley 1-type jug with a splashed-type glaze was found in fill 10004 of cut feature 10005. The jug is of early/mid- to mid-/late 12th-century date.

The only medieval coarseware sherd to be found at Brooklands (a NLCS jar or bowl of mid-/late 12th- to 14th-century date) was found associated with a fragment of briquetage in deposit 11005 in evaluation trench 11.

Agricultural boundaries
Ditch 9380 (fill 9316) yielded a small sherd from a Beverley 1 jug with a suspension glaze. The jug is likely to date to between the mid-/late 12th and early/mid-13th centuries.

An abraded sherd from a jug probably produced within the Humber basin between the 13th and 15th centuries was recovered from ditch 9384 (fill 9383).

Enclosure ditch 9386 (fill 9244) contained a handle sherd from a Beverley 2 jug of mid-13th- to early/mid-14th-century date.

Ditch 160178 (fill 160171) yielded a sherd from a Humberware jug or jar of 14th- to mid-16th-century date.

Three sherds were recovered from modern ditch 9059 (fills 9061 and 9062). One sherd is from a Glazed Red Earthenware jar of mid-16th- to 17th-century type and the other two are from 19th- or 20th-century White Earthenware vessels. In evaluation trench 10, the same ditch (10012, fill 100017) yielded a small sherd from an early modern English Porcelain vessel.

Miscellaneous
Pit 9180 (fill 9183) yielded a basal sherd from a small Beverley 2 jug of late 13th- to early/mid-14th-century date.

Two jug sherds were recovered from pit 140203 (fill 140204). One is from a small Beverley 1-type (BEVO1T) jug of probable mid-/late 12th- to early/mid-13th-century date, whereas the other sherd is from a late 13th- to 14th-century Humberware jug.

Natural channel 9372 yielded abraded sherds from two small jugs. The jug in Beverley 1 dates to between the mid-/late 12th and early/mid-13th centuries, whilst the Beverley 2 jug is of 13th- to early/mid-14th-century date.

In the PCAS evaluation, deposit 8011 in trench 8 yielded three sherds from two jugs or jars (BEVO2 and NLFMSW) of 13th- to early/mid-14th-century date. The other sherd found in this trench came from fill 8013 of cut feature 8014 and is from a Beverley 2 jug or jar of 13th- to early/mid-14th-century date.

Brigsley parish
A small number of other locations along the route yielded post-Roman pottery, much of which is of post-medieval to early modern date, although one sherd of handmade

Anglo-Saxon type was recovered. Four of these findspots were in Brigsley parish, made during excavation of general watching brief (GWB) areas B, D, E and F.

The small sherd from a handmade Anglo-Saxon jar or bowl in a local fabric (ESAXLOC) was recovered from bioturbation area 184 (fill 185) at NGR 525956 402138. The sherd can only be dated to between the 5th and 8th centuries.

Hedgerow 165 (fill 166) (NGR 525956 402138) contained a sherd from a large early modern earthenware bowl (WHITE) with moulded and over-glaze painted decoration. The bowl is of 19th- to mid-20th-century date.

Furrow 194 (196) (NGR 525956 402138) yielded a very abraded rim sherd from a Beverley 2 jug of probable late 13th- to mid-14th-century date, as well as a small sherd from an early modern flowerpot.

Hedgerow 222 (fill 223) (NGR 525676 402442) yielded a small group of 10 sherds from eight early modern vessels of probable late 18th-to mid-19th-century date.

Tetney parish
A single early modern sherd from a 19th-century earthenware mug (WHITE) with blue and black banded decoration was recovered from ditch 100154 in targeted watching brief 1 (TWB1; NGR 531026 402236).

Laceby parish
Pottery was recovered from four furrows in Laceby parish (NGR 522269 407026). Furrow 390 (fill 391) contained four sherds of post-medieval to early modern date; the latest sherds probably date to the 18th century. A single sherd from a Staffordshire Mottled ware cup of late 17th- to 18th-century date was recovered from furrow 392. Two sherds from a Humberware jug of probable 15th- or 16th-century date were recovered from furrow 401 (fill 402), whilst furrow 405 (fill 406) yielded a single sherd from a small Transfer-printed dish of probable 19th-century date.

Chapter 6
Non-Pottery Finds

Coins

Katie Marsden

A total of 15 coins was recovered (**Table 6.1**), comprising 12 of copper alloy and three of silver. The group is worn, with many showing signs of post-depositional corrosion. With the exception of a modern copper alloy penny of George V, the group is of Roman date. They comprise one silver *denarius*, nine *radiates* (two silver and seven copper alloy) and two copper alloy *nummi*. The remaining two coins (object numbers 9 and 90; ONs 9 and 90) are both too corroded to be closely identifiable but are likely to be *radiates* or *nummi* of 3rd- or 4th-century AD date. The mint marks on all the Roman coins are illegible.

The earliest coin was recovered from Station Road and is a *denarius* issued by Septimius Severus in 195 AD. Of the nine *radiates,* the silver coins (ONs 1 and 62) are unsurprisingly the earliest, with copper alloy *radiates* replacing silver around AD 260 (Reece and James 2000). One is a contemporary copy (ON 11) of a *radiate* of Tetricus II (272–274 AD) with a reverse type depicting sacrificial implements (cf. Besly and Bland 1983, Cunetio no. 3036).

The Station Road group indicates activity from the late 2nd to 4th centuries AD, with peak activity between AD 238 and 275; Reece (1991) periods 12 and 13. Whilst individual coins from periods 17 (AD 330–348) and 19 (AD 364–378) are present in the group, they do not form peaks, as in known coin-loss patterns from Romano-British sites (Reece 1995) and as seen at the nearby site of Wrawby, around 12 km to the west (Malone 2008). The coins provide broad dating, but the group here is too small to draw any further conclusions.

Table 6.1 List of coins

Site	*Object Number*	*Material*	*Identification*	*Reece period*
Station Road	1	Silver	Radiate, Valerian I (AD 253–60)	12
	3	Copper alloy	Nummus, House of Valentinian probably Valens (AD 364–78)	19
	4	Copper alloy	Radiate, Gallienus (AD253–60)	12
	8	Copper alloy	Nummus, House of Constantine (AD 335–41)	17
	9	Copper alloy	Radiate or nummus, illegible (AD C3–C4)	-
	10	Copper alloy	Radiate, Tetricus II (AD 272–4)	13
	11	Copper alloy	Radiate, Tetricus II (AD 272–4)	13
	14	Copper alloy	Radiate, illegible (AD C3)	13–14
	15	Copper alloy	Radiate, Tetricus I (270–3)	13
	25	Copper alloy	Radiate, possibly Allectus (AD 293–6)	14
Westfield Farm	52	Copper alloy	Radiate, illegible (AD C3)	13–14
	62	Silver	Radiate, Valerian I (AD 257–8)	12
	63	Copper alloy	Penny, probably George V (20th century)	N/A
Findspot at NGR TA 31026 02236 (TWB1)	83	Silver	Denarius, Septimius Severus (AD 195)	10
Keelby Road	90	Copper alloy	Radiate or nummus, illegible (AD C3–C4)	-

Metalwork

Katie Marsden

Introduction

The metalwork assemblage is relatively small. A total of 239 items of metal were recovered, comprising 183 of iron (many of them nails or nail fragments), 44 of copper alloy, nine of lead/lead alloy and three of other metal. The Romano-British and medieval finds have been grouped and are presented here according to functional categories following Crummy (1983, 5–6). Unsurprisingly, the majority of items belong to the class of personal adornment, as these items are commonly lost from the person during day-to-day activities. The cluster of whittle tang knives and book clasp at Laceby Beck is suggestive of more domestic medieval activity in this area.

Romano-British

Personal adornment

Three copper alloy brooches were recovered, one each from Westfield Farm, Station Road and Habrough. ON 17 (**Fig. 6.1**, 1) from boundary ditch 1653 (Station Road) is a one-piece sprung type dating from the Late Iron Age to early Romano-British La Tène III period (50 BC to AD 70). The mechanism is sprung with an internal chord; the pin and catch plate are broken. It is a Mackreth Drachfibel Derivative 'Odd 1a' type (Mackreth 2011, pl. 15, no. 4893).

ON 39 is a probable 'Birdlip' type brooch (**Fig. 6.1**, 2), recovered from gully 4433 (Westfield Farm). The head is sprung with an internal chord; the pin is broken at the head and is consequently missing. The bow has moulded decoration in the form of three sets of lateral ridges, terminating in an outward-facing hook, or 'beaked bow'. The triangular openwork catch plate on the rear of the bow has broken at the point where it would turn towards the foot, leaving a curved spur projecting outwards. Examples of this type are known from Dragonby (Hattat 2000, fig. 154).

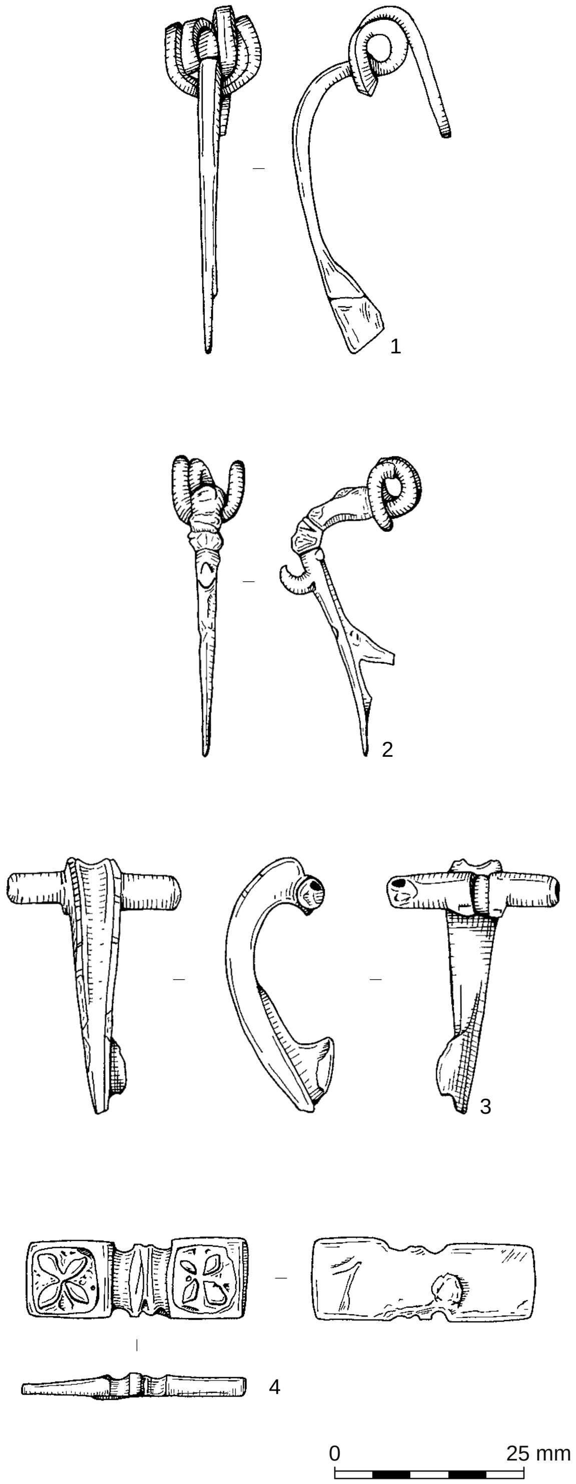


Figure 6.1 Metalwork (1–4)

The third brooch, ON 79 (**Fig. 6.1**, 3), was recovered unstratified from the medieval moated site at Habrough. The pin is missing, but it is otherwise complete and in good condition. The brooch is a probable Colchester derivative hinged brooch, of 1st- to 2nd-century AD date.

A probable belt mount (ON 113; **Fig. 6.1**, 4) recovered residually from Anglo-Saxon ditch 21016 (Laceby Beck) is probably of Romano-British date. The mount is broadly rectangular, with square enamelled ends connected by a narrowed, collared waist. The ends contain a four-petalled flower motif surrounded by enamel, mostly coloured white/yellow, and one petal has traces of a dark red. The reverse bears remains of an integral mount, now broken close to the plate. Whilst the form is unusual, similar enamelled four-petal flower motifs are known from North Lincolnshire and Gloucestershire, recorded on the Portable Antiquities Scheme database (NLM-9FCE2F and GLO-0C79B2 respectively) and dated to the Romano-British period; late Roman belt mounts with similar attachments are detailed by Crummy (1983; fig. 151).

Toilet, surgical or pharmaceutical items

A set of tweezers, ON 13, was recovered unstratified from Station Road. The tweezers are formed from a copper alloy strip bent to form two arms, which are undecorated. Such sets are difficult to date precisely, especially without supporting contextual information, as they are known from the Roman through to the medieval period.

Household utensils and furniture

A lead alloy (probably degraded pewter) spoon fragment, comprising the bowl only, was recovered unstratified from Westfield Farm (ON 56). The bowl is 'pear-shaped' (Crummy 1983 Type 2), a rounded end tapering to a narrowed handle, dated from the 2nd century AD onwards.

Tools

An iron knife, ON 28 (**Fig. 6.2**), was recovered from ditch 2217 (Keelby Road). It is a Manning (1982) type 12b, with a curving back in line with the tang. It is of Romano-British date, but such knife forms are long-lived and it cannot be more closely dated.

Medieval

Personal adornment

A copper alloy brooch, ON 36, was recovered unstratified from Habrough. The frame is annular, with constrictions at one side for the pin attachment and at the corresponding position on the other side for the pin tip to rest. The pin itself comprises a copper alloy wire, surviving only as a short loop around the frame, with the majority of the shank lost to an old break. The outer frame is decorated with regularly spaced notches. Annular brooches of this form appear to have been popular in the 13th and into the 14th centuries, where they are generally replaced by button and lace tag garment closures by the end of the century (Egan and Pritchard 2002).

The personal item group also includes two copper alloy buckles of medieval to post-medieval date. ON 88, recovered from subsoil 395 at NGR 522269 407026 (targeted watching brief 17; TWB17), is rectangular with a plain, undecorated frame. Use as a dress accessory or as a harness strap buckle is possible and such buckles are dateable from the 14th to 17th centuries (Whitehead 1996, no. 126). A similar buckle (ON 24), with slightly distorted frame and missing pin, was recovered unstratified from Keelby Road.

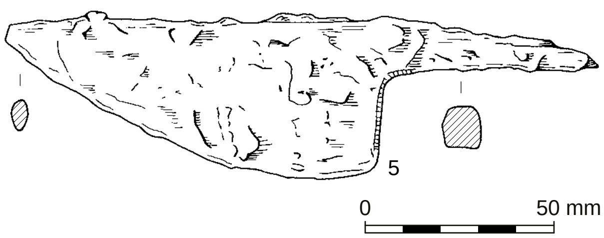


Figure 6.2 Metalwork

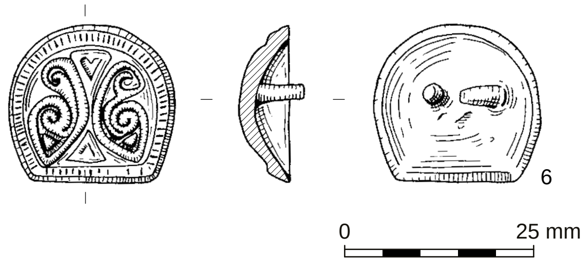


Figure 6.3 Metalwork

Writing

A probable book clasp (ON 117), of hooked form, was recovered from subsoil 461 at Laceby Beck. The clasp is formed of a rectangular sheet with narrowed strips at either end which curve to the back of the plate, where they are broken. One strip is likely to have continued to form a loop, making it a Howsam (2016) type A.5.1. Such clasps are difficult to date; they are generally rare in the medieval period and continue into the post-medieval period; however, the decoration, six pellets arranged in two triangles, is more suggestive of a medieval date.

Tools

Four knife or knife fragments (ONs 94, 96, 98 and 99) recovered from Laceby Beck are dateable to the medieval period. All are whittle-tanged, although precise dating is generally hindered by the fragmentary condition. ON 99 is probably a Goodall (2011, 106) type F, dateable from the 12th to 15th centuries.

Post-medieval

The post-medieval assemblage was largely unstratified and is generally not discussed further here. Worth mentioning was an unusual copper alloy belt mount of probable post-medieval date recovered unstratified from Station Road (ON 6; **Fig. 6.3**). The unusual form has a domed front, broadly circular in plan but with a straight top, with two spikes projecting from the concave back, probably to attach to a belt. The front has two raised motifs of geometric swirling lines, with a heart shape in between.

Metalworking Residues

Phil Andrews

Overall, the excavations yielded a relatively small quantity (8.68 kg) of metalworking debris or possibly related residues. The majority of this came from Station Road and Humberston Road, with smaller quantities from other sites. Only six contexts yielded more than 500 g of material.

Undiagnostic ironworking slag accounts for 2386 g of the total, most of the material very fragmentary, with no distinguishing features. The largest quantities are from Anglo-Saxon pit 493 (595 g), in this case comprising a single, hemispherical, moderately dense, slightly abraded 'lump', and from medieval saltern mound 140208 (1199 g), which yielded several less dense fragments, some with light green glassy surfaces; this debris is perhaps most likely to be a product of iron smithing. Context 140208 also yielded a 'run' of melted lead, weighing 29 g. A total of 1729 g of undiagnostic probable smithing slag was recovered from medieval saltern mound 9390 (context 9166), the 84 fragments denser than the fuel ash slag (see below), dark grey in colour with common small vesicles, and up to 25 mm thick with a flat underside where it had solidified on a surface. There is a further 581 g of undiagnostic possible ironworking slag, most from late Romano-British ditches and undated hearths, the largest quantity (168 g) from hearth 140167.

Light, vesicular, fuel ash slag of varying density, a few pieces with possible hearth lining attached, represents the largest total (3458 g), though this debris is not necessarily related to ironworking. The majority came from early Romano-British ditch 1404 (1149 g) and post-medieval ditch 7211 (1092 g), with most of the remainder from Romano-British ditches. There is also 497 g of other undiagnostic material including a few small pieces of possible hearth lining.

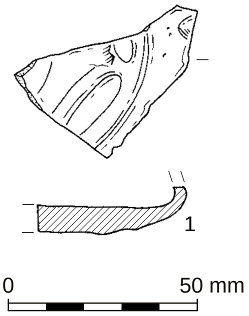
In addition to the ironworking debris, there is a single small, plain rim sherd (3 g) from a crucible of unknown form, from Romano-British ditch 7300 assigned a 3rd-century date. The sherd is moderately heavily vitrified, mid-grey in colour and has very slight traces of red on the interior, indicating copper alloy working.

Glass

Lorraine Mepham

Two fragments of Romano-British vessel glass and one Saxon bead were recovered. One of the vessel glass fragments came from late Romano-British ditch 2343 at Keelby Road; this is a basal fragment from a square bottle in blue/green glass, with a circular relief design (possibly featuring lettering within) and four small corner 'bosses' (Price and Cottam 1998, fig. 89d). The second (found residually in medieval drain 8246 at Blow Field) is a body fragment in pale blue glass from the corner of a rectangular vessel, perhaps another square bottle. Square bottles were used from the conquest period through to the end of the 2nd century AD and were very common from the last quarter of the 1st century AD onwards (*ibid*., 195).

The bead was extracted from a soil sample taken from Anglo-Saxon pit 493 at Laceby Beck; the pit also contained a dog skeleton, the skull missing. The bead is a wound disc form; the colour is a monochrome semi-translucent blue, although slightly masked by surface oxidation. Wound blue beads are an Early Anglo-Saxon type, characteristic of the period from c. AD 450–530; they are found across England, including examples in north Lincolnshire (Brugmann 2004, 74, fig. 37).



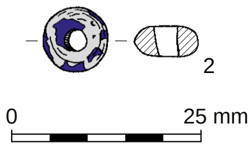


Figure 6.4 Glass

Illustrated glass

Fig 6.4

1. Base fragment from square bottle; relief-moulded design. *Context 2032, ditch 2343, Keelby Road*
2. Bead, wound disc, semi-translucent blue. *Context 496, pit 493, Laceby Beck*

Stone

Ruth Shaffrey

Introduction

All stone was examined with a x10 magnification hand lens for signs of use-wear or working. Stone that was found to be utilised is described by excavation area and discussed as a single assemblage.

Catalogue of Stone Objects

A more detailed catalogue is available in the site archive.

Chase Hill Road

A single piece of micaceous sandstone that has been used as a whetstone or grinding stone was found in ditch 6000 at Chase Hill Road (ON 68). This could be a reused quern fragment.

Westfield Farm

Fragments from two querns were found at Westfield Farm. A saddle quern of diorite was found in Early Iron Age ditch terminal 8027 where it may be considered to have been a placed deposit (8028, ON 66). It is badly degraded, presumably from exposure to heat.

A fragment of Millstone Grit lower rotary quern was found in early Roman pit 4508 (4509, ON 49). It is heavily blackened from exposure to fire.

A sandstone whetstone was an unstratified find from this area. It has been well-used across both faces and lengthwise along the edges. The artefact is not inherently dateable.

Keelby Road

A small fragment of a disc-shaped Millstone Grit millstone was the only stone object from Keelby Road (ON 34). It was recovered from undated pit 2056 but its relatively small 580 mm diameter indicates a probable Roman date.

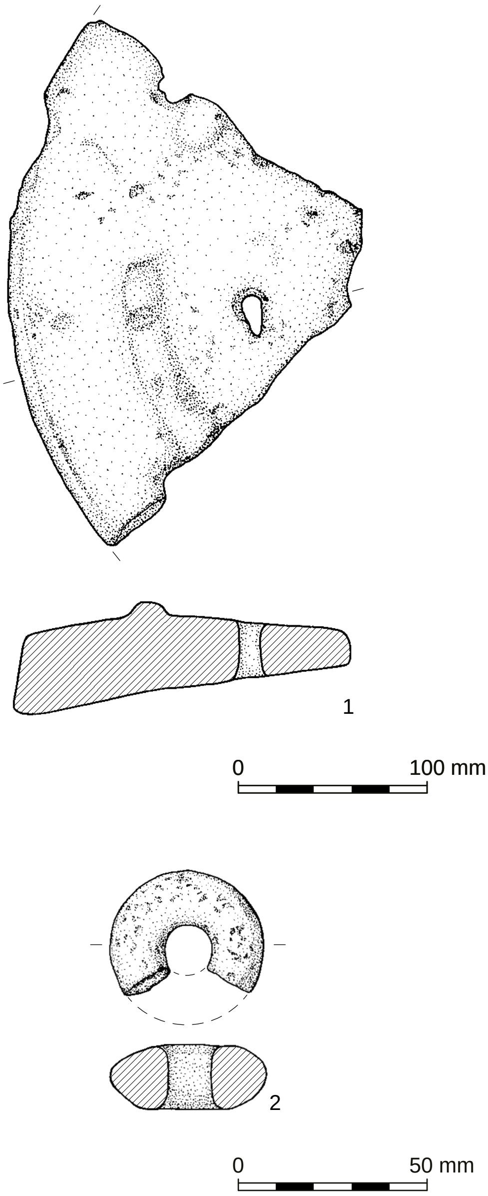


Figure 6.5 Stone

Station Road

Three whetstones were found at Station Road. A single unshaped piece of schist was recovered from a fill of Iron Age ditch 10711 (10546, ON 80). It has some possible use-wear across one end but is otherwise unused. A single cobble from Roman ditch 104 (ON 32) was not purposely shaped but had been extensively used as a point sharpener with multiple shallow grooves across it. An unstratified cobble (ON 29) had been used as a whetstone, primarily for sharpening fine points. This could be of any date from Bronze Age through to post-medieval.

Humberston Road

A single large fragment of rotary quern was recovered from Roman inhumation burial 7393 (ON 78). Three fragments of a small Millstone Grit millstone from the upper fill of pit 7301 (7302, ON 74/5) represent a typical disc-shaped millstone. They had been carefully placed in the pit. A fourth fragment of very similar appearance was found at Keelby Road (ON 34).

The rotary quern (ON 78; **Fig. 6.5**, 1) is of an unusual form. It has a rounded rim on the upper face that was either decorative or intended to create a wide, shallow, flat-bottomed hopper that is level with the upper surface of the quern outside the rim. It also has three perforations through the quern: two on the outside of this rim and one inside it.

Although projecting hopper querns occur across Roman England, the projecting rim is typically much closer to the eye of the quern and encloses an area that is deeper than the area outside it: a more obvious 'hopper'. The wide flat-bottomed area enclosed by a small rim on ON 78 is closest in design to some querns from northern England, for example at Carlisle and Vindolanda (Padley 1991, 159; personal observation). The quern has been made relatively locally from a Lincolnshire stone (Spilsby sandstone). Querns of this lithology mainly have a southwards distribution from source (Ingle 1989), and are usually 'beehive' shaped. Its manufacture in a more northern style is perplexing and suggests an external influence in its production. In addition, this quern is also unusual because of the additional perforations through it. Such perforations are typically seen on mechanically powered millstones and, although their purpose has not been fully established, they are usually interpreted as relating to a balancing or lifting mechanism. Their presence on this smaller quern may instead represent an atypical method for the attachment of a bridge.

Finally, a section of the unusual rim appears to have been deliberately removed. This may have been a practical action so that the fragments could be reused, but it has also been suggested that there was a process designed to decommission a quern when it was no longer required. As part of the ritual 'finishing' of a quern's life, a quern was often deliberately broken or had parts removed, such as a collar or lip, in an action coined 'detachment' (Heslop 2008, 69).

Laceby Beck

Three stone objects were found in this area. A Lias limestone spindlewhorl was recovered from pit 493 (492, ON 91; **Fig. 6.5**, 2). It is of a rounded Walton Rogers type B2 (2007) with its wide perforation consistent with the Anglo-Saxon date of the pit. An irregularly shaped piece of sandstone, well-used as a whetstone on both faces and most of the edges, was found in the subsoil (ON 118). This could be of any date from the Iron Age onwards. A fragment of small sandstone millstone was found in Anglo-Saxon occupation layer 826 (ON 121). The small size of the millstone (around 580 mm diameter) suggests the millstone is Roman in origin, but a Saxon date cannot be ruled out.

Discussion

Most of the stone objects have been made from locally available stone types, such as the Lias limestone and the sandstone, as well as the diorite saddle quern, which has been made from a boulder and therefore probably originated as a glacial erratic. The whetstones appear to have been locally sourced in an ad hoc fashion, making use of cobbles, rather than imported finely made tools.

Some of the querns are from more distant sources. The quern of Spilsby sandstone, for example, was probably produced some 40 km to the south and the Millstone Grit querns and millstones some 100 km or more to the west in Derbyshire. However, both rock types were commonly used for querns in Lincolnshire during the Roman period so their recovery here is to be expected.

The objects themselves represent domestic activity (spinning during the Saxon period at Laceby Beck), Roman tool maintenance, which could be household or industrial (the whetstones at Chase Hill Road, Westfield Farm, Station Road and Laceby Beck), and household-level grain processing (Roman-period querns from Westfield Farm and Humberston Road). However, the Roman millstone fragments found at Keelby Road, Humberston Road and Laceby Beck are evidence for centralised cereal processing via mechanisation, either animal- or water-powered. The centralisation of Roman grain processing is increasingly being recognised as a key component of the Roman agricultural economy (Shaffrey 2015). However, the 'Rural Settlement of Roman Britain' project recorded no millstones in the vicinity, suggesting that these are the first evidence for centralised grinding in the area (Allen *et al.* 2018). Millstone fragments are not likely to have been moved very far from their original point of use, and it is therefore likely that there was a mill in the vicinity during the Roman period.

Several instances of the special treatment of querns are apparent in this small assemblage. At Westfield Farm, a saddle quern had been placed in an Iron Age ditch terminal (8027). At Humberston Road a broken millstone had been carefully placed in a Roman pit (7302) and a rotary quern was included in the fill of a Roman inhumation burial (although not placed with the skeleton and not considered to be a grave good).

The ritual deposition of querns in ditches, and ditch terminals more specifically, is well established as a behaviour (albeit uncommon) during the British Iron Age, with mostly saddle querns deposited in this way (Heslop 2008; Watts 2014). At the same time, querns appear rarely to have been included in placed deposits in pits in northern England, despite the relatively higher frequency of the same activity in southern England. The deliberate deposition of querns in pits continued in central and southern England into the Roman period, but it is usually only recognised in site reports when a quern was complete at the point of deposition, or was deposited with other, 'more obviously special' material. The recovery of a millstone in a placed pit deposit at Humberston Road indicates that this practice did occur during the Roman period in the north and that millstones were sometimes also considered to be worthy of special deposition.

Fired Clay

Grace Jones

Fired clay, amounting to 498 pieces (7759 g) was recovered from 11 sites. This material comprises undiagnostic fragments, generally small and abraded, sometimes with flattish or irregular surfaces. There are one or two possible wattle impressions, suggesting a possible structural function, but otherwise the fired clay is of uncertain origin. Most are in silty/sandy fabrics. Associated pottery indicates that this material derives from Iron Age (10.2% of the total weight), Romano-British (58.8% by weight), Saxon (0.6%) and medieval (17.6%) contexts. A total of 12.9% of the assemblage (by weight) derives from undated contexts. The largest groups were recovered from Iron Age ditch 6100 (752 g; Chase Hill Road); two features of Romano-British date: pit 4503 (1314 g; Westfield Farm), ditch 1804 (810 g; Station Road), and layer 20027 (815 g, Westfield Farm). All other features yielded fewer than 250 g of fired clay.

Saltworking Residues

Grace Jones

Introduction

This section provides details of the artefactual remains of salt production recovered along the course of the route. It includes briquetage, a term commonly applied to the remains of the ceramic pans, troughs, supports and so forth used in the extraction of salt, as well as the fragmentary remains of ovens and hearths (after Lane 2001, 8), and the resultant by-product of fuel ash slag formed from the boiling over of brine (Timberlake 2016, 78). The bulk of the assemblage derives from medieval salt production at Brooklands, Sea Lane (**Tables 6.2** and **6.3**). Small quantities of briquetage of Iron Age or Romano-British date were also recovered during excavation at Westfield Farm. Fired clay associated with salt production was additionally recorded during the trial trenching at Tetney Lock Road (**Table 6.3**; Irving and Lane 2013), with fuel ash slag found at Tetney Lock Road, Station Road and Chase Hill Road (**Table 6.3**; Wood 2013).

Iron Age/Romano-British

Twenty-two pieces of briquetage were recovered from Westfield Farm. Most (14 pieces, 503 g) derive from late Romano-British ditch 8296 (intervention 4928). The material is in a soft, silty fabric containing abundant (40%) fossiliferous shell and limestone fragments, up to 17 mm in size and poorly sorted. The sherds are flat, with a hackly fracture. They have two surfaces, roughly finished with wiping; the wall thickness is 10 mm. They are fully oxidised to a yellowish red colour (Munsell 5YR 5/6). The poorly wedged and fully oxidised nature of the fabric, combined with the flatness of the sherds, indicate these are briquetage rather than pottery. A single fragment (21 g) in a shelly limestone fabric was also recorded from late Romano-British ditch 8273. Its colour is comparable to the material from ditch 8296. This has only one surface surviving and was more than 15 mm thick.

Five fragments (123 g) came early Romano-British gully 4952. Three are probable container fragments with flat surfaces, 8 mm thick, in a silty fabric with moderate to common organic inclusions, fired to a red colour (2.5YR 5/6 red). One piece (41 g) has an internal curved surface but the outer surface is missing (2.5YR 6/6 red). The fifth piece (49 g) has one flattish surface and is reddish brown in colour (2.5 YR 5/4) and may derive from structural/hearth material associated with domestic activity.

Briquetage in shelly limestone fabrics has been identified from a number of Middle to Late Iron Age sites in the region. Morris (2001, 269) notes they provided ‘a successful fabric recipe for use in making both brine boiling/salt drying containers and also the hearth supports for those containers’; these calcareous fabrics were also used for pottery production. The fabric may be encompassed by Lane (1992, 219) type 6, which includes container fragments and flat slabs. It has also been identified at

Table 6.2 Quantification of saltworking residues recovered during excavation

Site/feature	Briquetage		Fuel ash slag	
	No.	Weight (g)	No.	Weight (g)
Brooklands	**255**	**8067**	**495**	**14,219**
Brine pit 9081	-	-	3	63
Filter pit 9011, saltern mound 9388	82	1422	111	1271
Filter pit 9383, saltern mound 9388	14	359	17	502
Pit 9003, saltern mount 9388	-	-	9	212
Natural hollow formed in saltern mound 9388	1	46	11	200
Possible turf wall, saltern mound 9388	2	193	-	-
Saltern mound 9388	64	3071	122	8610
Saltern mound 9202	4	52	12	55
Saltern mound 9387	10	486	36	479
Saltern mound 9390	28	323	116	2163
Possible well 9306	N/A	1611	3	42
Layer 9147	-	-	6	36
Layer 9286	16	114	-	-
Linear 9296	12	70	-	-
Pit 9095	1	4	4	44
Pit 9138	-	-	12	97
Pit 9141	-	-	5	23
Pit 9173	-	-	1	15
Pit 9214	4	25	-	-
Pit 9215	1	43	1	17
Pit 9253	-	-	13	47
Hearth 9237	1	7	5	204
Ditch 9357	2	4	2	39
Ditch 9384	10	225	5	83
Ditch 9386	3	12	-	-
Land drain 9345	-	-	1	17
Westfield Farm	**22**	**662**	**-**	**-**
Ditch 8273	1	21	-	-
Ditch 8296	14	503	-	-
Ditch 8314	2	15	-	-
Gully 4952	5	123	-	-

Langtoft, Market Deeping and Deeping St James, Lincolnshire (Morris 2001, 252, 266 and 282). At Cowbit Wash the use of shelly limestone fabrics to make briquetage containers appears to pre-date the use of organic temper (*ibid*., 38). The limestone-gritted fabrics, including those from Westfield Farm, tend not to display 'salt colours', the pinks/mauves/buffs/whites that result from the presence of salt, but colours more typically associated with the organic-tempered fabrics (*ibid*., 41). This difference is likely to relate to a number of factors, including the use of the organic-tempered fabrics in higher temperatures and the differing saline content of the clays: the organic-tempered ones more likely to derive from the estuarine or saltmarsh clays (*ibid*., 41).

Briquetage in shelly limestone fabrics is typically found on sites with Iron Age pottery. A survey of sites with evidence for Romano-British salt production in the south Lincolnshire area yielded evidence for thin (typically 90–100 mm but can range from 60–160 mm) flat fragments from rectangular evaporating vessels, but in organic-tempered fabrics (Hallam 1960, 39). The date of the small group of material from Westfield Farm is, therefore, uncertain and although found in a ditch of Romano-British date, it may represent residual material of Iron Age derivation.

Medieval

Saltworking residues amounting to 22.5 kg were recovered from Brooklands (**Tables 6.2** and **6.3**). This includes 14.7 kg of fuel ash slag, 6.729 kg of ceramic fragments, and 1.611 kg of extremely fragmentary pieces of both recovered from a bulk soil sample but not divisible by type (included in **Table 6.2** as briquetage, well 9306).

Briquetage

The ceramic material is generally silty in texture and contains common (20%) voids from the burning out of organic material. In some instances, the voids appear to be orientated perpendicular to the surface. The clay is iron rich and was fired in an oxidising atmosphere, resulting in various shades of red (Munsell 10YR 6/6 light red, 2.5YR 7/2 pale red, 2.5YR 5/6 red, 2.5YR 6/6 light red, 2.5YR 5/8 red, 2.5YR 6/4 light reddish brown, 2.5YR 7/4 light reddish brown, 5YR 6/4 light reddish brown and 5YR 7/4 pink). The largest group, from context 9341 of saltern 9388, includes pieces that have been heated to particularly high temperatures and are partially vitrified and glassy; one is curved in shape and one is amorphous. This group also contains fragments displaying the pinks/mauve/buff colours that are typically associated with briquetage containers (5YR 7/3, pink to 5YR 6/3, light reddish brown); several fragments also have traces of a white salt residue on their surface. Some fragments from filter pit 9011 are also pink/buff/grey in colour (2.5YR7/2 pale red). Many of the ceramic fragments have one flat or slightly curved face; some also have the remains of one edge. Surfaces are typically roughly wiped with organic material. Two pieces have a rod/wattle impression: one is 9 mm in diameter; one piece has a perforation. One fragment from ditch 9341 (saltern 9388) has a row of small perforations, up to 3 mm in diameter; another from slot 9323 through saltern 9388 has a slightly curved surface with a row or arc of small perforations, approximately 5 mm diameter.

The processes involved in the medieval saltmaking industry are described by Rudkin and Owen (1960, 82–83), based on evidence provided by John Moneypeny's 1612 account of saltmaking on the coastline of the Solway Firth, John Lucas's writing of the 18th-century industry near Arneside, Westmoreland and William Brownrigg's 1748 description of methods used at Ulverstone, Lancashire. The salt-impregnated silts of the Lincolnshire marshland, known as mould or muldefang, were scraped into a heap, protected from the elements (probably in a small building or 'salt-cote'), and then separated out in a clay-lined trench/tank, or kinch, with a deeper collection area. Turves or peat sods provided filter material and the salt washed from the silts; the resultant brine was then collected in a wooden bucket. This was evaporated to produce the salt. Documentary sources such as court rolls, as well as archaeological evidence (Cope-Faulkner 2014; McAvoy *et al.* 1994), indicate that the pans were made of lead. The briquetage identified at Brooklands probably derives from bricks used to support the evaporation pans during heating, and this process is noted in Henry Duncan's description of salt extraction in the Solway Firth in 1812: 'These pans ... made of lead ... are placed on bricks about 20 inches from the ground' (reproduced in McAvoy *et al.* 1994, 141). These 'soft silt bricks' were found at Wainfleet St Mary, Lincolnshire (McAvoy *et al.* 1994, 142), and also at Marsh

Table 6.3 Saltworking residues recorded during evaluation

Site	*Briquetage*		*Fuel ash slag*	
	No.	*Wt (g)*	*No.*	*Wt (g)*
Brooklands	14	176	19	277
Brooklands	7	32	33	206
Tetney Lock Road	87	2289	20	250
Station Road	-	-	1	12
Chase Hill Road	-	-	1	3
Total	108	2497	74	748

Lane, Kings Lynn, Norfolk, in a silty fabric without the addition of organic material (Percival 2016, 61).

The mauve/pink/white colouration of two amorphous fragments (15 g) from medieval ditch 8314 at Blow Field are also likely to derive from salt production.

Fired clay associated with medieval salt production was recovered during trial trenching. This includes fragments of the hearth and part of at least one pedestal, 'greater than 120 mm tall and 75–80 mm at the base' from context 22025, trench 22 (plot 13, Brooklands). This did not display evidence of salt bleaching but appeared to have been subjected to intense heat during an industrial process, probably salt processing. Part of a square or rectangular pedestal was also recorded from context 10021, trench 10 (plot 11, Brooklands). Although recovered from an area of known medieval salt working, the fragment is undated.

Fuel ash slag

The fuel ash slag comprises fragments with no discernible shape or form, typically a lightweight, dark greyish brown vesicular material, glassy in appearance, occasionally with areas of green vitrified material. Similar green deposits were noted on slags from Marsh Lane, Kings Lynn (Percival 2016, 63). Of note is a group from saltern mound 9390 that was denser than the other saltmaking slags from the site, flattened on one side and quite thin (<25 mm), suggesting it results from settling in the bottom of a hearth. Similar slag material has been recorded from other medieval saltern sites in the region, including Bicker Haven, Lincolnshire (Healey 1975, 36) and the above-mentioned Marsh Lane, Kings Lynn, Norfolk (Percival 2016, 64). Chemical analysis of the material from Bicker Haven indicates the material was formed during fusing of clay and fuel ash (Healey 1975, 36). Timberlake (2016, 78) describes how the material from Marsh Lane results from the boiling over of brine into the hearth, and the formation of slag cakes or concretions 'as a result of the reaction between the hot brine (sea salt), peat and wood ash, and the clay lining of the hearth and the pan brick supports'.

Discussion

The Hornsea sites were well-situated to take advantage of the natural resources that would have been required for the extraction of salt: salt water or saline mud, peat and turves for filtration and fuel, clay for pans and containers (for Iron Age/Romano-British salt production), supports and to line tanks, and pasture for beasts of burden (Clarke 2016, 36; Lane 1992, 220; Lane 1993, 77; McAvoy *et al. 1994*, 140–1). Salt was, and indeed still is, a valuable commodity, used not only in the preservation and trade of foodstuffs, but also in tanning and cheesemaking, for medicine and even ritual use (Lane 2001, 6).

Worked Bone

Grace Jones and Lorraine Mepham

Introduction

Twenty-six objects of worked bone/antler were recovered during the investigations. Just under half (12 objects) came from Westfield Farm/Blowfield, with seven from Laceby Beck, four from Humberston Road, and single objects from East Field Road, Station Road and Keelby Road. The earliest object is a perforated dog tooth from the posthole of an Iron Age roundhouse at Westfield Farm. The Romano-British worked bone is dominated by grooved and polished sheep/goat metapodials – a class of objects thought to be related to textile-working. Of the 12 recovered, eight came from Romano-British contexts and the other four are likely to be of similar date; they were found on five

Plate 6.1 Iron Age perforated dog tooth object 42

sites. Other objects of Romano-British date include a spindlewhorl, the tip of a point, a sheep/goat femur with a single transverse drilled perforation and a polished sheep/goat tibia fragment. The Anglo-Saxon material includes three personal items: a nearly complete single-sided triangular-backed comb, part of the tooth plate of a double-sided comb, and a pig fibula pin. Objects likely to derive from textile-working during this period include three pin-beaters. A cut piece of antler is of probable Anglo-Saxon date but its function is unknown. Two objects came from features of medieval date: the shank of a possible needle or pin, and a horse metatarsal drilled through longitudinally. The assemblage is discussed by date and functional group below; a summary by site is also presented.

Personal Items

Iron Age

A dog canine tooth with a central transverse drilled perforation, possibly used as an amulet, was found in posthole 4716 of Iron Age roundhouse 4702 (ON 42, Westfield Farm; **Fig. 6.6**, 1; **Pl. 6.1**). Parallels for such items are rare but include an example from a Middle to Late Iron Age context at Norton, Bishopstone, East Sussex (Somerville 2005, 111) and an Early Iron Age grave at Magdalenska gora, Slovenia (Škvor Jernejčič and Toškan 2018, 6).

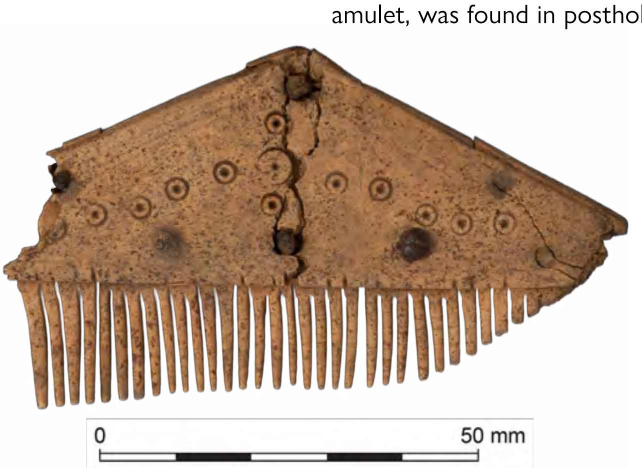


Plate 6.2 Anglo-Saxon bone comb object 109

Anglo-Saxon

Two antler combs were found at Laceby Beck. One is nearly complete, although damaged; it was found in subsoil layer 461 (ON 109; **Fig. 6.6,** 2; **Pl. 6.2**). This is a composite single-sided triangular-backed comb, a type in use from the late Romano-British period up to the 5th century and occasionally beyond (MacGregor 1985, 83, fig. 48h). It has been constructed from five tooth plates and two side plates, held in place by eight iron rivets, of which six survive *in situ*. The teeth were cut *in situ*, with the cut marks visible along the adjacent edge of the side plates. It is decorated with ring-and-dot motifs bounded by incised border lines, as is typical of the type. Fourteen of the ring/dot motifs are visible on each of the side plates, these bordered by two incised parallel lines on the short sides and three on the long side. There are traces of bordering incised lines on the other side plate but these are now very abraded. The comb is damaged at each end but was at least 79 mm in length; the height to the apex is 45 mm.

The second is a double-sided composite comb, although only one end of the tooth plate survives; the stain from an iron rivet used to secure the side plates can be seen. The tooth plate has opposed wide-spaced and narrow-spaced teeth. This comb type is known from the Romano-British and Saxon periods; this example came from Anglo-Saxon pit 493.

Plate 6.3 Perforated pin (object 92) recovered from Anglo-Saxon pit

A complete pin, 80 mm in length and made from a pig fibula (ON 92), came from the same Anglo-Saxon pit (493) as the double-sided comb. This pin form utilises the articular end to form an expanded head, and in this example the head is perforated (**Fig. 6.6**, 4; **Pl. 6.3**). The type has a long currency; Anglo-Saxon examples from this area include one from Gosberton, Third Drove, Lincolnshire (Crowson *et al.* 2005, 32, fig. 12), whilst Anglo-Scandinavian and medieval examples are known from York (MacGregor *et al.* 1999, 1950–1, fig. 909). There is some debate as to the use of such objects, but the type is typically undecorated and may have served a number of simple, utilitarian functions. The most likely is to secure clothing by means of a cord passed through the perforation, or securing other items; other possible uses include textile-working such as mesh knitting (MacGregor 1985, 121).

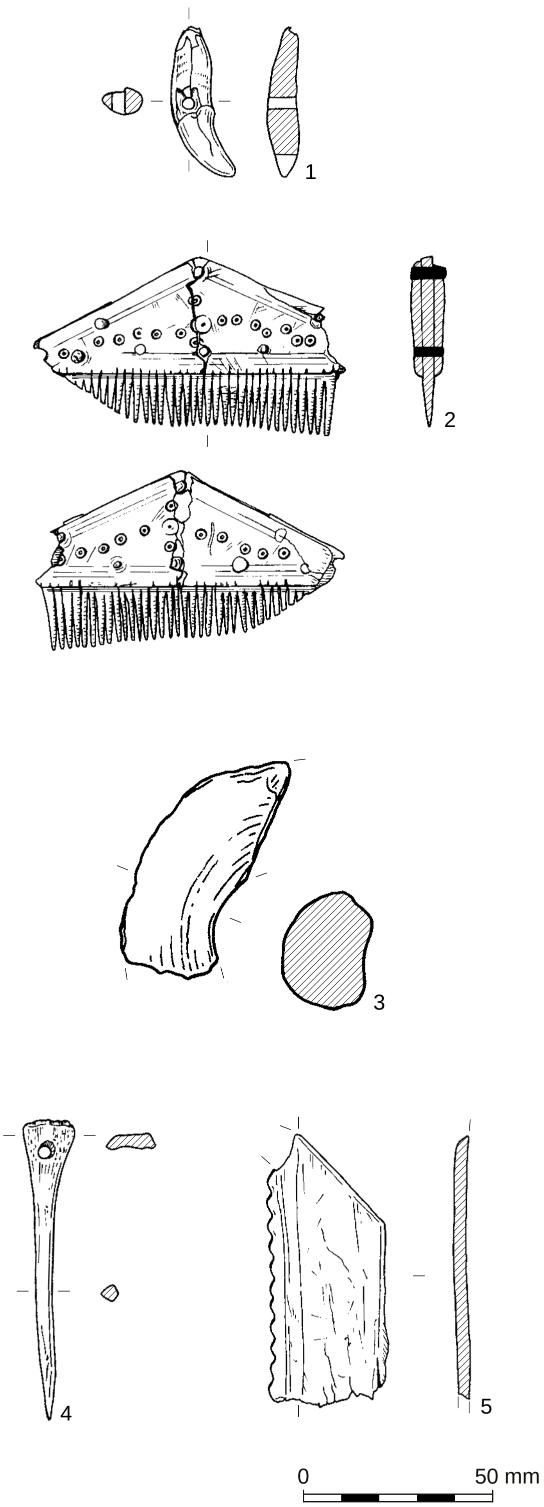


Figure 6.6 Worked bone (1–2 and 4–5) and ceramic spindlewhorl (3)

Textile-Working Equipment

Romano-British

Grooved and polished sheep/goat metapodials
Twelve sheep/goat metapodials (10 metatarsals and 2 metacarpals) have been utilised as objects (**Pl. 6.4**). Most have an overall surface polish (through use-wear); five have transverse wear lines, usually paired. In the case of ONs 46 (125 mm in length) and 45 (>130 mm in length), these lines are located approximately 35 mm and 45 mm from each end respectively. The slightly shorter (120 mm) ON 41 has this wear 35 mm and 40 mm from each end. ON 43 is broken in half, but the wear pattern can be seen 30 mm from the surviving end. The broken example from context 4443 varies in displaying this towards the middle of the object. Two bones have central drilled transverse perforations: ON 23 (perforation of 6 mm diameter) and ON 44 (perforation of 5 mm diameter). Five of the seven examples from Westfield Farm were found in early Romano-British contexts, two were undated. Of the three from Humberston Road, one was recovered from an early Romano-British feature, one was residual in a post-medieval feature, and one was an unstratified find. The single finds from Station Road and Keelby Road are of early and late Romano-British date respectively.

This type of artefact is most commonly found on Iron Age sites but its use continues into the Romano-British period. Twenty-two examples have been illustrated from Danebury Iron Age hillfort, Hampshire, and include examples with transverse wear lines and perforations (Sellwood 1984, figs 7.37–38). A function connected with textile-working has been suggested, perhaps as bobbins, spindles or spools (Sellwood 1984, 392). This follows interpretation of examples from Glastonbury Lake Village (Bulleid and Gray 1917, 406 and 460). Eight were recovered from Cadbury Castle, including two from a single pit, suggesting the possibility that the objects were used together (Britnell 2000, 186). Britnell notes that this type of artefact is unlikely to have been used on a warp-weighted loom but may have been used to make narrow braids on a hand loom (*ibid*., 186). Romano-British examples from the area include one from Winterton Roman villa, here identified as a netting-needle or bobbin (Stead 1976, 226, fig. 122, 205). Perforated metapodials (metacarpals and metatarsals) of sheep or goat are amongst the textile equipment found at Bryggen in Bergen, Norway, from the period 1150–1500, although it was suggested that these had a recreational use, perhaps as 'toys in a string game' (Øye 1988, fig. II.17).

Spindlewhorl
A spindlewhorl (ON 71; **Pl. 6.5**), measuring 40 mm x 30 mm, was made from a cattle femur drilled longitudinally. The object was recovered from late Romano-British ditch 7637 at Humberston Road.

Anglo-Saxon

Pin-beaters

Three objects are of a type known as pin-beaters or thread-pickers (**Pl. 6.5**). All were recovered from Laceby Beck: two from layer 827 and one from feature 822. They range in size from 84–111 mm in length and 7.4–9.3 mm maximum diameter. These objects were probably used in conjunction with weaving combs on a warp-weighted loom, inserted between individual warp threads and used to push the weft together. They can be single- or double-ended; all three pin-beaters seen here are the cigar-shaped double-ended form, and all have an overall surface polish through use. These are common finds throughout the Saxon period (MacGregor 1985, 188, fig. 101, 14–15; MacGregor *et al.* 1999, 1967, cat. no. 6669). Examples from Lincolnshire include those found at Walpole St Andrew, Rose Hill Farm (Crowson *et al.* 2005, fig. 60.1) and Dowsby, Hoe Hills (*ibid.*, 67).

A ceramic loom weight in a Charnwood-type fabric was recovered from bioturbation 491 (**Fig. 6.6**, 3), further evidencing textile production.

Plate 6.4 Examples of Romano-British polished and perforated sheep/goat metapodials

Miscellaneous Objects

Six objects are of uncertain function. Three came from features of Romano-British date: the tip of an object, possibly a point used in textile or leatherworking (early Romano-British enclosure ditch 5148, East Field Road, North Killingholme), a sheep/goat femur with a single transverse drilled perforation, but broken at both ends (ON 40, late Romano-British gully 4919, Westfield Farm), and a sheep/goat tibia fragment, polished through use (late Romano-British enclosure ditch 8278, Westfield Farm). A strip of antler, cut obliquely at one end, with one long edge cut in a denticulate fashion, was found in the same layer (827; **Fig. 6.6**, 5; **Pl. 6.6**) as two pin-beaters at Laceby Beck; a date in the Anglo-Saxon period is likely for this object (ON 115). Objects recovered from medieval features comprise the shank of a possible needle or pin, polished through use (ON 38, medieval ditch 8311, Blow Field) and a horse metatarsal drilled through longitudinally (ON 48, medieval ditch 8309, Blow Field).

Catalogue of worked bone

Personal items

Westfield Farm, Iron Age

ON 42, context 4711, posthole 4716, Iron Age roundhouse 4702. Dog canine tooth, central drilled perforation: amulet?

Laceby Beck, Saxon

ON 109, subsoil layer 461. Composite single-sided triangular-backed comb; five tooth plates; side plates decorated with ring-and-dot motifs bounded by incised border lines; six of eight iron rivets survive *in situ*; damaged central area and ends; length >79 mm, maximum height 45 mm

Context 494, pit 493, Anglo-Saxon. Tooth plate fragment from a double-sided composite comb; stain from iron rivet; tooth plate has opposed wide-spaced and narrow-spaced teeth

ON 92, context 496, pit 493, Anglo-Saxon. Pig fibula pin, perforated head

Textile-working equipment

Laceby Beck, Saxon

ON 107, layer 827. Double-ended pin-beater; polished

Plate 6.5 Romano-British spindlewhorl (object 71) and Anglo-Saxon pin beaters (contexts 822 and 827)

through use but surfaces subsequently worn; length 104 mm, maximum diameter 9.3 mm

ON 114, layer 827. Double-ended pin-beater; polished through use; length 111 mm, maximum diameter 7.5 mm

ON 120, context 828, feature 822. Double-ended pin-beater, polished through use; 84 mm length, maximum diameter 7.4 mm

Grooved and polished sheep/goat metapodials

Westfield Farm, Romano-British

ON 41, context 4951, gully 4952, early Romano-British. Sheep/goat right metatarsal; polished through use; transverse wear grooves; length: 120 mm

ON 43, context 4532, layer, undated. Sheep/goat right metatarsal; polished through use; transverse wear grooves; one end broken

ON 44, context 4981, pit 8237, undated. Sheep/goat metatarsal; both ends broken; central transverse perforation (drilled)

ON 45, context 4357, slot 4353, ditch 8312, early Romano-British. Sheep/goat left metatarsal; polished through use; transverse wear grooves; one end broken

ON 46, context 4316, slot 4315, ditch 8312, early Romano-British. Sheep/goat right metatarsal; polished through use; transverse wear grooves

ON 47, context 4316, slot 4315, ditch 8312, early Romano-British. Sheep/goat left metatarsal; polished through use; one end broken

Context 4443, slot 4442, gully 8303, early Romano-British. Sheep/goat left metatarsal; polished through use; possible transverse wear grooves; one end broken

Station Road, Holton le Clay and Tetney, Romano-British

ON 23, context 1104, slot 1105, ditch 109, early Romano-British. Sheep/goat left metatarsal; polished through use; central transverse perforation (drilled)

Humberston Road, Tetney, Romano-British

ON 69, unstratified, sheep/goat left metatarsal; polished through use; transverse wear grooves; one end broken

ON 70, context 7211, ditch 7631, post-medieval. Sheep/goat distal metacarpal; polished through use; in 2 joining fragments

ON 71, context 7093, slot 7094, late Romano-British ditch 7637. Spindlewhorl made from cattle femoral head, drilled longitudinally; 40 mm x 30 mm

Context 7402, slot 7404, ditch 7634, early Romano-British. Sheep/goat left metatarsal; polished through use; drilled longitudinally; one end broken

Keelby Road, Stallingborough, Romano-British

Context 2142, slot 2144, ditch 2322, late Romano-British. Sheep/goat left metatarsal; polished through use; one end broken

Animal Bone

Lorrain Higbee

Overview of Assemblage

The assemblage comprises 17,910 fragments (248.850 kg) of animal bone and includes hand-recovered (around 98%) and sieved material. Bone was recovered from deposits of Beaker, Iron Age, Romano-British, Saxon, medieval and post-medieval date at several locations along the cable route. The largest concentrations came from Laceby Beck, Station Road and Westfield Farm/Blow Field (**Table 6.4**). The assemblage includes a total of 4078 identified bones (**Table 6.5**); this figure takes account of refits and associated bone groups (hereafter ABGs; **Table 6.6**).

Methods

Plate 6.6 Anglo-Saxon worked antler (context 827)

The assemblage was analysed following best practice guidelines (Baker and Worley 2014; 2019) and the following recorded where applicable: species, element, anatomical zone (after Cohen and Serjeantson 1996, 110–12; Serjeantson 1996, 195–200), anatomical position, fusion state (after O'Connor 1989; Silver 1969), tooth eruption/wear (after Grant 1982; Halstead 1985; Hambleton 1999; Payne 1973), butchery marks (after Lauwerier 1988; Sykes 2007a), metrical data (after Payne and Bull 1988; von den Driesch

1976), gnawing, burning, surface condition, pathology (after Vann and Thomas 2006) and non-metric traits. This information was directly recorded into a relational database (in MS Access) and cross-referenced with relevant contextual information.

The assemblage has been quantified in terms of the number of identified specimens present (or NISP; **Table 6.5**). Other quantification methods such as the minimum number of individuals (or MNI), minimum number of elements (or MNE) and meat weight estimates (or MWE; following Boessneck *et al.* 1971; Bourdillon and Coy 1980; Dobney *et al.* 2007; O'Connor 1991) are also presented for the main periods. The live weights used to estimate MWE are 275 kg for cattle, 37.5 kg for sheep and 85 kg for pig.

Caprine (sheep and goat) elements have been differentiated based on the morphological criteria of Boessneck (1969), Halstead *et al.* (2002) and Payne (1985). Positively identified sheep bones are more common than those from goat, so this term will be used throughout the report to refer to all undifferentiated caprine bones.

Table 6.4 Distribution of animal bone assemblage by fragment count and weight

Site	*Periods*	*% Frag. count*	*% Weight*
Chase Hill Road	Iron Age	4.5	3.6
East Field Road	Iron Age, Romano-British, medieval	3.2	2.6
Humberston Road	Iron Age, Romano-British, medieval	10.5	11.6
Keelby Road	Romano-British	5.9	7.1
Station Road	Iron Age, Romano-British	22.5	21.4
Westfield Farm and Blow Field	Iron Age, Romano-British, medieval, post-medieval, modern	19	21
Laceby Beck	Beaker, Iron Age, Romano-British, Anglo-Saxon, medieval	26.1	25.9
Habrough	Iron Age, Romano-British, medieval	3.8	3.3
Tetney Lock Road	Medieval	0.6	1
Brooklands	Medieval, modern	1.4	0.5
Other	Iron Age, Romano-British, medieval, post-medieval	2.5	2

Results

Preservation

Bone preservation is generally good, although some poorly preserved bones were noted from Roman ditches at Westfield Farm and Humberston Road, and from Anglo-Saxon pits and layers at Laceby Beck. These fragments were probably exposed to weathering as a result of having been reworked and redeposited.

The number of gnawed bones is extremely low at just 377 fragments, and this suggests that the assemblage has not been significantly biased by the bone-chewing habit of scavenging carnivores. Most of the gnawed bones came from Romano-British ditches at Humberston Road, Station Road and Westfield Farm, and Anglo-Saxon pits at Laceby Beck.

Beaker

Three cattle bones came from Beaker pit 646 at Laceby Beck. The bones include part of a mandible, the shaft of a metatarsal and a calcaneus.

Iron Age

The Iron Age assemblage comprises 344 identified fragments and came from ditches and pits at several locations, with the largest concentrations from the settlements at Westfield Farm and Chase Hill Road. Apart from a few intrusive bones from a hedgehog, the assemblage is entirely composed of bones from domestic species. Cattle

Table 6.5 Number of identified animal bones (or NISP) by period

Species	*Beaker*	*Iron Age*	*Late Iron Age/ early Romano-British*	*Early Romano-British*	*Late Romano-British*	*Romano-British*	*Anglo-Saxon*	*Medieval*	*Post-medieval to modern*	*Unphased*	*Total*
Cattle	3	155	31	233	401	242	464	123	32	287	1971
Sheep/goat	-	131	14	148	231	182	191	228	29	127	1281
Sheep	-	1	-	2	2	2	6	1	-	3	17
Goat	-	-	-	1	2	-	-	-	-	1	4
Pig	-	21	6	23	29	15	93	15	10	27	239
Horse	-	29	4	38	98	42	32	44	48	66	401
Dog	-	2	1	5	13	6	21	9	6	3	66
Dog/fox	-	1	-	2	2	-	-	-	2	-	7
Cat	-	-	-	-	-	-	1	3	-	1	5
Red deer	-	-	-	-	1	-	-	1	-	-	2
Roe deer	-	-	-	-	-	1	-	-	-	-	1
Rabbit	-	-	-	-	-	-	-	1	-	-	1
Hedgehog	-	4	-	-	-	-	-	-	-	-	4
Domestic fowl	-	-	-	1	1	1	11	4	4	3	25
Goose	-	-	-	-	-	-	29	2	-	6	37
Duck	-	-	-	-	1	-	-	-	-	-	1
Swan	-	-	-	-	-	-	1	-	-	-	1
Partridge	-	-	-	-	-	-	-	-	-	1	1
Crow/rook	-	-	-	-	-	-	-	1	-	1	2
Passerine	-	-	-	-	1	-	-	1	-	-	2
Carp	-	-	-	-	-	-	-	7	-	-	7
Eel	-	-	-	-	-	-	-	3	-	-	3
Total	3	344	56	453	782	491	849	443	131	526	4078

bones dominate accounting for 50% of livestock (by NISP), followed by sheep at 43% and then pig at just 7%. Rarer components include horse and dog.

All parts of the beef and mutton carcass are present, and this indicates that these animals were slaughtered and butchered nearby, and the meat distributed locally as part of a closed subsistence economy. Cattle tibiae and sheep radii are common, and these are from a minimum of at least nine animals of each species. Most cattle and sheep post-cranial bones have fused epiphyses and are therefore from skeletally mature animals. Age information from tooth eruption and wear is limited to a small number of complete mandibles – 5 from cattle and 11 from sheep. The cattle mandibles are from animals aged 30–36 months and adult (mandible wear stages or MWS E to G) and the sheep mandibles from animals aged 1–10 years (MWS D to I), although most (64%) are in the older age classes. The mortality pattern for Iron Age sheep strongly suggests that the husbandry strategy was focused on wool production and possibly milk. A few neonatal calf and lamb bones came from Westfield Farm and Chase Hill Road. The presence of these young animals suggest that pregnant livestock were kept close to settlements during the winter and spring. Both main livestock were relatively small, horned breeds. Measurements taken on distal cattle tibiae, a major load-bearing joint, range between 54.2 mm and 63.2 mm, and shoulder height estimates between 1.10 m and 1.30 m, while distal sheep tibiae range between 21.5 mm and 25.2 mm and the average shoulder height was 0.55 m.

Few pig bones were recovered but the broad range of elements is enough to suggest the presence of complete carcasses from at least two animals. Most of the post-cranial bones have unfused epiphyses and are therefore from immature animals, some less than 10 months of age. Two complete mandibles from the Laceby Beck site are from animals aged 21–36 months (MWS E and F).

Horse bones came from several locations, mostly from ditches but also well 7441 at the Humberston Road site. The bones are from a minimum of three animals, two adults and a juvenile, and some show signs of butchery. A shoulder height estimate of 12.3 hands was recorded for a complete metacarpal from pit 4666 at Westfield Farm. Two dog teeth and a dog or fox canine tooth came from separate ditches at the Chase Hill Road site.

Table 6.6 Associated bone groups (or ABGs)

Feature	*Period*	*Site*	*Species*	*N*	*Comments*
Ditch 125	Early Romano-British	Station Road	Horse	11	Lower thoracic and lumbar vertebrae, sacrum and left pelvis, upper part of lumbar section ankylosed
Ditch 113	Late Romano-British	Station Road	Dog	22	Part skeleton, adult animal
Ditch 7193	Romano-British	Humberston Road	Dog	24	Part skeleton, juvenile animal with mid-shaft fracture right femur
Pit 493	Anglo-Saxon	Laceby Beck	Dog	85	Complete skeleton, adult animal with signs of degenerative osteoarthritis lower thoracic and lumbar vertebrae, and sacrum. Fracture to right distal humerus and dislocation of elbow joint.
Gully 3205	Medieval	Habrough	Sheep	57	Part skeleton, juvenile animal
Pit 3160	Medieval	Habrough	Sheep	14	Part skeleton, juvenile animal
Pit 9265	Medieval	Brooklands	Sheep	50	Complete skeleton, animal aged 4–6 years
Pit 300026	Post-medieval	Blow Field	Cattle	28	Part skeleton, neonatal calf
Pit 300026	Post-medieval	Blow Field	Cattle	58	Complete skeleton, neonatal calf
Pit 300113	Post-medieval	Blow Field	Sheep	65	Complete skeleton, neonatal lamb
Ditch 21003	Undated	Laceby Beck	Pig	27	Part skeleton, juvenile animal
Subsoil 971	Undated	Habrough	Pig	23	Part skeleton, animal aged 14–21 months

Late Iron Age to early Romano-British

A small number of bones came from broadly dated deposits at Station Road and Westfield Farm. Cattle bones are common, followed by sheep, then pig, horse and dog.

Early Romano-British

A total of 453 identified fragments and two ABGs (**Table 6.6**) came from early Romano-British ditches, gullies and pits at several locations, with the largest concentrations from Station Road, Keelby Road, Westfield Farm and East Field Road. The assemblage is entirely composed of bones from domestic animals, particularly livestock, which account for 90% NISP. Rarer components include horse, dog, goat and domestic fowl.

Cattle account for 57% of livestock by NISP, sheep a further 37% and pig just 6% (**Table 6.7**). The same basic pattern is suggested by MNE with cattle at 50%, sheep 42% and pig 8%, but MNI indicates that there are more sheep than other livestock, a total of 11 animals that account for 55% MNI, compared to seven cattle at 35% and two pigs at 10%. Discrepancies between NISP/MNE and MNI values for cattle and sheep are common in most assemblages and reflect higher rates of fragmentation for large carcasses due to butchery and an over-abundance of one or two sheep bones, in this instance the tibia, that skews the MNI value relative to NISP/MNE. Regardless of these differences, cattle by virtue of their greater size provided 77% of the meat consumed during the early Romano-British period, compared to just 16% mutton and 7% pork.

Table 6.7 Relative importance of livestock species by NISP, MNE, MNI and MWE. Romano-British includes bones from early, late and broadly dated contexts

	Early Romano-British			Late Romano-British			Romano-British			Anglo-Saxon		
	Cattle	Sheep	Pig	Cattle	Sheep	Pig	Cattle	Sheep	Pig	Cattle	Sheep	Pig
NISP	233	150	23	401	233	29	242	184	15	464	197	93
% NISP	57.3	37	5.7	60.5	35.1	4.4	54.9	41.7	3.4	61.5	26	12.5
MNE	155	130	26	310	199	30	131	118	9	273	210	83
% MNE	49.8	41.8	8.4	57.5	37	5.5	50.7	45.8	3.5	48.2	37.2	14.6
MNI	7	11	2	22	19	3	9	9	2	16	19	6
% MNI	35	55	10	50	43.2	6.8	45	45	10	39	46.4	14.6
MWE	1925	413	170	6050	713	255	2475	338	170	4400	713	510
% MWE	76.7	16.5	6.8	86.2	10.2	3.6	83	11.4	5.6	78.3	12.7	9

Note that the calculation of MNE includes teeth retained in mandibles as well as loose teeth, therefore the total might be higher than the NISP count

All parts of the beef and mutton carcass are present, and the broad range of pig skeletal elements, albeit with some absences due to small sample size, also suggest that whole carcasses are represented. Tibiae are the most common cattle and sheep elements, and for pig the most common elements are skulls and mandibles. A single goat horn core came from gully 8306 at Westfield Farm. Other common cattle bones include the skull, mandible, metapodia, scapula and radius. Many of these elements, including the distal part of the tibia, are waste elements from primary butchery and are frequently recovered from ditches located in peripheral areas away from settlements where livestock, particularly cattle, are more likely to have been slaughtered and butchered (Wilson 1996). The other common bones are major meat-bearing elements from the forequarters.

Most cattle (75%) and sheep (74%) post-cranial bones have fused epiphyses and are therefore from skeletally mature animals. The unfused elements include a few from neonatal calves/lambs and juveniles but also a few late-fusing elements from subadult animals. Age information from six complete cattle mandibles indicates the presence of older calves aged 8–18 months, juveniles and old and senile animals (MWS C, E, H and I). Approximately half (54%) of the 13 complete sheep mandibles found are from animals aged 4–6 years (MWS G), a further 31% are from animals aged 2–3 years and two are from slightly older animals aged 3–4 years (MWS E and F). Limited age information is available for pigs; however, the size and texture of post-cranial elements suggests that the majority are from juvenile animals and this is confirmed by three complete mandibles, which are from animals aged 7–27 months (MWS C to E).

Butchery evidence is summarised in **Table 6.8**. Most (78%) butchery marks relate to the processing of cattle carcasses, primarily using cleavers to dismember and portion, but also splitting bones for marrow. Knife cuts were also noted on a few bones and these relate to detachment of the mandible from the skull and the foot at the ankle. Cut marks on the lingual side of a mandible suggest that the tongue was sometimes removed for consumption, offering a rare glimpse into the use of offal. Filleting marks were also noted on two scapulae, one of which also showed evidence that the spine had been removed from the blade. This combination of evidence, filleting marks and removal of the spine, is a general indication that some shoulder joints of beef were cured for longer-term storage. Butchery marks were also noted on a few sheep bones and a pig humerus, the evidence suggesting the use of cleavers to dismember and portion mutton and pork carcasses.

Shoulder height estimates for cattle range between 1.05 m and 1.14 m (mean 1.09 m), and distal breadth measurements for major load-bearing joints range between 38 mm and 40.7 mm (mean 38.2 mm) for astragali and 53.5 mm to 62.4 mm (mean 56.1 mm) for tibiae.

Table 6.8 Summary of butchery evidence by implement type and technique

	Early Romano-British		*Late Romano-British*		*Romano-British*		*Anglo-Saxon*	
Butchery implement	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
Cleaver	46	85	104	80.6	45	76.2	277	92.9
Knife	8	15	23	17.8	13	22	19	6.3
Saw	-	-	2	1.6	1	1.8	2	0.8
Total	54	100	129	100	59	100	298	100
Butchery type								
Disarticulation	36	66.6	91	70.6	40	67.9	230	77.2
Portioning	7	13	4	3.1	4	6.7	33	11
Filleting	4	7.4	15	11.7	11	18.7	8	2.7
Skinning	-	-	3	2.3	3	5	1	0.3
Marrow	6	11.2	13	10	-	-	26	8.8
Working	1	1.8	3	2.3	1	1.7	-	-
Total	54	100	129	100	59	100	298	100

The assemblage includes a total of 38 horse bones and an ABG (**Table 6.6**), these account for approximately 8% NISP. The bones came from several locations, mostly from ditches, and are from a minimum of six animals, one of which is a juvenile. Most body parts are present, and the pelvis is the most common element, followed by mandibles, which were sometimes deposited in pairs – as for example in ditch 2326 at Keelby Road and gully 4419 at Westfield Farm. The ABG from ditch 125 comprises an articulated section of the lower thoracic and lumbar vertebrae, sacrum and left pelvis from a mature animal with degenerative joint disease affecting the upper lumbar vertebrae, which are in the early stages of ankylosis. Chop marks on a metacarpal and pelvis indicate that horse carcasses were processed for meat. A shoulder height estimate of 12.2 hands was recorded for a complete metacarpal from ditch 5149 at East Field Road and the other measurements suggest that the bones are from small pony-sized animals. In addition, a domestic fowl femur came from ditch 125 at the Station Road site.

Late Romano-British

A total of 782 identified bones came from late Romano-British ditches, gullies and pits at several locations, with the largest concentrations from Station Road, Keelby Road and Westfield Farm. Most of the identified bones are from domestic species, particularly livestock, which account for 85% NISP. Rarer animals include other domestic animals such as horse, dog and fowl, and a few bones from wild species such as red deer, duck and a small bird from the passerine family.

The assemblage is dominated by cattle bones, which account for 61% of livestock by NISP, followed by sheep at 35% and then pig at 4% (**Table 6.7**). The same basic pattern is suggested by MNE with cattle at 58%, sheep 37% and pig 6%, but MNI indicates only a slight difference between the numbers of cattle (22 animals or 50%) and sheep (19 animals or 43%), but similarly low numbers of pigs (three animals at 7%). The over-abundance of one or two sheep bones, in this instance the tibia, has increased the importance of sheep relative to the overall number of bones. It is clear, however, that cattle were of prime importance and provided 86% of the meat consumed during the late Romano-British period.

All parts of the beef and mutton carcass are present, and the broad range of pig skeletal elements, albeit with some absences due to small sample size, also suggest that whole carcasses are represented. The most common elements are cattle mandibles, sheep tibia, and pig skulls and mandibles. Other common cattle bones include the skull, metapodia, scapula and radius. The main components of the cattle bone assemblage are identical to those from early Romano-British deposits and suggest little change in patterns of consumption and waste disposal.

Most cattle (66%) and just over half (54%) of sheep post-cranial bones have fused epiphyses and are therefore from skeletally mature animals. The unfused elements include a few from neonatal calves/lambs and juveniles but also a few late-fusing elements from subadult animals. Age information from 31 complete cattle mandibles indicates the presence of a few older calves aged between 8–18 months, juveniles, subadults and young adults (MWS C to F), but the majority (71%) are adults and fall into the old and senile age categories (MWS H and I), suggesting an arable-linked husbandry strategy to provide traction animals. There are fewer complete sheep mandibles and these are from a range of ages, including lambs aged 6–12 months to mature adults aged 6–8 years (MWS C to H). Age information for pigs is very limited but the majority are from juvenile animals, and this is confirmed by three complete mandibles, which are from animals aged 17–27 months (MWS D and E).

Most (69%) of the butchery evidence (**Table 6.8**) is on cattle bones. Cleavers were widely used to dismember carcasses, portion joints and split bones for marrow. Knife cuts were also noted on a few cattle bones, some of these marks relating to dismemberment, such as those below the mandible articular process, but others result from skinning and filleting. Cut marks on the lingual side of a mandible suggest that the tongue was sometimes removed for consumption, and similar evidence was noted from the early Romano-British assemblage. Filleting marks were also noted on three scapulae, and the spine had been removed from two other scapula, providing limited evidence for cured shoulder joints of beef. Butchery marks were also noted on a few sheep and pig bones, the evidence suggesting the use of cleavers to dismember and portion mutton and pork carcasses.

Both cattle and sheep were relatively small, horned breeds. Measurements taken on cattle major load-bearing joints range between 38.6 mm and 43.3 mm for the distal astragalus and 47.1 mm and 67.5 mm for the distal tibia. Shoulder height estimates for cattle range between 1.10 m and 1.38 m (mean 1.19 m). Slight asymmetry was also noted between the medial and lateral condyles of several metapodia. This type of evidence is generally seen on the foot bones of cattle that have been used as traction animals. The measured ranges for sheep major load-bearing joints is 15.9 mm to 19.4 mm for the distal astragalus and 21.6 mm to 26.5 mm for the distal tibia, and shoulder height estimates range between 0.52 m and 0.64 m (mean 0.58 m).

The assemblage includes a total of 98 horse bones accounting for approximately 13% NISP (**Table 6.5**). The bones came from several locations, mostly from ditches but also a few pits, and are from a minimum of five animals, including a new-born foal from Keelby Road and a juvenile from Station Road. Most body parts are present, common elements include the tibia and metatarsal, followed by the skull and radius. Butchery marks are present on several horse bones, mostly chop marks relating to dismemberment. Two bones, a radius and metapodial, had been split lengthways either for marrow or as raw material for bone-working, although the latter explanation seems more plausible given other evidence for the use of certain horse bones for this purpose, notably those that provide straight cylinders of bone with few surface features. As indicated above, horseflesh was not generally eaten in Roman Britain apart from times of food shortage. Shoulder height estimates range between 12.1 hands and 13.2 hands (mean 12.3 hands) indicating that these were small pony-sized animals.

A dog ABG (**Table 6.6**) and several other dog (or fox) bones came from ditches at Station Road. The ABG from ditch 113 comprises part of the vertebral column and hindquarters from an adult animal. Two additional bones, a right pelvis and tibia, were also found and these are from a small, more gracile animal with an estimated shoulder height of 0.30 m. A few further dog (or fox) bones from ditches at Station Road and

Westfield Farm are mostly from the lower hindquarters and feet, but also include fragments of skull and mandible.

A few bird bones, including domestic fowl, duck and passerine, and a sawn piece of red deer antler were also found. The latter is a part of the beam from near the crown and indicates that antler-working was undertaken nearby.

Romano-British

A total of 491 identified fragments and an ABG (**Table 6.6**) came from broadly dated Romano-British ditches, gullies and pits at several locations. Again, most of the bones are from domestic species, particularly livestock, which account for 90% NISP. Rarer elements include horse, dog, domestic fowl and roe deer.

The relative abundance of livestock shows a similar pattern to that from phased Romano-British contexts, particularly the later deposits (**Table 6.7**). Cattle dominate, accounting for 55% and 51% NISP and MNE, followed by sheep at 42% to 46% and then pig at 3% for both NISP and MNE. There are equal numbers of cattle and sheep (total 90% MNI) and low numbers of pigs (two animals or 10%) and cattle provided 83% of the meat consumed.

Age information for cattle and sheep indicates mainly adult animals amongst the post-cranial bones. Most of the complete cattle mandibles are from juveniles and subadults (MWS D and E), with a few from older animals (MWS F to I), and the complete sheep mandibles are from animals aged 1–6 years (MWS D to G). The pig bones and mandibles are all from juvenile animals.

Most parts of the beef and mutton carcass are present, and any absences are probably due to small sample size. The most common elements are cattle humeri and sheep tibiae. Other common cattle bones include the skull, mandible, scapula, radius and tibia, and for sheep it is the femur and metapodia. Few pig bones came from broadly dated Romano-British contexts, but the pelvis is the most common element.

Butchery marks are evident on only 59 bones (**Table 6.8**) from broadly dated Romano-British contexts and most (81%) of the evidence relates to the dismemberment and portioning of cattle carcasses. Cleavers were widely used for this purpose, but some knife marks were also noted, and these relate to skinning and filleting. The combination of butchery marks on six scapulae indicates some shoulder joints were cured for longer-term storage. Butchery marks were also noted on a few sheep bones and indicate that mutton carcasses were dismembered using a cleaver.

The assemblage includes a total of 42 horse bones (8.5% NISP; **Table 6.5**), mainly from ditches at Humberston Road, with a few from Westfield Farm. Most body parts are present, although the femur and tibia are the most common elements, and these are from a minimum of at least three adult animals. Butchery marks are evident on three horse bones from Humberston Road, a radius and two tibiae, the marks resulting from dismemberment, portioning and filleting. The evidence adds weight to the possibility that horseflesh was occasionally eaten at rural sites during the Romano-British period, even if this was only in lean times.

The dog bones from Humberston Road include three bones from ditch 7636, a single bone from ditch 7298 and the partial remains of two dogs from ditch 7193. The right femur of one of the dogs from 7193 has a healed mid-shaft fracture. A roe deer metacarpal and domestic fowl tibiotarsus were also found in ditches at this site.

Anglo-Saxon

A total of 849 identified bones and an ABG (**Table 6.6**) came from a small number of Anglo-Saxon ditches, gullies, pits and midden at Laceby Beck. Pit 493 and midden 21020 were particularly rich in animal bones and yielded 63% of the identified fragments.

Bones from domestic animals dominate the assemblage, particularly livestock species, which account for 89% NISP. The assemblage also includes some horse, dog, domestic fowl and goose bones, and single bones from a cat and swan.

Cattle continue to be of prime importance during the Anglo-Saxon period and account for 62% NISP, followed by sheep at 26% and pig at 12% (**Table 6.7**). The same basic pattern emerges based on MNE, although in this instance cattle fall below 50%, relative to an increase in both sheep (37%) and pigs (15%). The MNI result puts sheep as the main livestock species at 46%, with cattle at 39% and pig numbers remain at 15%. The reasons for this discrepancy are probably the same as those outlined above, relating to high fragmentation rates for cattle bones and the over-representation of one or two sheep elements. As in other phases, cattle, by virtue of their larger size, contributed the bulk (78%) of the meat consumed. Pork consumption was higher than during the Romano-British period.

All parts of the beef and mutton carcass and most parts of the pork carcass are present. Cattle radii are common, and these are from at least 16 animals. Other common cattle bones include the skull, mandible, scapula, pelvis, tibia and metacarpal; common sheep elements include the mandible and tibia, and for pig it is the skull and scapula. Some of these common elements are butchery waste, but those from the fore and hindquarters are high-value meat joints. These elements from different stages in the carcass reduction sequence came from mixed deposits of waste including pit 493 and midden deposit 21020.

Most cattle (68%) and sheep (79%) post-cranial bones have fused epiphyses and are therefore from skeletally mature animals. The unfused elements include a few from neonatal calves/lambs and juveniles but also a few late-fusing elements from subadult animals. Most (47%) of the 19 complete cattle mandibles are from subadult animals aged 30–36 months (MWS E), these animals were culled at the optimum age for prime beef. The other mandibles are from calves, juveniles and adult animals (MWS C, D, G to H). The mortality profile established from 21 complete sheep mandibles shows a peak in mortality for lambs aged 6–12 months (MWS C) and a second peak amongst older sheep aged 4–6 years (MWS G). The rate of mortality for sheep between these age classes (MWS D to F) ranges from 10% to 19%. Age information for pigs is very limited but most post-cranial bones are from juveniles, and eight complete mandibles are from animals aged 7–27 months (MWS C to E), although most are under 2 years (MWS D).

Butchery marks are evident on large numbers of bones from Anglo-Saxon deposits (**Table 6.8**). Most (73%) of this evidence was recorded on cattle bones, which were extensively butchered using cleavers to dismember and portion carcasses, but the pattern is less regimented than on cattle bones from Romano-British deposits, suggesting an ad hoc approach. There is also some evidence that bones were processed for marrow. Knife cuts were noted on a few bones and these relate to detachment of the mandible from the skull, the horn core from the frontal part of the skull and the foot at the ankle, but also skinning and filleting. The pattern of chop and cut marks on 35 scapulae, the majority from pit 493, are like those seen on cattle scapulae from Romano-British deposits and this indicates that the technique for curing shoulder joints continued to be practised. Such evidence includes removal or trimming around the glenoid cavity, removal of the spine, and shave marks along the cervical and thoracic margins of the blade. Butchery marks were also noted on a range of sheep and pig bones, the evidence suggesting the use of cleavers to dismember and portion mutton and pork carcasses. There is some limited evidence, on two pig scapulae from pit 21021, that shoulder joints of pork were also cured. This includes trimming around the glenoid cavity and filleting marks along the cervical margin of the blade.

The cattle and sheep bones from Anglo-Saxon deposits are comparable to those from Romano-British deposits and represent small, horned breeds. Shoulder height estimates for cattle range between 1.11 m and 1.22 m (mean 1.16 m), and distal breadth measurements for the astragalus range from 36.2 mm to 41.0 mm (mean 37.8 mm). For sheep, the shoulder height estimates range between 0.56 m and 0.67 m (mean 0.61 m), and measurements on the distal tibia between 25.3 mm and 28.4 mm (mean 26.2 mm).

A total of 32 horse bones came from midden deposit 21020 and a few pits and ditches. The broad range of elements is consistent with whole carcasses being present, although mandibles are the most common element, and these are from a minimum of at least three animals. Nine horse bones show signs of butchery, the pattern of disarticulation and filleting like that recorded on cattle carcasses and providing a general indication that horseflesh was occasionally eaten.

Two groups of disarticulated dog bones were found in ditch 21016 and midden deposit 21020, and a dog burial came from pit 493. The disarticulated bones are probably from single animals, one an adult and the other a juvenile. A sample of bone from the ulna of the adult from ditch 21020 provided a radiocarbon date of AD 430–600 (Poz-123812). The adult dog from pit 493 is a large male with a shoulder height of 0.63 m; there are signs of degenerative osteoarthritis on the lower thoracic and upper lumbar vertebrae and cranial articular surface of the sacrum. The dog had also suffered a severe fracture to the right distal humerus which affected the articular surfaces of the radius and ulna and led to a significant degree of remodelling and eburnation. A single cat bone, a right femur, came from ditch 21016.

The Anglo-Saxon assemblage also includes a small number of bird bones, mostly from pit 793 but also some from ditches and midden deposits. Goose bones outnumber those of domestic fowl, and there are two different sizes, probably representing wild and domestic types. The left humerus from a swan came from ditch 706.

Medieval

The medieval assemblage includes 443 identified bones and three ABGs (**Table 6.6**), and came from ditches, gullies and pits, with the main concentrations from Habrough, Blow Field and Tetney Lock Road. Most of the identified bones are from livestock or other domestic animals such as horse. The assemblage is dominated by sheep bones, which account for 62% of livestock, followed by cattle bones at 34%, and then pig. The assemblage also includes bones from several other mammals, as well as birds and fish.

The broad range of body parts indicates that whole beef and mutton carcasses are represented and although some bones are under-represented, it is likely that this is a product of small sample size. Sheep humeri and tibiae and cattle femora are common, and these are from a minimum of at least 11 sheep and nine cattle. Most cattle post-cranial bones have fused epiphyses and are therefore from skeletally mature animals, while roughly equal numbers of fused and unfused sheep post-cranial bones are present. Age information from five complete cattle mandibles indicates animals aged 30–36 months and an old adult (MWS E and G to I), and the sample of 11 complete sheep mandibles includes animals aged 3–8 years (MWS F to H). The mortality profiles suggest that livestock were managed for secondary products. Few pig bones were recovered; cranial fragments are common, but the broad range of elements is enough to suggest the presence of complete carcasses from at least two animals. Age information is extremely limited but suggests that the remains are from immature animals.

Horse bones came from ditches at several locations. The broad range of elements is consistent with whole carcasses and the bones are from a minimum of four animals, three adults and a juvenile. Shoulder height estimates based on measurements on two metacarpals and a radius indicate small pony-sized animals of between 13.1 hands and 14 hands (mean 13.2 hands). A few dog and cat bones came from ditches and pits. One of the dog bones is from a neonate and one of the cat bones is from a juvenile. Part of a red deer pelvis from the right-hand side came from ditch 8252 within the interior of the moated site at Blow Field.

Bird bones (domestic fowl, goose, crow/rook and passerine) and fish vertebrae (carp and eel) form a minor component of the assemblage.

Post-medieval and modern

A total of 131 identified bones and three ABGs (see **Table 6.6**) came from post-medieval ditches at Blow Field, where a proportion is likely to be residual, and a few from other locations. The broad range of cattle and sheep bones is consistent with mixed deposits of waste from different processes, including butchery and meat consumption. The three ABGs are natural mortalities of new-born calves and a lamb. Several juvenile pig bones have also been identified, and small groups of disarticulated horse bones came from some ditches. The assemblage also includes a few dog and domestic fowl bones.

Undated

A relatively large number (526/12.87%) of identified bones came from undated deposits at several locations. Cattle bones dominate, followed by sheep, then horse, pig, dog, goose, domestic fowl, cat, partridge and crow/rook.

Discussion

Livestock husbandry regimes in the Lincolnshire Marshes are poorly understood, largely because of a lack of sizeable assemblages and often poor preservation. Analysis of the animal bones from several locations on this project has provided information relating to livestock husbandry regimes in the Lincolnshire Marshes between the Iron Age and medieval periods. The dataset is relatively small when broken down into chronological subsets by locations, but there is enough detail to allow for broader comparisons between periods across the scheme.

Most of the Iron Age animal bones came from the settlements at Westfield Farm and Chase Hill Road at the northern end of the route. The evidence indicates a focus on cattle and sheep farming as part of a subsistence economy. Age information is limited but suggests that sheep flocks were primarily managed for wool, and the husbandry strategy for cattle, which is based on limited information, indicates a focus on older animals, possibly for milk, manure and traction. While there is little doubt that there was an established arable economy in the region during the Iron Age, there is little evidence for the type of arable-linked livestock husbandry strategies common at Iron Age sites in southern and eastern Britain, where arable farming was both more intensive and extensive (Hambleton 1999, 70–83).

The relatively large quantity of animal bones from Romano-British contexts indicates a livestock economy based primarily on cattle farming. At locations such as Westfield Farm and East Field Road, there is a clear increase in the proportion of cattle relative to sheep between the Iron Age and Romano-British phases. At these and other locations (eg, Station Road and Keelby Road) there is also an increase between early and later Romano-British phases, and the mortality profile for late Romano-British cattle shows significant numbers of older animals (**Fig. 6.7**). The recorded increase in the proportion of cattle and the age at which they were slaughtered for meat can be seen as part of a broad trend linked to the intensification and expansion of arable cultivation from the second century onwards (Albarella 2007, 396–9; Allen 2017, 112; Allen and Lodwick 2017, 143–7; Maltby 2016; van der Veen and O'Connor 1998). Locally there is evidence from the farmstead at Immingham (Williams 2010) for a shift in emphasis from sheep farming in the Late Iron Age to arable cultivation by the mid-2nd century, and a general emphasis on cattle farming during the Romano-British period at other locations within the Lincolnshire Marshes (ASWYAS 2007; Hall 2005; Muldowney *et al.* 2009; Peachey 2010). Pathological changes

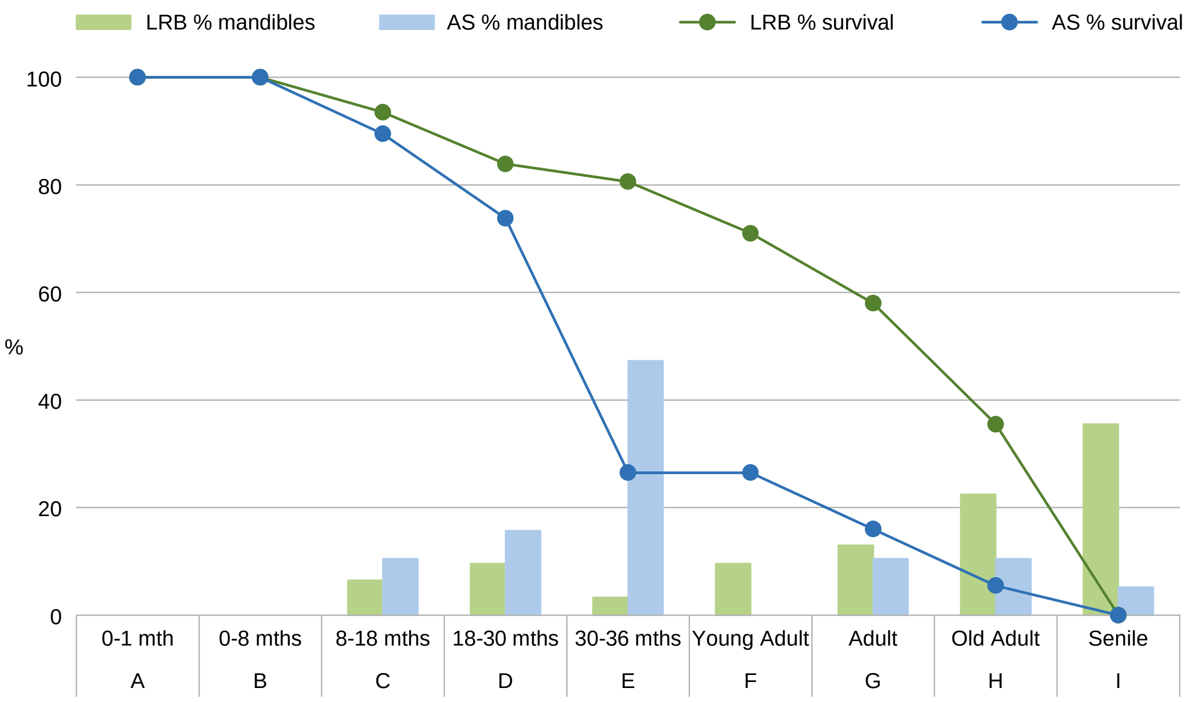


Figure 6.7 Cattle mortality pattern based on mandibles retaining 2+ teeth with recordable wear. Sample sizes late Romano-British (LRB) = 31 and Anglo-Saxon (AS) = 19. Mandible wear stages (MWS) and age categories after Halstead 1985

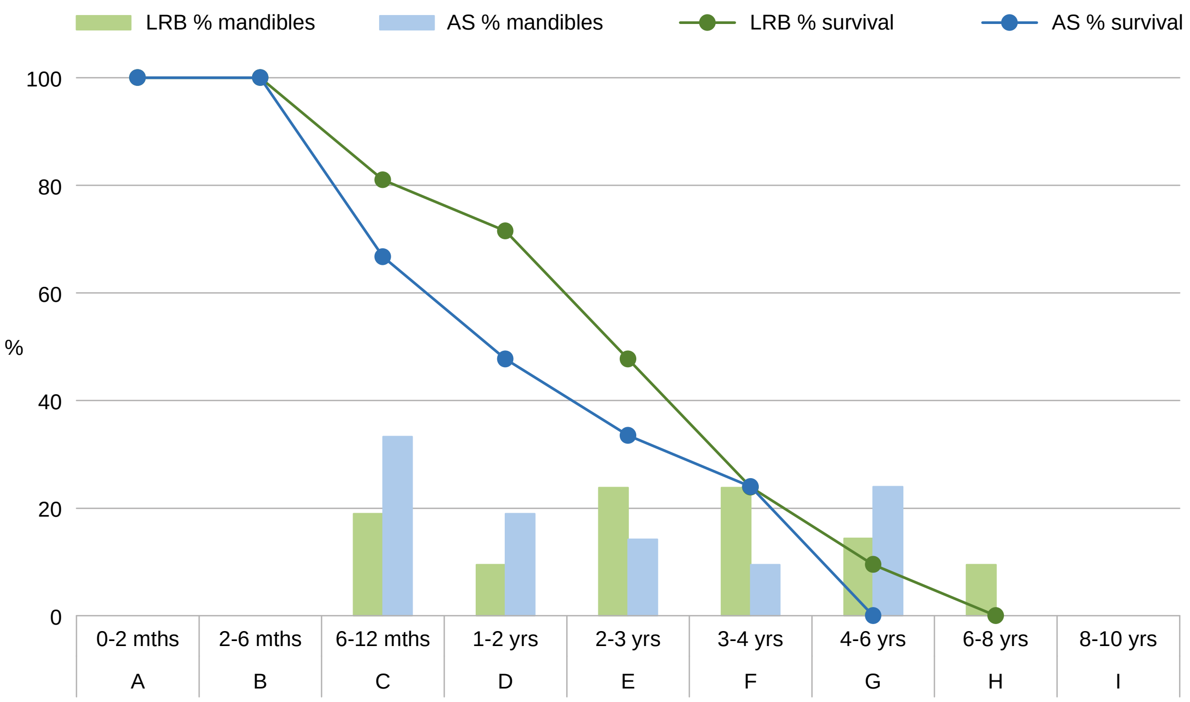


Figure 6.8 Sheep mortality profile based on mandibles retaining 2+ teeth with recordable wear. Sample sizes late Romano-British (LRB) = 21 and early Saxon (AS) = 21. Age categories after Payne 1973

on cattle foot and ankle bones, from a late Romano-British ditch at Station Road, provide direct evidence for the use of cattle as traction animals, and a fragment of femur shaft from a late Romano-British ditch at Keelby Road appears to be from an 'improved' type of cattle. The appearance of larger cattle at several sites across the country has led to the suggestion that these were bred specifically as traction animals to aid the expansion of arable cultivation (Albarella *et al.* 2008; Allen 2017, 99–104 and 139; Rizzetto *et al.* 2017, 540–2; van der Veen and O'Connor 1998, 132).

The Anglo-Saxon assemblage came from a few particularly bone-rich deposits at Laceby Beck. The deposits are dominated by cattle bones, particularly elements of high meat value from the forequarters, and the mortality profile suggests that the herd was intensively managed for prime beef (**Fig. 6.7**). The emphasis on cattle farming and meat production is consistent with evidence from the wider region, for example the Anglo-Saxon open settlement at Nettleton Top near Caistor (Berg 1993). Sheep were of secondary importance and the flock was managed primarily for wool, with meat a secondary consideration. High rates of mortality amongst older lambs aged 6–12 months (MWS C, **Fig. 6.8**) suggests either heavy losses during winter or seasonal culling to ensure the provision of winter fodder (Hambleton 1999, 70), although a dietary preference for lamb cannot be ruled out. The proportion of pigs increased from late Romano-British levels, suggesting perhaps a more crucial role in the seasonal supply of meat. The pattern of butchery marks recorded on cattle, and a few pig scapulae indicates that some joints were cured for longer-term storage, presumably for leaner months. This type of specialist processing is generally seen on cattle scapulae from Romano-British deposits (Dobney 2001; Dobney *et al.* 1996; Lauwerier 1988), including examples from Station Road, Humberston Road and Westfield Farm, but has not previously been recorded on bones from Anglo-Saxon Britain (Rizzetto *et al.* 2017, 543–4). The general character of the Anglo-Saxon assemblage is consistent with a self-sufficient subsistence economy, producing enough for the settlement as well as surplus for over-wintering (Holmes 2014, 77 and 84). The livestock economy transitioned from one closely linked to the expansion and intensification of arable cultivation during the late Romano-British period to a self-sufficient subsistence economy based on a mixed farming regime designed to provide food security at a more local level. While similarities can be drawn with the less intensive farming and land-use patterns of the Iron Age (Hamerow 2002, 152; Holmes 2014, 123), the shift should be seen as a functional adaptation to changing socio-economic and political conditions, rather than a decline into past practices (Rizzetto *et al.* 2017, 552).

Horse bones are ubiquitous in the Anglo-Saxon assemblage, and many show signs of butchery consistent with the processing of carcasses for meat. Horses are thought to have held a special status in the British Iron Age, being highly valued, prestige animals, and this undoubtedly meant that the consumption of horsemeat was rare and possibly confined to special events (Allen 2017, 126), while in most 'Romanised' parts of the Empire the consumption of horseflesh was generally restricted to emergencies (Tacitus Annals II, 24 and Histories IV, 60, quoted in Luff 1982). Butchered horse bones have been noted at a number of other Saxon sites (Baker 2002; Crabtree 1989, 104; 2012, 20; Higbee 2009, 301; Higbee forthcoming), but hippophagy is thought to have been at relatively low levels until the mid-Saxon period (Holmes 2017, 51; Poole 2013, 330).

Few bird bones were found, but most came from Anglo-Saxon deposits at Laceby Beck. The generally low levels of bird bones from other Saxon sites have led to the suggestion that domestic and wild birds did not feature highly in the Saxon diet, because farmers were able to meet their protein needs through livestock husbandry, so the procurement of wild resources was considered unnecessary for survival (Holmes 2017, 30; Sykes 2004, 99). However, some wild birds, such as the swan from ditch 706, may have been viewed as luxury food items (Albarella and Thomas 2002; Dobney and Jaques 2002, 18; Holmes 2014, 50–9).

The general character of the small, sheep-dominated assemblage from medieval deposits is consistent with the importance of the wool trade to the regional economy (Sykes 2007a, 29). Until the invention of the horse-plough, cattle continued to be used as traction animals to aid arable cultivation (Langdon 1986; Sykes 2006a, 71; Trow-Smith 1957) and the mortality profile for medieval cattle from the sites along the cable route reflects this. The red deer pelvis from the moated site at Blow Field is a high status food item. Deer hunting has long been an elite sport and was tightly controlled during the medieval period, with many aspects undertaken following highly ritualised behaviours including the 'unmaking' of the deer carcass and gifting of certain parts to hunt participants in line with their role and/or status (Sykes 2005; 2006b; 2007b). The pelvis represents the part discarded at the kill site as an offering for the crows, but these elements were occasionally transported back to elite sites as part of the haunch.

Marine Shell

Lorraine Mepham

The marine shell assemblage amounts to 2403 fragments, the overwhelming majority of which are oyster, with whelk, cockle and mussel represented by small quantities. **Table 6.9** gives the breakdown of the assemblage by site sub-division and by species, using number of shells (ie, excluding fragments).

Over 90% of the assemblage derived from three areas, in each case largely or wholly of Iron Age/Romano-British date: 46% from Humberston Road, 30% from Station Road and 14% from Keelby Road. However, even within these areas, only two features yielded more than 100 shells (ditch 1694, Station Road, 187 shells; ditch 2343, Keelby Road, 396 shells).

Table 6.9 Breakdown of marine shell assemblage by species (no. shells)

Site	Oyster		Whelk	Cockle	Mussel	Total
	L	R				
Keelby Road	145 (76)	125 (54)	0	0	1	271
Station Road	284 (44)	267 (78)	11	1	0	562
Humberston Road	411 (170)	403 (214)	45	4	3	866
Tetney Lock Road	0	0	0	1	0	1
Westfield Farm/Blow Field	60 (25)	68 (41)	6	16	0	150
Habrough	4 (0)	0	0	1	0	5
Brooklands	1 (0)	1 (1)	2	14	1	19
Other	6 (0)	9 (3)	0	1	0	16
Total	911 (315)	873 (391)	64	37	5	1890

L = left valve, R = right valve; numbers in brackets denote number of measurable examples

The condition of the oyster is variable; some is worn and flaky, but the majority is better preserved. The proportion of measurable shells overall is 40%; this rises to 47% and 48% for Humberston Road and Keelby Road respectively and falls to 22% for Station Road. Many shells show signs of overcrowding, in the form of adhering debris and the 'clumping' of left valves. This indicates natural breeding conditions, where young oysters compete for space, rather than farmed oyster beds where oysters are given more space to grow. The size of the shells is relatively consistent, although the presence of small shells was particularly noticeable in the large deposit from ditch 2343 at Keelby Road. There also seems to be a prevalence of elongated shells over more rounded forms, which may indicate their origin: a soft substrate is thought to result in elongated oysters, whereas rounder shells might be expected on firmer substrates in deeper water (Winder 2000).

The occurrence of other species (whelk, cockle and mussel) is negligible, and these clearly never formed anything other than a very minor part of the diet of the inhabitants.

Human Bone

Jacqueline I McKinley

Introduction

Elements of unburnt human bone were recovered from 12 contexts distributed across five areas of investigation, dispersed along some 25 km of the scheme-wide route (**Fig. 6.9**; **Table 6.10**). Data pertaining to bone fragments from an additional two contexts from two of these areas, recovered in the evaluation stage of the investigations (RPS 2013e, 218) are also included in this report.

The majority of the assemblage comprises fragments of disarticulated, redeposited bone recovered from the fills of various ditches forming components within field systems and enclosures, generally of Late Iron Age to late Romano-British chronology, but also with Anglo-Saxon and medieval examples. The remains of a mid- to late Romano-British coffined burial were found at Humberston Road, the grave cut through the fill of an

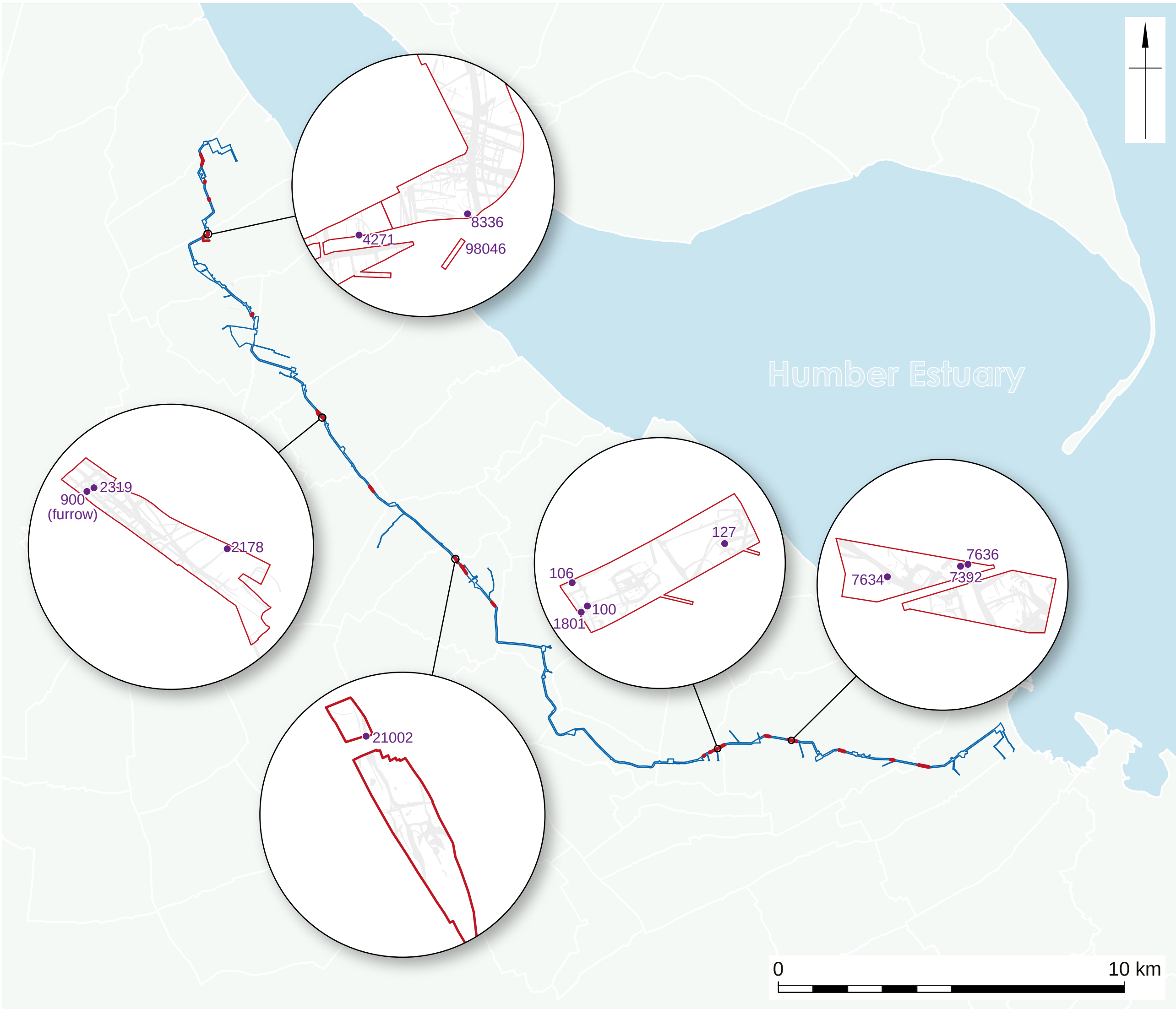


Figure 6.9 Distribution of human bone

early Romano-British roadside ditch. The partly articulated but heavily manipulated and redeposited remains of an adult male were recovered from the fill of a medieval drain at Blow Field alongside redeposited sherds of 12th- to 13th-century pottery.

Given the location and form of the deposits from which the majority of the material was recovered it is not surprising that most of the bone was not recognised as human at the time of excavation. With the exception of the inhumation burial from Humberston Road, the partly articulated remains from Westfield Farm/Blow Field, and the redeposited material from ditch 2319 and furrow 900 at Keelby Road, the human remains were collected together with animal bone (sometimes large quantities of animal bone) from the excavated segments of 10 ditches. It is probable that further fragments of human bone would have been present in other unexcavated parts of at least some of these ditches.

The date of the majority of the human bone assemblage was unknown or unconfirmed other than for the broad *terminus post quem* provided by the date of the features from which the material was recovered. Residual pottery derived from earlier phases of activity was found in many of these deposits, raising the strong possibility that much of the human bone could also be of earlier date. Consequently, bone samples from seven features were submitted for radiocarbon analysis (see **Table 6.10**). Three of the dates failed, including one for which there was sufficient bone to make a second submission (see Radiocarbon Dating, Chapter 7). The bone redeposited in the early Romano-British roadside ditch at Humberston Road (7636) returned a Late Iron Age date; consequently, the other redeposited bone from the site could be of a similar earlier date than the Romano-British ditch from which it was recovered. The late Romano-British date obtained for the remains from ditch 1801 at Station Road is commensurate with that indicated for the other features containing human bone in the area. The skull fragments from the Anglo-Saxon ditch at Laceby Beck cannot be dated with any great confidence; residual pottery from across the prehistoric temporal range through to the early medieval period was recovered from various features at the site. An Iron Age to Romano-British date is possible given the frequency of Iron Age and Romano-British human bone across the scheme. Despite the lack of Iron Age features at Keelby Road, residual ceramics were recovered from Romano-British ditches and enclosures indicative of activity in the immediate vicinity in this earlier period. The Middle to Late Iron Age date obtained from the skull fragment from ditch group 2319 is commensurate with the other residual material, and, though not conclusive, the redeposited bone from the other features in this area may be of a similar date. An early Romano-British date is believed likely on stratigraphic grounds for the bone redeposited in ditch group 4372 at Westfield Farm. The partially articulated remains redeposited in the 12th- to 13th-century medieval drain proved to be of a similar date to the feature. The date of the fragment from the evaluation is unknown, but cannot be assumed to be commensurate with that of the medieval feature in which it was found.

Methods

The minimum number of individuals (MNI) within the disarticulated bone assemblage was assessed by site and temporal phase, taking account of the assessed age and sex indicated for the remains from any one context, and the skeletal elements represented (presence/absence of duplicate skeletal elements; see McKinley 2004). The distance between and the nature of deposits was also considered in the tentative attribution of additional numbers of individuals.

Age and sex were assessed using standard methodologies (Bass 1987; Buikstra and Ubelaker 1994; Scheuer and Black 2000; van Beek 1983). Where possible, a standard set of measurements was taken (Brothwell and Zakrzewski 2004) to facilitate the calculation of various skeletal indices including stature (Bass 1987; Brothwell 1972, 88; Trotter and Gleser 1958). Non-metric traits were recorded (Berry and Berry 1967; Brothwell and Zakrzewski 2004; Finnegan 1978). Grading for preservation is

Table 6.10 Summary of results from analysis of human remains

Context	*Cut*	*Group*	*Date*	*Deposit type*	*Quantification*	*Age/sex*	*Pathology*	*Comment*
Westfield Farm/ Blow Field								
4236	4235	4271	Earlier med.* (late 12th–13th C)	Redeposited drain	52%	Adult 27–40 yr Male	Dental hypoplasia (4/15); calculus; ?blunt weapon trauma *peri-/post mortem* – parietal vault; soft tissue trauma – left MtC; Schmorl's nodes – T6–12; osteophytes – T11–12 bsm, C4–6 ap, T1 ap, 4 right & 2 left carpals, 3 right & 2 left C/MtC joints; 1 right & 2 left costo-vertebral (inc. 8–9th); plastic changes – T11–12; endocranial new bone – occipital; hypervascularity – parietals (head lice); MV – mandibular M3s absent, mandibular torus	1–2, slightly abraded, skull heavily fragmented partially articulated
4371/4373	4372	8336	ERB	Redeposited ditch	1 frag. u.	Subadult/adult >15 yr	-	2, slightly abraded
98046⸸	98042	-	u/d	Redeposited ditch	1 frag. u.	Subadult/adult >12 yr	-	⸸PCAS evaluation: good-fair [?1–2]
Keelby Road								
885	884	2319	M–LIA*	Redeposited ditch	5 frags s.	Adult 20–30 yr ?Female	Calculus; MV – mandibular molar cusp variations, shovelled maxillary I2	2–3, eroded/degraded
901	900	-	u/d	Redeposited C16th furrow	6 frags l.	Adult >20 yr ??Male	-	4–5, eroded with fungal/root channelling
2179	2178	2324	?MIA–?ERB	Redeposited ditch	7 frags a.u.	Subadult/adult >15 yr Female	-	4-5, eroded
Station Road								
1005	1006	106	LRB	Redeposited ditch	5 frags l	Subadult/adult >15 yr ??Female	-	1–2; worked/polished proximal shaft
1136	1138	100	LRB	Redeposited ditch	8 frags s.l.	Subadult/adult 15–35 yr	Hypervascularity – head lice?; cut-marks *peri-/post mortem* – parietal vault	1–2, abraded
1257	1259	1801	LRB*	Redeposited ditch	15% l.	Adult >20 yr Male	Osteophytes – right distal tibia	1–2, slightly abraded; canid gnawing
37040⸸	Tr 37	127	?LRB	Redeposited ditch	1 frag. s.	Subadult/adult >12 yr	Porotic hyperostosis	⸸PCAS evaluation: good–fair [?1–2]
Humberston Road								
7382	7381	7634	?LIA–?ERB	Redeposited ditch	1 tooth	Adult >45 yr	-	3
7393	7392	-	M/LRB	Inh. burial coffined	75%	Adult 50–60 yr Female	*Ante mortem* tooth loss (4/19); caries (3/13); apical cyst/abscess (2/19); cuts/?trauma – frontal vault; osteophytes – right scapula, prox ulna & acetabulum; enthesophytes – ischial tuberosities, iliac crest, proximal femora; MV – crown variations; uneven tooth wear (tool use)	2–5+ (very variable, left upper limb heavily degraded), heavily fragmented; Fe staining left tibia
7476	7475	7636	LIA*	Redeposited roadside ditch	2 elements u.l.	Subadult/adult 15–25 yr ??Female	?Plastic change – clavicle	1–4; elements not necessarily from same individual, condition very variable
Laceby Beck								
758	757	21002	?LIA/ ?ERB	Redeposited Anglo-Saxon ditch	3 frags s.	Juvenile–adult 10–30 yr ??Female	*Cribra orbitalia* (porotic)	2, slightly abraded

KEY: * – radiocarbon dated; u/d – undated; s. – skull; a. – axial skeleton; u. – upper limb; l. – lower limb (elements shown only where all are not represented); C/T –cervical/thoracic vertebrae; I – incisor; bsm – body surface margins (spinal); ap – articular process (vertebral); C/MtC – carpal/metacarpal; amtl – *ante mortem* tooth loss; MV – morphological variation; ⸸ – information taken from PCAS evaluation report (RPS 2013e). Material not available during analysis.

in accordance with McKinley (2004, fig. 6). A summary of the results is presented in **Table 6.10**; further details are held in the archive.

Results and Discussion

Taphonomy and assemblage composition

The only discrete feature containing human bone was inhumation grave 7392 at Humberston Road, which had suffered horizontal truncation due to plough damage, resulting in the cut surviving to a depth of only 0.15 m. The extensive fragmentation of the bone is undoubtedly an artefact of this disturbance and it is probable that some bone will have been removed from the grave via this mechanism.

The condition of the bone from the inhumation grave is markedly poorer than that from most of the ditch fills across the scheme, with the loss of some trabecular bone and variable levels of erosion to different skeletal elements, the left upper limb being particular badly affected (**Table 6.10**). The nature of the grave fill, comprising a mixture of redeposited natural (an acidic sandy clay) and the accumulated worked soil of the ditch fill through which the grave was partly cut, is reflected in this variable preservation. Most of the bone from the ditch fills is in fairly good condition (grades 1–2); the remains from Keelby Road form an exception, showing greater levels of erosion and degradation than elsewhere, probably due to the detrimental effects of the heavier clay soil matrix seen in this area.

With the exception of the material from Westfield Farm/Blow Field (see below), all the redeposited bone comprises fragments rather than complete skeletal elements, though some do feature fresh breaks to which there is no joining fragment. Some of the bone is slightly abraded (**Table 6.10**), suggesting it might have been subject to more than one episode of disturbance prior to its final deposition, but most is unlikely to have been moved across a substantial distance or have lain exposed on the surface for any length of time, if at all. The material from Humberston Road, Keelby Road and perhaps Laceby Beck is all of a similar Middle to Late Iron Age or possibly early Romano-British date. Radiocarbon dates from this material, where available, reveal a Late Iron Age chronology. The remains from Humberston Road comprise single elements (the complete navicular from the roadside ditch was probably displaced from the coffined burial remains) and probably represent random deposits of already disarticulated material. The same is likely to be the case for the skull elements from the ditches at Laceby Beck and Keelby Road. The few fragments of axial skeleton and upper limb (see **Table 6.10**) from ditch 2324 at the latter site also appear insufficient to suggest the ditch had cut through *in situ* burial remains. That the '...majority of Iron Age populations were disposed of in archaeologically untraceable ways...' (Hill 1995, 106) is a widely accepted premise. Excarnation, in its various forms, has long been considered to represent a predominant mortuary rite undertaken in the Iron Age, supported by the relatively common recovery of disarticulated redeposited skeletal elements or parts thereof from what are deemed non-mortuary contexts (Carr and Knüsel 1997; Harding 2016, 108–126; Hill 1995, 13–18; Whimster 1981). It is probable that some, if not all, of the redeposited bone from the above-mentioned sites (including that found in evaluation at Keelby Road) relates to this category of mortuary rite. The location of the finds does not seem to attribute them any significance in terms of placement, and although the slight emphasis on the skull might be viewed as of some significance, there is no evidence here to expressly suggest selection, curation or deliberate 'placement' of specific skeletal elements.

The late Romano-British material from Station Road is markedly different in character from that elsewhere. Most of the long bones of the lower limb from an adult male were found redeposited in one (1801) of several intercutting ditches on the western margins of the site, together with a complete dog tibia. Most of a left fibula, probably from the same individual, was found together with a complete dog vertebra, some 5 m to the east in the latest (100) of the complex series of intercutting ditches. In this instance, the quantity and

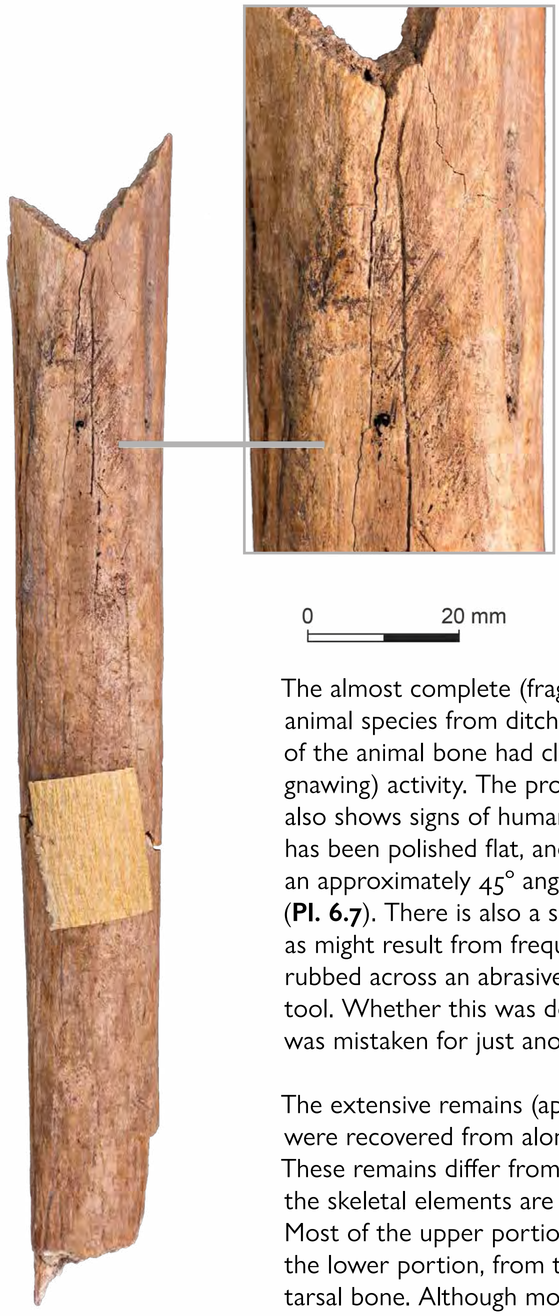


Plate 6.7 Late Romano-British redeposited bone from ditch 106 at Station Road Late Romano-British redeposited bone from ditch 106 at Station Road. Right proximal tibia shaft showing flattened area of polishing and fine striations

condition of the bone, together with the singular presence of the dog bones, strongly suggest the remains of a late Romano-British inhumation burial, inclusive of a dog as human companion, had been substantially disturbed or completely removed by the insertion of at least one of these later features. That this could have occurred within what potentially comprised living memory suggests the grave was not marked and that the 'communal memory' had been sufficiently disrupted (perhaps by a change in 'population'?) to erase the knowledge of the grave's location. Evidence for canid gnawing to the end of the tibiae and femur implies either the initial burial was not made very deep, or that the redeposited bone was not completely dehydrated and certainly not well covered following its redeposition in the ditch. The presence of dog remains (whole or decapitated) in Romano-British inhumation graves is well recorded (eg, Philpott 1991, 203–4), and the dog's common function in life as both companion and guard might have been significant in the choice for their inclusion (Smith 2006, 36–45; Toynbee 1971, 291 note 172).

The almost complete (fragmented) right tibia, recovered together with a range of animal species from ditch 106 at Station Road, suggests yet another scenario. Some of the animal bone had clearly been modified by human (butchery) and animal (canid gnawing) activity. The proximal end of the human tibia shaft (old, dry-bone breaks) also shows signs of human modification. A 46 mm by 12 mm area of the distal surface has been polished flat, and there are marked fine striations (minimum eight 'lines' at an approximately 45° angle) along the length of the lateral half of this flattened area (**Pl. 6.7**). There is also a slightly polished appearance to most of the rest of the shaft as might result from frequent handling. The features suggest the bone was repeatedly rubbed across an abrasive surface from right to left, indicating it had been used as a tool. Whether this was done in the knowledge that the bone was human or whether it was mistaken for just another animal bone is open to debate.

The extensive remains (approximately 52% of the skeleton) of a mature adult male were recovered from along a 0.65 m length of a drainage ditch (4235) at Blow Field. These remains differ from the other redeposited bone in that the vast majority of the skeletal elements are complete and, with the exception of the skull, unbroken. Most of the upper portion of the skeleton (skull, upper limb and thorax) is present; the lower portion, from the lumbar vertebrae down, is missing except for a single tarsal bone. Although most of the bone was apparently disarticulated and jumbled (cranium complete), at least one segment of the thoracic area of the spine was still articulated at the time of deposition. This indicates that the remains were not quite fully decomposed when they were put in the ditch and that they are unlikely to have been moved far from their original place of deposition. The 12th- to 13th-century date of both the ditch and of the bone itself (confirmed by radiocarbon analysis) renders these remains of a very different character to the other redeposited human bone from the scheme. The corpse's potential original location and the reason for the final deposition of the remains in the drain form intriguing questions discussed further below. The single skeletal element found in ditch 4372, some 85–90 m to the east at Westfield Farm, derives from a different individual, as does the single element from the evaluation trench. As the former was recovered from a small segment of ditch on the very southern margins of the area of investigation, there is no way of knowing to what it might relate.

Demographic data and reflections on mortuary rites

A minimum of nine (MNI), potentially twelve, individuals are represented: four, potentially six, Middle to Late Iron Age or possibly early Romano-British; four, possibly five, mid- to late Romano-British; and one 12th/13th century. Given the nature of much of the assemblage, the age categories extended to many of the individuals is necessarily broad, and the sexing often tentative. No younger immature individuals were identified anywhere within the assemblage (**Table 6.10**).

The earliest temporal group include an older juvenile–young adult, possibly female (Laceby Beck); an older subadult to young adult, again possibly female (Humberston Road); a female >15 years (Keelby Road); and an unsexed adult (Humberston Road). A further two individuals could be represented at Keelby Road, not on the basis of duplicated elements (the most secure method), but rather on the extensive distance (90 m) between the two deposits where the bone was assessed as female, and on the apparent dichotomy in the suggested sex of the two neighbouring deposits from the north end of the site (**Table 6.10**). The mid- to late Romano-British assemblage comprises two individuals of >15 years, one possible female (Station Road and Westfield Farm); a young to mature adult male (Station Road); and an older adult female (Humberston Road). A fifth individual, >12 years of age, might be represented by the bone recovered from an evaluation trench at Westfield Farm, again not on the basis of duplication but on distance (trench 98 lay some 200–300 m south-east of ditch 4372. The 12th/13th century remains from the ditch at Blow Field are those of a mature adult male.

The East Midlands Historic Environment Research Framework (Research Frameworks 2023) emphasises the importance of increasing understanding of Iron Age placed and structured deposits of all forms (Framework Objective 4H). The human bone of Iron Age date from Hornsea Project One appears to fall into the category of material providing evidence for excarnation (and potentially curation) of human remains, which are commonly linked with settlements and their associated hinterlands of ditch systems and enclosures. The small quantities of bone recovered are such as might readily pass unrecovered or unnoticed from ditches forming the type of extensive systems of field boundaries encountered across the scheme; an additional obstacle to the discovery of this type of deposit is the common practice of 10–20% sample excavation of such features involving strategically located segments. A failure to securely date redeposited material of this type can also lead to an incorrect assumption regarding the temporal context of the bone and a corresponding misinterpretation of the reflected mortuary rite. Although the quantities of bone and number of deposits from the scheme are small and widely dispersed, the assemblage does provide a flavour of what probably comprised one of the predominant mortuary rites being undertaken in the region. The form and location of the bone deposits themselves were not sufficiently distinctive to suggest deliberate placement, and could offer no useful guidance as to where within such systems attention could best be focused in future investigations. The paucity of much evidence of a similar form from elsewhere in the region is likely to reflect the various inevitable pitfalls surrounding the recovery and recognition of such deposits, which are so easily 'lost' in the archaeological landscape where they might originally have played a functioning role in their community of origin, such as 'mediation between this world and the next' (Sharples 1991, 87).

Dispersed singletons and/or small grave groups within rural agricultural settings – often placed at/towards field boundaries that probably related to individual farmsteads – are common features within many Romano-British landscapes. A small number of disturbed and *in situ* burial remains, similar to those found at sites within the scheme, have been recovered from various locations in the region, particularly around Killingholme and Immingham where a greater number of developer-funded archaeological investigations have been undertaken. Single cremation-related deposits, including burial remains, have been found at East Halton Skitter, Goxhill (North Lincolnshire HER 877–MLS8777), East Clough Road, near Killingholme (HER 20199–MLS20199) and Immingham (Cavanagh in prep.; Keefe and Holst in prep.). None of the remains seemed to have represented those of immature individuals, but both sexes are represented.

Although clearly disturbed and redeposited from an unknown but obviously neighbouring location, the human remains from ditch/drain 4235 at Blow Field, given their 12th/13th-century date, fall into the classification of a 'non-normative' burial. Non-churchyard burials of this date are very rare; a non-cemetery or non-churchyard burial was viewed with such horror that few people were excluded (Daniell 1997, 104–109; Gilchrist and Sloane 2005, 73). Those who might be denied burial in consecrated ground varied to some degree across the medieval temporal range and, sometimes, on the inclination of the individual ecclesiastical authority (Cherryson *et al.* 2012; Daniell 1997, 104–109). The debarred could include individuals killed in a tournament or duel, pagans, heretics, witches, excommunicants, those convicted of murder or treason, the 'cursed', thieves who had not made 'satisfaction' or who were caught in the act, some cases of suicide and, sometimes, strangers to the parish. The parochial system entitled those living within the parish to be buried within the parochial churchyard; the right was not extended to strangers, who may be banished to a marginal location within the cemetery if included and may be denied even that if someone did not come forward to pay the necessary fees (Cherryson *et al.* 2012). Were one such vagabond or vagrant to die from want or illness, his fellows may have buried him wherever they could before moving on. Those guilty of specific acts were often treated in a prescribed fashion and disposed of in specific places, such as the burial of suicides and witches at crossroads, though some of the former are known to have been interred in open fields (MacDonald and Murphy 1990, 48, quoted in Cherryson *et al.* 2012). Victims of circumstance may also be buried in unconsecrated ground; those who died in battle, for example, and murderers rarely buried their victims in the churchyard (Cherryson *et al.* 2012; Daniell 1997, 108; Gilchrist and Sloane 2005, 72–3). There are accounts of murder victims being buried in rubbish tips or gardens (Daniell 1997, 108), and any marginal open space or ditch would readily suffice for a clandestine burial.

The location of the bone within ditch 4235 poses two questions: where was the body originally buried, and why was it redeposited where it was? The ditch might well have been the original location for the corpse; discovered and disturbed during clearing of the ditch, it might hurriedly have been covered up again, thought best left alone through worry of retribution or plain fear. If not in the ditch originally, the corpse seems likely to have been disposed of somewhere very close by. It might be significant that the parish boundary lay just 5 m to the south of the ditch, the body perhaps having been disposed of in a liminal location, on the margins between two parish authorities. Were this the case, it might suggest the man fell into one of the 'excluded' groups for whom no one parish would accept responsibility. There are, however, indications of an unhealed blunt-weapon trauma to the man's skull, which strongly suggest he met a violent death; the casualty of a small skirmish or unfortunate victim of a murder. His cause of death suggests these remains are those of a clandestine burial rather than someone who was for some reason excluded from the parish churchyard.

Indices, pathology and morphological variations

The nature of most of the deposits and condition of the bone negated the possibility of taking many measurements or calculating other than a limited range of the standard skeletal indices. Stature was estimated for the Romano-British female from grave 7392 at 1.58 m (5 feet 2¼ inches), and for the medieval male from Blow Field (ditch 4271) at 1.75 m (5 feet 10½ inches). The former is very close to the female average of 1.59 m for the period presented by Roberts and Cox (2003, 163), whilst the latter is above both the overall male mean of 1.71 m, and the maximum mean of 1.74 m given for the *c.*1050–1550 AD date range (*ibid.*, table 5.11). The data for the male suggests this clearly large, robust man, with strong upper body/limb muscle attachments indicative of a powerful individual (brachial index 73.3), was relatively well nourished and probably not drawn from the lower orders.

The platymeric index (demonstrating the degree of anterior–posterior flattening of the proximal femur) and platycnemic index (illustrating the degree of meso-lateral flattening of the tibia) were calculated for the Romano-British female at 78.5/83.0 (broad) and

73.2/74.2 (normal) respectively. The slightly higher rates for the right side suggest the woman favoured this side, the strongly marked muscle attachments of the lower limb (particularly compared with the relatively gracile upper body) suggesting extensive and/or strenuous mobility featured markedly in her lifestyle.

The only non-symptomatic variations in skeletal morphology comprised commonly observed differences in various tooth crown/cusp form, and a mandibular torus in the medieval male (from ditch 7271). The latter variant has sometimes been linked to non-masticatory tooth wear and, as this man had strongly marked medial pterygoid attachments, it might suggest he was prone to clenching or grinding his teeth – which could also be responsible for the *ante mortem* damage to his right M2 crown where a small fragment had sheared off, though this could reflect an individual trauma violently forcing the teeth together. The Romano-British woman has extensive wear to all the anterior teeth, with an uneven, jagged appearance to the sliver of remaining enamel, suggesting damage due to their use as a 'tool'. The left maxillary first incisor crown in particular has a smoothly rounded notch (4 mm) in the mesial half of crown, possibly linked to the repeated gripping or passage of some type of broad thread.

Various dental conditions, reflective of the individual's diet, dental hygiene and advanced age, were recorded in the Romano-British female's dentition (**Table 6.10**).

Very heavy calculus (calcified plaque) deposits were observed in the Mid–Late Iron Age dentition from Keelby Road (ditch 2319), suggesting this young female had a diet strongly dependent on carbohydrates and poor dental hygiene. In contrast, the slight calculus seen in the medieval male dentition (ditch 4271), together with the lack of other dental lesions, suggest this mature male had a relatively good, self-cleaning diet with a reasonable protein intake. Slight dental hypoplasia was observed in the cervical region of some of the man's anterior teeth. Developmental defects in the tooth enamel formed in response to growth arrest in the immature individual, the presence of these faint lesions suggest the man had undergone short periods of illness or nutritional stress as a young child (Hillson 1979), an experience which, given other skeletal indicators (see above), did not seem to result in any lasting harm.

Other childhood stress indicators seen elsewhere include slight lesions indicative of *cribra orbitalia*, generally believed to be associated with childhood iron deficiency anaemia (Molleson 1993; Roberts and Manchester 1995, 166–9), in the ?Late Iron Age individual from Laceby Beck (ditch 21002), and porotic hyperostosis.

Extensive damage to the right parietal vault of the medieval male from Blow Field is strongly suggestive of peri-mortem blunt-weapon trauma (**Pl. 6.8**). The damaged

Plate 6.8 12-13th century redeposited skull from ditch/drain 4271 at Blow Field. a) Exocranial view of right parietal vault showing location and form of blunt weapon trauma; detail show endocranial surface at anterior end of lesion b) endocranial view of right parietal bone from below showing extent of lesion

area, some 93 mm anterior–posterior and a maximum 22 mm medio-lateral, forms an irregular lozenge shape. The exocranial margins are irregular and have old dry-bone damage, but all except a small area of the endocranial vault shows internal bevelling suggestive of green or semi-green breakage. Fractures which extend from either end of the 'lozenge' and out from the broadest area of damage in the anterior portion have the appearance of shock fractures. The focus of the lesions appears likely to coincide with the broadest area of damage, but the possibility of multiple blows cannot be excluded. The post-mortem damage and absence of fragments from the centre of the affected area (probably lost when the remains were disturbed and redeposited in antiquity) render it difficult to suggest the nature of the implement used to inflict the injury, but the lack of any sharp margins indicate it comprised a blunt 'weapon' of some form. No potentially associated lesions (eg, defensive lesions) were observed on the other recovered skeletal elements. As discussed above, these lesions, together with the unusual location of the remains, suggest the man died either as the unsuccessful participant in a mutual conflict or that he was murdered.

Cuts inflicted by a sharp implement were observed in skull fragments from two Romano-British deposits. There are two shallow, parallel linear marks (16 mm long, 5 mm apart) on the right frontal vault of the elderly female from Humberston Road (7393), which appear to represent the well-healed remnants of a doubtless distressing and unpleasant, but relatively minor, sharp weapon injury. The lesions lie 45 mm superior to the orbital margins towards the temporal line at an angle of around 75°; the superior-lateral margins of the lesions appear acute and the inferior-medial shallow. Cuts visible on the fragment of redeposited parietal vault from ditch 100 at Station Road appear to have been made to green or semi-green bone with no indications of healing (**Pl. 6.9**). A magnified view of this minimum 12 mm-long lesion (which crosses the broken edge of the skull fragment) suggests there may have been more than one cut. Located some 33 mm anterior to the lambdoid suture and 73 mm superior to the squamous margin, the 1–2 mm-deep 'V'-shaped incision is set at a 45° angle. The upper margin of the feature is not sharp and is slightly uneven, suggesting it was potentially inflicted to semi-green rather than fully green bone. If this were the case, it could have been made when the burial remains were disturbed and redeposited rather than at/immediately after the time of death of the individual (see above taphonomy and assemblage composition).

Plate 6.9 Late Romano-British redeposited bone from ditch 100 at Station Road. Fragment of right parietal vault showing location and form of cut marks (with detailed inset)

Minor soft tissue traumas in the form of enthesophytes (Rogers and Waldron 1995, 24–25) were observed in various skeletal elements around the hip region of the elderly Romano-British female (7393), and here are reflective of life-long repetitive strain injuries. Mild–moderate exostoses in the left second metacarpal of the medieval male are more suggestive of singular traumatic damage to the interosseous ligament in this part of the hand. Plastic changes seen in the redeposited clavicle from ditch 7475 (Humberston Road) may also indicate a singular or repetitive trauma involving the pectoralis major muscle. Plastic changes (ie, where the bone reacts over time to an abnormal physical pressure exerted on it) seen in the anterior central-left side of the 11th and 12th thoracic vertebral bodies, which show a marked concavity, are suggestive of a different mechanism. Pressure resulting from distended/inflamed adjacent soft tissues or a small abnormal growth in the lower part of the abdomen might be responsible for these lesions.

Areas of increased porosity in the exocranial surface of the skull were seen in the redeposited parietal vault fragment from ditch 100 at Station Road and in the parietal vault of the medieval male. The lesions are indicative of hypervascularity/increased blood supply to the area, probably due to persistent scratching of the head to relieve the irritation of heavy lice infestation.

Age-related degenerative changes to spinal and extra-spinal joint surfaces (osteophytes) were recorded in three individuals (**Table 6.10**), the most extensive lesions being recorded in the medieval male, whose hands were particularly affected. These, together with lesions reflective of physical stress in the lower spine (Schmorl's nodes, rate 6/15) of this individual, are testament to the physically strenuous life of a big, active man who died in his prime.

Multi-Isotope Analysis

Joanna Moore, Lauren Kancle and Janet Montgomery

Introduction

Isotopic data (carbon, nitrogen and sulphur) were recovered during the course of radiocarbon dating of bone samples derived from four individuals. All the remains had been redeposited in ditch fills distributed across four of the areas of investigation and were radiocarbon dated to different parts of the temporal range. Two were of Middle to Late Iron Age date (885 from Keelby Road and 7476 from Humberston Road), one was late Romano-British (1257 from Station Road) and one medieval (4236) from Blow Field.

The isotopic data has been interpreted and is discussed here in context with previously published data from contemporaneous human remains.

Stable Isotope Analysis

Carbon and nitrogen

Isotopic analysis of carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) is a well-established technique for the reconstruction of diets in past populations, using collagen from archaeological teeth and bones (DeNiro and Epstein 1978; Kohn 1999; Richards *et al.* 2006; Schoeninger *et al.* 1983). The composition of these $\delta^{13}C$ and $\delta^{15}N$ values reflect the isotopic composition of the protein consumed during the tissue's formation. Therefore, $\delta^{13}C$ and $\delta^{15}N$ values can be used to garner insights into not only the types and quantities of food resources utilised by a population but also any socio-economic and cultural influences surrounding the dietary practices of groups or individuals. The variations that arise in $\delta^{13}C$ values allow differentiation between broad resource types such as marine or terrestrial ecosystems or C_3 and C_4 plants (Ambrose *et al.* 1997; Camin *et al*. 2008; Lee-Thorp 2008). The variability in $\delta^{15}N$ values facilitates the visualisation of the contribution of terrestrial and marine resources in diets, in addition to trophic level shifts within the food chain (Hedges and Reynard 2007; Robinson 2001; Schoeninger and DeNiro 1984).

Sulphur

The utility of the isotopic analysis of sulphur ($\delta^{34}S$) is based on the principle that the $\delta^{34}S$ value in any given location will be distinctive to that local area (Nehlich 2015). These $\delta^{34}S$ values may remain uniform over large geographic areas or they may vary significantly over smaller distances (Krouse *et al.* 1991). Each area's $\delta^{34}S$ signature

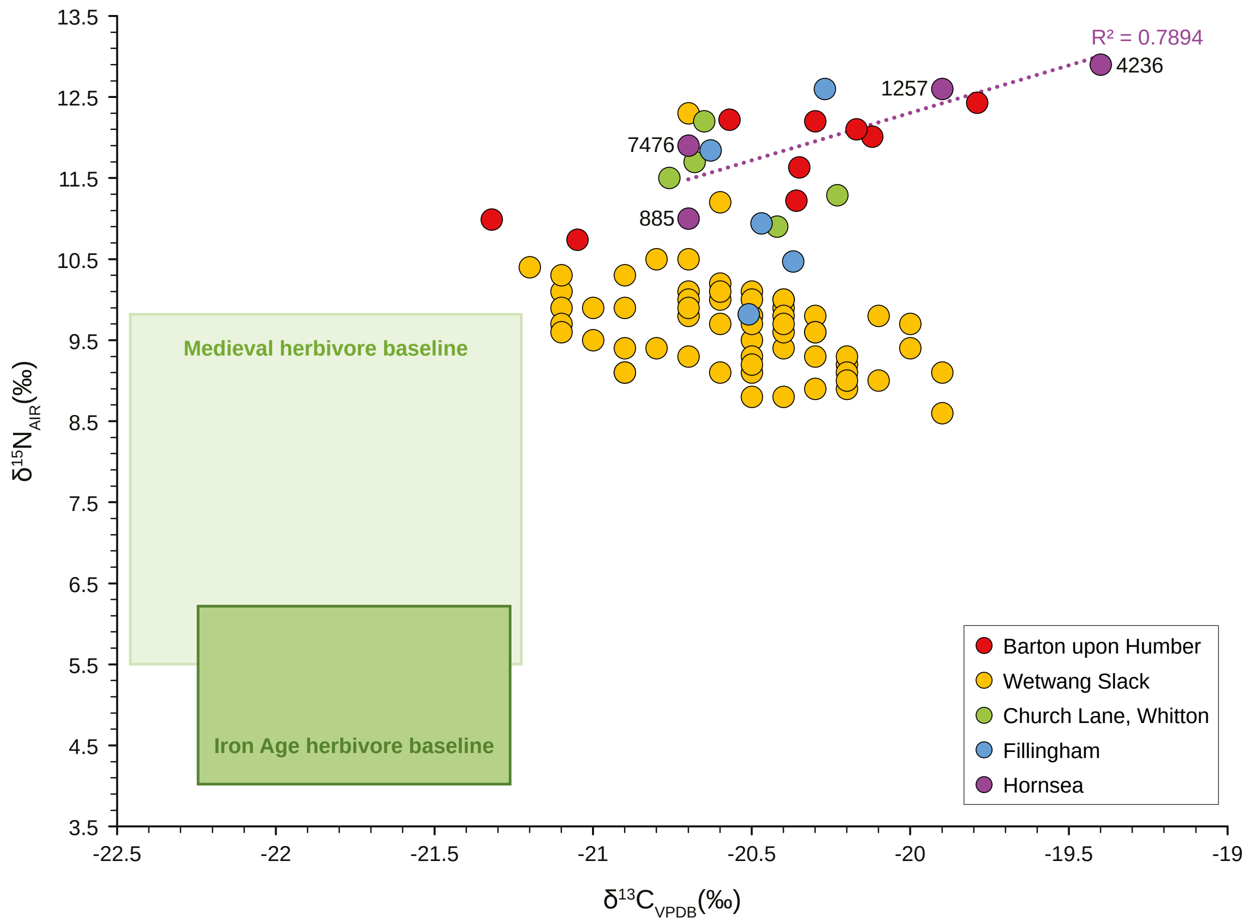


Figure 6.10 $\delta^{13}C$ and $\delta^{15}N$ data shown alongside comparative human and animal data

ultimately derives from the various sulphur contributions from that locale's atmosphere, hydrosphere, lithosphere, and biosphere (Peterson and Fry 1987). The bioavailable sulphur of a region, with its distinctive $\delta^{34}S$ value, is ultimately taken up by plants and used to synthesise amino acids which are, in turn, consumed by animals higher up in the food chain and incorporated into their bodily tissues, including their bone collagen. Studies suggest that there is little meaningful fractionation of sulphur as it ascends the food chain (McCutchan *et al.* 2003; Richards *et al.* 2003); consequently, the $\delta^{34}S$ values of an individual's tooth and bone collagen act as a record of the environment where that individual sourced their food. This data is useful in gaining insight into issues such as mobility and can be especially helpful in revealing 'non-local' or 'migratory' individuals when comparing the $\delta^{34}S$ values of a large number of contemporaneous individuals from a site/given area.

Methods

The carbon, nitrogen and sulphur isotope data from long bone and cranial fragments were produced at Scottish Universities Environmental Research Centre (SUERC) AMS Laboratory, Glasgow during radiocarbon dating, following the method outlined in Dunbar *et al.* (2016).

Results and Interpretations

The isotope data for the individuals from the current investigations are presented in **Table 6.11**, and in **Figures 6.10** and **6.11** alongside comparative data from geographically close populations from Lincolnshire and Yorkshire (Jay and Richards 2006; Jay and Montgomery 2018; Jay *et al.* 2013; Macpherson 2005). All four of the individuals within the current assemblage have $\delta^{13}C$ and $\delta^{15}N$ values consistent with a predominantly

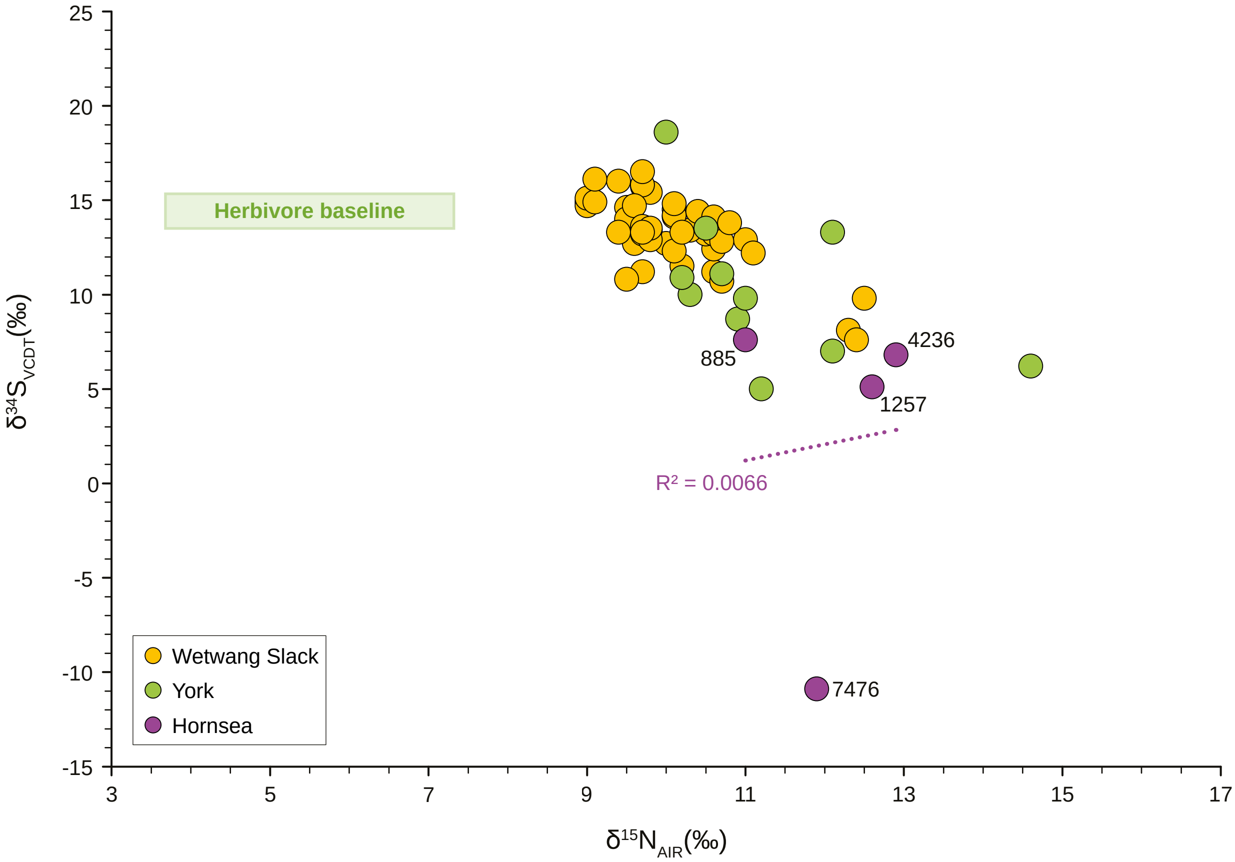


Figure 6.11 $\delta^{34}S$ and $\delta^{15}N$ data shown alongside comparative human and animal data

terrestrial C3 diet. These values are similar to early medieval populations from Lincolnshire and an Iron Age site in East Yorkshire (**Fig. 6.10**). The two Iron Age individuals (885, young adult ?female and 7476, subadult/young adult ??female) have the lowest $\delta^{13}C$ values within the current assemblage and are consistent with other Iron Age individuals from nearby Wetwang Slack. The two Hornsea Project One individuals have relatively high $\delta^{15}N$ values, and plot closely with Wetwang Slack outliers WWH14 and WWH431, whose values have been interpreted as indicative of diets high in animal protein with the possible inclusion of freshwater fish (Jay and Richards 2006). The medieval individual (4236; adult male) has the highest $\delta^{13}C$ and $\delta^{15}N$ values of the assemblage and, when compared to a medieval faunal baseline from nearby Whitton in Lincolnshire, exhibits a ^{13}C and ^{15}N enrichment of 2.3‰ and 5.2‰ respectively (see **Fig. 6.10**). Assuming the Whitton faunal baseline provides a suitable proxy for the animals eaten by the medieval population in the Blow Field region of the Hornsea scheme, the $\delta^{13}C$ and $\delta^{15}N$ values from the adult male (4236) indicate a diet high in animal protein with the inclusion of marine resources. Although the Hornsea dataset is limited in sample size, there is a correlation between increasing $\delta^{13}C$ and $\delta^{15}N$ values from the earliest dated individual (885) to the latest (4236), tentatively suggesting a temporal shift in dietary habits towards the incorporation of larger amounts of marine resources in their diet (**Fig. 6.10**, $R^2 = 0.7894$). This is consistent with the widely observed trend of increasing amounts of marine foods being consumed over time in England (Müldner and Richards 2005; 2007).

The Hornsea Project One individuals have $\delta^{34}S$ values that range from -10.9‰ to +7.6‰ (mean = +2.2 ±8.8, 1 s.d.). It is clear from **Figure 6.11** (see $R^2 = 0.0066$) that there is no correlation between $\delta^{34}S$ and $\delta^{15}N$ values, indicating that there is no relationship between $\delta^{34}S$ values and the consumption of marine foods. Therefore, the range in $\delta^{34}S$ values seen in this assemblage likely reflects geographical differences in where food was sourced rather than differences in what foods were being eaten. It is common for $\delta^{34}S$ values to vary by up to 3‰ within a population (Zazzo *et al.* 2011) and, as can be seen in **Figure 6.11**, the majority of the Hornsea Project One individuals have $\delta^{34}S$ values that cluster within 2.5‰ of each other. As there is no comparative data for the immediate region and the current dataset is small, it is difficult to determine whether these clustered values are consistent with the local area and therefore indicative of continuous occupation over the various periods represented by these individuals, or simply suggestive of food sourced in regions with a similar geology. However, the Hornsea Project One individuals plot lower than the majority of the Wetwang Slack population, with similar values to a small number of Wetwang outliers and medieval individuals from York (**Fig. 6.11**). As the tightly clustered Iron Age population from Wetwang Slack represent a sedentary population that resided on chalk, it is clear that the individuals within the current assemblage did not live in a region dominated by this type of geology. Rather, the relatively low $\delta^{34}S$ values seen in this small group suggests that they lived in a region of predominantly silicate sedimentary rocks, such as Yorkshire. The relatively low $\delta^{34}S$ values observed in the current assemblage also suggests that these individuals resided in an inland location, as coastal regions are expected to produce $\delta^{34}S$ values above +10‰ (Nehlich *et al.* 2011). It is, however, important to note that there is a dearth of $\delta^{34}S$ data from the east coast of England; consequently, no definitive conclusions can be made as to the origins of these individuals.

It is clear that the Iron Age individual from Humberston Road (7476) is an outlier within the group, with a significantly lower $\delta^{34}S$ value than the others, which could be a result of temporally different subsistence practices in the region. The area is marshland, a terrain that has been shown to produce low $\delta^{34}S$ values (Peterson and Fry 1987; Peterson *et al.* 1986) and, therefore, could explain this individual's low $\delta^{34}S$ value. Alternatively, if the tight clustering of the other three individuals within the assemblage is indicative of local origins, it is possible this individual (7476) was a non-local in origin and moved to the area. Negative $\delta^{34}S$ values, such as those seen in this case, are thought to be indicative of a riverine or floodplain environment (Nehlich *et al.* 2011). Consequently, it is possible that while the majority of the individuals within the assemblage lived in an inland location, this young Iron Age individual (7476) was living in a river valley or near wetlands.

Table 6.11 Carbon ($\delta^{13}C$), nitrogen ($\delta^{15}N$) and sulphur ($\delta^{34}S$) data from bulk analysis of bone collagen (data produced by SUERC during radiocarbon dating)

SUERC ID	*Context*	*Period*	*Skeletal element*	*$\delta^{13}C_{VPDB}$ (‰)*	*$\delta^{15}N_{AIR}$ (‰)*	*$\delta^{34}S_{VCDT}$ (‰)*
GU56057	1257	Romano-British	Right femur	-19.9	12.6	5.1
GU56058	885	Iron Age	Parietal vault	-20.7	11.0	7.6
GU56060	4236	Medieval	Left humerus	-19.4	12.9	6.8
GU56061	7476	Iron Age	Clavicle	-20.7	11.9	-10.9

Chapter 7
Environmental Evidence and Radiocarbon Dating

Environmental Evidence

Inés López-Dóriga

Introduction

A **series of bulk samples** for the retrieval of environmental evidence by flotation were taken during the evaluation and mitigation excavations, along with monolith samples for soil description and subsampling for pollen analysis and radiocarbon dating. A small number of samples were also taken for artefact retrieval.

Following on from the assessment of the bulk samples (Wessex Archaeology 2020), the charred plant remains from a selection of samples were analysed further and fully quantified. This report incorporates the results of both the assessment of the plant macrofossils, which have been revised, and the analyses of non-woody plant remains, microfauna (foraminifera and ostracods), molluscs and pollen from a selection of samples (**Table 7.1**). Wood charcoal was not preserved in sufficient quantities to make its analysis meaningful.

Table 7.1 Types of environmental work carried out at the sites

Site	*Plant macrofossils*	*Pollen*	*Microfossils (F + O + Moll)*
Chase Hill Road	✓*	-	-
East Field Road	✓	✓	-
Westfield Farm	✓	-	-
Keelby Road	✓	-	-
Wells Road	✓*	-	-
Station Road	✓	-	-
Humberston Road	✓	-	-
Tetney Lock Road	✓	-	✓
Laceby Beck	✓	-	-
Habrough	✓	-	-
Brooklands	✓*	-	✓

*Assessment (taxa quantified as relative abundance) only.

Materials and Methods

Charred and waterlogged plant remains

More than 500 bulk sediment samples were taken from a range of features including ditches, pits, gullies, postholes, hearths and kilns. The size of the samples was around 20 litres on average. Some of the samples were pre-soaked in a solution of water and hydrogen peroxide to help break up the clayey sediment. The samples were processed by standard flotation methods; the flot retained on a 0.5 mm mesh (evaluation samples) and a 0.25 mm mesh (mitigation samples), residues on a 1 mm mesh. The coarse residue fractions (>5.6 mm) were sorted with the naked eye.

For the assessment, the flots of the samples were scanned and preliminary identifications of dominant or important taxa were noted, and the abundance of remains were qualitatively quantified. The samples had varying presence of bioturbation indicators (roots, modern seeds, mycorrhizal fungi sclerotia, earthworm eggs and insects) and environmental evidence was mostly archaeobotanical and preserved by carbonisation, with 13 samples preserved by waterlogging. Charred and waterlogged material was preserved in variable quantities and varying degrees of preservation were present. Remains of terrestrial, aquatic and marine molluscs, together with ostracods, foraminifera, fish and other small animal bones were present in some of the samples.

The flots and the finer residue fractions (5.6 mm to 1 mm) of the 39 samples for further plant remains analysis were subsampled where appropriate (where there were larger volumes or a high density of charred plant material) for the extraction of remains, using a stereo incident light microscope at magnifications of up to x40. Taxonomic identifications are given using the nomenclature of Stace (1997) for wild plants, and traditional nomenclature, as provided by Zohary *et al.* (2012), for cereals; where data from other authors of the evaluation reports has been incorporated, the nomenclature has been standardised (eg, Cerealia = Triticeae; 'hulled wheat' = *Triticum spelta/dicoccum*). Except where otherwise stated (eg, fragments not anatomically quantifiable), analysis quantifications are given as MNI (minimum number of individuals) and are based on anatomy – generally whole items or the highest type of anatomical fragments: eg, cereals based on Antolín and Buxó (2011; glume bases and legume cotyledons divided by two), or size (hazelnut pericarp fragments, based on Antolín and Jacomet 2015). When only fractions of flots or residues have been fully extracted, the number of remains in the fractions has been multiplied to obtain an estimated total count of items per sample.

Microfauna

John E Whittaker

A total of nine samples were received as a series of flots, with additionally, in three cases, a few specimens extracted from the residues. Analysis sought to examine the flots for foraminifera and ostracods, with regard to ultimately attaining a multidisciplinary environmental reconstruction. The contents of the samples were first put through a nest of sieves (>500, >250, >150 microns) and the residue examined on a picking tray for foraminifera and ostracods under a binocular microscope.

Molluscs

Matt Law

Molluscs from nine samples were identified using a reference collection. Nomenclature follows Anderson (2008) and ecological information about species is derived from Davies (2008), Evans (1972), Kerney (1999), Kerney and Cameron (1979), and Macan (1977). Minimum numbers of individuals (MNI) for each were calculated and while ecological groupings were used, consideration was also given to individual species ecologies.

MNI was calculated by counting whole shells and non-repeating shell elements (usually shell apices and body whorls with mouth) and adding the count of non-repeating elements with the highest total to the number of whole shells. For Bivalvia, counts of individual valves are also presented, and for the species *Bithynia tentaculata*, which has a calcareous operculum with which it can close the mouth of the shell while dormant, counts of both shells and opercula are presented.

Sediments and pollen

Alex Brown

Three monolith samples were described following standard descriptions (Hodgson 1997; Troels-Smith 1955), including Munsell colour, texture, structure and nature of boundaries. Subsamples were taken from the monolith samples for the purpose of pollen analysis and radiocarbon dating on macrofossils (**Tables 7.27** and **7.28**).

The radiocarbon dating results (**Table 7.28**) from a monolith sample (486 and 487 from ditch 4405 at Blow Field) believed to be from the same sequence were internally inconsistent (Poz-126497: 3050±35 BP, 1410–1220 BC and Poz-126653: 450±30 BP, AD 1410–1480), probably due to the submission of different materials (humic fraction of bulk sediment and freshwater snail) less suitable for accurate dating in the absence of suitable plant macrofossils. Although it is the later 15th-century AD result that is consistent with the archaeology and could provide an earliest possible date for the pollen sequence above it, this sequence has not been incorporated into the present publication because of the uncertainty about the data.

Seven samples derive from monolith sample 5006, taken from cut 5139 in ditch 5151 (East Field Road). Pollen was identified and counted using a Meiji MT420 OL biological research microscope. A total of 300 pollen grains was counted for each sub-sample in addition to aquatics and fern spores. One *Lycopodium* tablet was added to enable calculation of pollen concentrations. Pollen and spores were identified to the lowest possible taxonomic level. Plant nomenclature followed Stace (1997) and Bennett *et al.* (1994). Pollen sums are based on total land pollen (TLP) excluding aquatics and fern spores, which are calculated as a percentage of TLP plus the sum of the component taxa within the respective category. Identification of indeterminable grains was according to Cushing (1967). Plant taxa are assigned to one of the following groups (trees and shrubs, dwarf shrubs, cultivated, field weeds, ruderals, herbaceous open/undefined, fern spores and aquatics) based on their most likely ecological affinity, although many plant taxa occur in a range of environmental niches (see Stace 1997 for specific plant taxa).

Results

Charred and waterlogged plant remains

In general, the flots were small, with high numbers of roots and modern seeds that may be indicative of stratigraphic movement and the possibility of contamination by later intrusive elements. Charred material is either rare and poorly preserved or very abundant, while fine (<2 mm) wood charcoal occurs in small amounts and other environmental evidence such as terrestrial and freshwater molluscs is present in most of the samples. A summary version of the assessment of the flots (this incorporates material assessed at different stages of the project and in different reports) is given in each site section (**Tables 7.2**, **7.4, 7.5**, **7.7**, **7.9**, **7.10**, **7.12**, **7.14**, **7.15**, **7.17**. **7.19** and **7.20**). However, about 50% of the total number of samples – those with no plant macroremains – have been excluded from the tables; full details are deposited with the archive. For this publication, more than 90,000 charred plant remains were quantified from the analysed samples, belonging to a minimum number of items equalling 57,000, representing at least 70 different taxa. Full quantification results for the samples selected for analysis are included in tables in each site section (**Tables 7.3**, **7.6**, **7.8**, **7.11**, **7.13**, **7.16** and **7.18**).

Chase Hill Road

Iron Age ditch samples provided relatively poor results, with only small quantities of charred plant remains (**Table 7.2**). The charred plant remains included grains and chaff of cereals (Triticeae) such as barley (*Hordeum vulgare*) and hulled wheat (*Triticum* sp.), identified to spelt (*T. spelta*) in some instances where identification was possible. Remains of wild plants were also present.

East Field Road

Little evidence was recovered from the Iron Age features, with only one sample from a gully providing relatively abundant charred plant remains, which were fully quantified on analysis (with more than 100 remains belonging to about 50 items; see **Table 7.3**), dominated by glume bases of hulled wheat, mostly spelt, and a few grains (some of which may have been sprouted; a detached coleoptile and sprouted embryo were present).

Table 7.2 Summary of assessment plant remain data for Chase Hill Road

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*
Iron Age											
104015	104014	-	S104/1	10	50	++, I	C	C	Triticeae, *Hordeum* sp. grains; *Triticum spelta* glume base	A	Cyperaceae, *Potentilla* sp., *Danthonia decumbens, Urtica urens, Stellaria* sp.; rhizome/tuber
104019	104016	-	S104/2	9	20	++	-	C	*Triticum spelta* glume base	C	*Danthonia decumbens;* rhizome/tuber
104022	104023	-	S104/4	7	25	++	-	-	-	C	rhizome/tuber
104028	104029	6000	S104/3	7	25	+	-	C	*Triticum spelta* glume base	C	Poaceae, rhizome/tuber
6006	6007	6000	110491_6002	20	10	60%, A*, E, I	C	-	Triticeae	C	Poaceae, indet. root
6028	6029	6000	110491_6018	20	30	30%, A	C	C	*Triticum* sp. grain and glume base	-	-
6028	6070	6000	110491_6021	20	60	1%, A, E	C	B	*Triticum* sp. (inc. *spelta)* glume bases	B	Poaceae (*Poa/Phleum*, *Avena* sp. awns), Cyperaceae, *Raphanus raphanistrum*
6028	6072	6000	110491_6022	3	12	40%, A	-	-	-	C	Poaceae, Vicieae
6028	6075	6000	110491_6023	8	60	5%, C	-	-	-	C	Poaceae
6065	6068	6000	110491_6019	1.5	2	2%, C, E	-	-	-	C	*Poa/Phleum*, Polygonaceae (inc. *Persicaria* sp.)
6084	6091	6000	110491_6029	40	100	60%, A, E, I	C	-	*Triticum* sp., *Hordeum vulgare*	C	Poaceae *(Bromus* sp., *Lolium/Festuca*), cf. Cyperaceae
6085	6087	6100	110491_6028	27	15	50%, C, E	C	-	Triticeae	-	-

Key: Scale of abundance (WA): A* = 30-99, A = >10, B = 9-5, C = <5; Bioturbation proxies: Roots (% or PCAS scale of abundance: +: rare; ++: occasional), Uncharred seeds (WA scale of abundance), E = earthworm eggs, I = insects.

Sparser charred remains were retrieved from an early Romano-British ditch (**Table 7.4**), a medieval furrow and an undated ditch; occasional plant remains preserved by waterlogging were also retrieved from a palaeochannel of uncertain chronology.

Westfield Farm and Blow Field

The plant remains in samples of Iron Age or Romano-British chronology from this site are relatively sparse (**Table 7.5**). A sample from an early Romano-British ditch fill (20012) had a slightly more abundant assemblage that was fully quantified (**Table 7.6**). This was characterised by the minor presence of barley and hulled wheat (again identified to spelt) with more abundant and diverse remains of potential weeds.

A relatively rich assemblage was also retrieved from a late Romano-British ditch (99907; **Table 7.5**) where spelt again had a minor presence, with a larger diversity of remains of wild plants.

The generally better-preserved charred plant remains recovered from Blow Field are largely consistent with a medieval or post-medieval chronology (three samples analysed, **Table 7.6**). These are very similar, being dominated by the remains of naked wheat (*T. aestivum/turgidum*) and with some barley and oats, and possible rye (*Secale cereale*, just a few rachis internodes in one of the assessed samples; see **Table 7.5**). Two wheat rachis internodes were retrieved, allowing for the identification of the wheat species to *T. aestivum* (bread wheat). Although no *Avena* lemma bases were present, necessary for the species identification, the large size of most of the grains suggests the cultivated taxon. Poorly preserved remains of large-seeded legumes were also preserved, including at least broad bean (*Vicia faba*). Another crop identified was flax or linseed (*Linum usitatissimum*).

Table 7.3 Analysis results of charred plant remains from East Field Road

Feature type			*Gully*
Feature			5062
Context			5038
Sample			110491_5009
Vol (l)			20
Flot size (ml)			30
Sub-sample			50% <5.6/4mm residue
Bioturbation (roots %, uncharred seeds (scale of abundance, C=<5), E = earthworm eggs)			60%, C, E
Fragmentation index (MNI/NR)			0.48
Density (MNI/l)			3
Preservation			Poor
Scientific name	*Common name*	*Plant part*	*Count*
Wild herbaceous plants			
Ranunculus sp.	Buttercup	seed	1
Raphanus raphanistrum	Wild radish	capsule	1
Cereals			
Avena sp.	Oat	awn fragment	5
Hordeum vulgare	Barley	rachis segment	1
Triticum spelta	Spelt	spikelet	6
Triticum sp.	Wheat	spikelet	40
Triticum sp.	Wheat	rachis segment fragment	12
Triticeae	Cereal	detached germinated embryo	1
Triticeae	Cereal	coleoptile	1
Indet.			
Indeterminata		seed	1
NR			113
MNI			54

Plant remain numbers by type and taxon are given as MNI except otherwise stated. NR = number of remains

Similar but smaller assemblages were retrieved from other samples of medieval/post-medieval chronology, and the fill of the moat (30093; **Table 7.5**) had abundant remains preserved by waterlogging, including seeds of elder (*Sambucus* sp.) and black/raspberry (*Rubus* sp.) and herbaceous taxa such as mint family (Lamiaceae), sedges, buttercups, burnet-saxifrage (*Pimpinella* sp.), cinquefoil, rushes and trefoil/medick/clover.

Keelby Road

The early Romano-British samples provided low to moderate amounts of poorly preserved charred plant remains (**Table 7.7**). The plant taxa include wheat (spelt when identified to species level) and barley, as well as some remains from wild plants, such as sedges, docks, wild grasses, vetches and violet.

The plant remains in some of the late Romano-British samples were particularly rich and well-preserved, and were subsequently analysed (**Table 7.8**); in addition to spelt, barley and possibly oats, other cultivated species present in the assemblage were garden pea and broad bean. Some of the cereal grains were sprouted. An unusual find of a possible clove from wild garlic (*Allium* cf. *vineale*) was found in one of the samples. A diversity of seeds of wild plants were also present.

Wells Road

Abundant plant remains preserved by waterlogging were recovered from the Romano-British (and undated) samples (**Table 7.9**), comprising short-lived plant material.

Table 7.4 Summary of assessment plant remain data for East Field Road

Feature	Context	Group	Sample	Vol (l)	Flot (ml)	Bioturbation	Charred grain	Charred chaff	Charred cereal notes	Charred other	Charred other notes	Waterlogged
Early Romano-British												
5139	5138	5151	110491_5004	16	15	75%, A, E	-	B	*Triticum* sp. (inc. *spelta*) glume bases	C	*Plantago lanceolata*, Cyperaceae	-
Furrow												
20183	20184	5153	110498_20181	38	15	80%, A, E, F	C	-	Triticeae	C	Poaceae	-
Undated												
5076	5077	-	110491_5020	40	20	80%, A*, I	-	C	*Triticum* sp. glume base	-	-	-
102049	102037	-	S/102/1	14	100	++, B	-	-	-	-	-	+

Key: Scale of abundance (WA): A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (% or PCAS scale of abundance: ++: occasional), uncharred seeds (WA scale of abundance), E = earthworm eggs, I = insects.

Station Road

A few isolated charred plant remains of little significance were retrieved from the samples from Iron Age and early Romano-British contexts on this site (**Table 7.10**).

By contrast, most of the samples from late Romano-British deposits such as spreads, hearths, ditches and pits, contained very rich, well-preserved and diverse plant remains. A selection of these samples was analysed and fully quantified (**Table 7.11**), the remains comprising cereal grains, chaff and wild plant seeds. The taxa include grains and chaff of wheat, mostly identified to spelt, barley, and seeds of other crops such as broad bean and flax/linseed. In addition, a large and diverse range of wild plant taxa were present. An undated sample from the evaluation (feature 38035; **Table 7.10**) probably belongs to this phase, judging by the very similar range of taxa.

Humberston Road

The Iron Age and Romano-British samples provided a rich charred plant remain assemblage, of which seven samples were analysed (two Iron Age, five Romano-British; see **Table 7.13**). A number of samples provided similar but sparser remains that were not quantified (**Table 7.12**).

The assessed samples were dominated by cereal chaff, with a moderate amount of probably wild plant seeds and a small number of cereal grains. The dominant cereal taxa amongst the analysed assemblages are hulled wheats, identified to spelt when preservation allowed precise identification. A grain of naked wheat was present in one of the samples. Some of the Romano-British spelt wheat grains were sprouted. The next major domestic taxa were barley and possibly cultivated oats, although this is uncertain as it was based only on the size of the grains rather than on the presence of lemma bases, which is the key criterion. Several large-seeded legume seeds were also found, including one positively identified to broad bean. Flax was present as a seed and a capsule fragment. Hazel nutshell fragments and a seed of apple/pear (*Malus/Pyrus*) were also identified. The wild, probably weedy, taxa included a diversity of grasses, sedges and other species.

Tetney Lock Road

The medieval and undated samples provided little charred plant remain evidence (**Table 7.14**).

Laceby Beck

No charred plant remains were retrieved from early prehistoric or early Romano-British features, and most of the recovered material in this area came from Anglo-Saxon features, which contained both waterlogged and charred plant remains (**Table 7.15**).

A rich assemblage of remains preserved by waterlogging was recovered from undated ditch 540, including plant taxa such as buttercups, rushes, sedges, pondweed, goosefoot,

Table 7.5 Summary of assessment plant remain data for Westfield Farm and Blow Field

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Sub-sample*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*	*Waterlogged*
Iron Age													
4803	4804	-	110491_429	10	15	-	40%, A*, E	C	-	*Hordeum vulgare*	C	Poaceae	-
20021	20022	8289	110498_20003	40	15	-	80%, A*, E	C	-	*Hordeum vulgare*	C	Vicieae	-
Iron Age/Romano-British													
98016	98015	-	S98/ 3	7	30	-	++	C	C	*Triticum* sp., Triticeae grains; Triticum spelta glume/ spikelet fork	B	Poaceae, *Anthemis cotula*; rhizome/tuber	-
98020	98023	-	S98/ 6	7	8	-	+, C	C	B	*Triticum* sp. grains; Triticum spelta glume/spikelet fork	C	*Danthonia decumbens*, Cyperaceae	-
99009	99008	-	S99/1	14	90	-	++, B	C	A	*Triticum spelta* glume/spikelet fork, Triticeae grain	C	*Rumex* sp., *Danthonia decumbens*; rhizome/tuber, monocot stem	-
Early Romano-British													
4503	4504	-	110491_431	10	10	-	90%, C, E	C	-	Triticeae	C	Poaceae, Cyperaceae	-
4503	4507	-	110491_434	10	15	-	50%, A, E	C	-	*Triticum* sp., *Hordeum vulgare*, Triticeae	-	-	-
Romano-British													
8021	8022/8023	8315	110491_455	16	10	-	80%, A, E	C	-	Triticeae	-	-	-
8021	8022	8315	110491_485	55	4	-	75%, C	C	-	*Triticum aestivum/turgidum*, Triticeae	-	-	-
8217	8218	8336	110491_474	28	15	-	90%, A*, E	C	-	*Triticum* sp.	-	-	-
Late Romano-British													
4601	4603	8275	110491_482	28	10	-	80%, A*, E	-	-	-	C	Asteraceae	-
8046	8047	8291	110491_456	10	4	-	70%, A	C	-	*Triticum* sp.	-	-	-
8175	8177	8293	110491_465	20	40	-	40%, C	C	-	*Triticum* sp.	C	Vicieae, Poaceae	-
8167	8168	8318	110491_459	40	40	-	75%, B, E	-	-	-	C	*Poa/Phleum*, *Potentilla* sp.	-
99007	99006	8340	S99/2	8	120	-	++, I, C	B	C	Triticeae, *Triticum* sp. grains; *Triticum spelta* glume/ spikelet fork	A	*Rumex* sp., *Ranunculus* subgenus *Ranunculus*, Poaceae, Fabaceae, *Sparganium* sp., Cyperaceae, *Danthonia decumbens*, *Pisum/ Vicia* sp.; rhizome/tuber, monocot stem	-
20030	20031	8340	110498_20005	35	25	-	60%, A**, E	C	-	*Triticum* sp.	C	Poaceae	-
Medieval													
96008	96009	4059	S96/ 2	9	30	-	++, I	C	-	*Triticum* sp.	-	-	-
96008	96009	4059	S96/ 3	8	15	-	+, A		-	-	C	Fabaceae	-
300008	300010	300203	110498_200001	35	35	-	70%, A*	A	-	*Triticum* cf. *aestivum/ turgidum*, *Hordeum vulgare*, Triticeae	-	-	-
4508	4510	-	110491_436	8	4	-	70%, A	C	-	*Triticum* sp. (inc. *aestivum/ turgidum*), *Hordeum vulgare*	-	-	-
4046	4047	8246	110491_463	40	40	-	5%, C	C	-	*Hordeum vulgare*, *Triticum aestivum/turgidum*	-	-	-
300054	300052	300202	110498_200007	34	35	-	80%, A*, E, *Cecilioides acicula* (B)	A	-	*Triticum* cf. *aestivum/ turgidum*, *Hordeum vulgare*, *Avena* cf. *sativa*, Triticeae	-	-	-
4209	4210	4269	110491_412	8	25	-	30%, C	B	-	*Triticum aestivum/turgidum*, *Hordeum vulgare*	B	Vicieae (inc. large seeded), Poaceae, Cyperaceae, indet.	-
4215	4216	4270	110491_413	10	4	-	20%, C	B	-	*Triticum aestivum/turgidum*, *Hordeum vulgare* (C)	-	-	-
4217	4218	4271	110491_414	10	10	-	60%, A*	C	-	*Triticum* sp., Triticeae	-	-	-
4036	4038	8247	110491_401	19	10	-	60%, A***	B	-	*Triticum aestivum/turgidum*	C	Poaceae	-
97027	97049	8247	S97/ 2	7	10	-	++, C	A	-	*Triticum* sp. (inc. cf. *aestivum*), *Hordeum* sp., Triticeae	A	Poaceae, *Vicia* sp., *Pisum/ Vicia* sp., *Anthemis cotula*, *Polygonum aviculare*; rhizome/ tuber	-

Feature	Context	Group	Sample	Vol (l)	Flot (ml)	Sub-sample	Bioturbation	Charred grain	Charred chaff	Charred cereal notes	Charred other	Charred other notes	Waterlogged
97027	97051	8247	S97/ 3	7	15	-	++, I, C	A	C	*Triticum* sp. (inc. cf. *aestivum*), Triticeae grains; *Triticum aestivum* rachis fragment	A	Poaceae, *Avena* sp., *Anthemis cotula*, *Linum usitatissimum*, *Vicia* sp., *Pisum/Vicia* sp.	-
97024	97034	8257	S97/ 1	8	70	-	++, C	A*	-	*Triticum* sp. (inc. cf. *aestivum*)	C	*Avena* sp., *Plantago lanceolata, Polygonum aviculare, Pisum/Vicia* sp.	-
300088	300087	-	110498_200009	5	60	-	10%, C, I, *Cecilioides acicula* (A)	A	C	*Triticum aestivum/turgidum* and *Hordeum vulgare* grains, *Secale cereale* rachis segment	-	-	-
Medieval/post-medieval													
95007	95006	-	S95/ 1	7	30	-	++	C	-	*Triticum* sp. (in. cf. *aestivum*), Triticeae	C	*Anthemis cotula*	-
95014	95015	-	S95/ 2	6	25	-	++	C	-	*Triticum* cf. *aestivum*, Triticeae	-	-	-
95028	95026	-	S95/ 6	9	25	-	++	C	-	*Hordeum* sp., *Triticum* cf. *aestivum*	B	Poaceae, *Vicia* sp., *Ranunculus* subgenus *Ranunculus*, Asteraceae, rhizome/tuber	-
98047	98043	-	S98/ 2	8	50	-	+	B	-	*Triticum* sp. (inc. cf. *aestivum*), *Hordeum* sp., Triticeae	A*	Cyperaceae, *Anthemis cotula*, Poaceae, *Bromus* sp., *Danthonia decumbens*, *Avena* sp., *Vicia* sp.; rhizome/tuber	-
98050	98070	-	S98/ 4	8	50	-	++, I, C	A*	C	*Triticum* cf. *aestivum*, *Hordeum* sp., Triticeae grains; Triticum spelta glume/spikelet fork	A*	Poaceae, *Ranunculus* subgenus *Ranunculus, Avena* sp., *Vicia* sp., *Pisum/Vicia* sp., Characeae, Cyperaceae; rhizome/tuber	-
300089	300093	-	110498_200010	35	1900	12.50%	1%, E	-	-	-	-	-	A* - *Sambucus* sp., Lamiaceae, Cyperaceae, *Ranunculus* sp., *Pimpinella* sp., *Potentilla* sp., *Juncus* spp., Trifolieae, *Rubus* sp.
Post-medieval													
8186	8187	8264	110491_471	40	30	-	80%, A***, E	-	-	-	C	Asteraceae	-
300015	300017	-	110498_200002	27	30	-	80%, A*, E	A	-	*Triticum aestivum/turgidum*, *Hordeum vulgare*, *Avena* cf. *sativa,* Triticeae	-	-	-
300048	300049	300201	110498_200005	36	60	-	80%, A*, I, *Cecilioides acicula* (B)	B	-	*Triticum* cf. *aestivum/ turgidum*, *Hordeum vulgare*, *Avena* cf. *sativa,* Triticeae	-	-	-
300097	300098	300204	110498_200011	35	15	-	30%, A**, E	C	-	*Triticum* cf. *aestivum/ turgidum*, *Hordeum vulgare*, Triticeae	-	-	-
Undated													
20103	20104	-	110498_20100	40	110	-	90%, A, E, I, F	-	-	-	C	*Plantago lanceolata*	-
95008	95009	-	S95/ 5	9	20	-	++	C	-	*Triticum* sp., Triticeae	C	Asteraceae	-
95012	95013	-	S95/ 4	7	30	-	++, I	C	-	*Hordeum* sp., Triticeae	C	*Avena* sp.	-
95016	95017	-	S95/ 3	7	20	-	++	C	-	*Triticum* sp., *Hordeum* sp., Triticeae	C	*Ranunculus* subgenus *Ranunculus*	-
98052	98075	-	S98/ 5	8	25	-	+, A, I	B	-	*Triticum* sp., Triticeae	C	Poaceae, rhizome/tuber	-
98055	98060	-	S98/ 7	7	30	-	+, B	A	C	*Triticum* sp. (inc. cf. *aestivum*), *Hordeum* sp., Triticeae grains; Triticum spelta glume/spikelet fork	A	Poaceae, *Plantago lanceolata*, Cyperaceae, *Ranunculus* subgenus *Ranunculus*, *Vicia* sp.; rhizome/tuber	-
99011	99010	-	S99/3	8	80	-	+, I, C	B	A	Triticeae, *Triticum* sp. (inc. cf. *aestivum*) grains; *Triticum spelta* glume/spikelet fork	B	*Ranunculus* subgenus *Ranunculus*, *Luzula* sp., *Sparganium* sp., Cyperaceae; rhizome/tuber, monocot stem	-
300061	300062	-	110498_200008	18	35	-	60%, A**	C	-	*Triticum* sp., Triticeae	-	-	-

Key: Scale of abundance (WA): A*** = exceptional, A** = 100+, A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (% or PCAS scale of abundance: +: rare; ++: occasional), uncharred seeds (WA scale of abundance), F = mycorrhizal fungi sclerotia, E = earthworm eggs, I = insects.

Table 7.6 Analysis results of charred plant remains from Westfield Farm and Blow Field

Phase			*Early Romano-British*	*Medieval*		*Post-medieval*
Feature type			Ditch	Gully 8251	Pit	Spread
Feature			20012	4060	4508	-
Context			20013	4061	4511	20027
Sample			110498_20000	110491_483	110491_437	110498_20004
Vol (l)			36	60	10	40
Flot size (ml)			30	5	35	100
Sub-sample			40% <5.6/4mm residue	45% <5.6/4mm residue	-	65% <5.6/4mm residue
Bioturbation (roots %, uncharred seeds, scale of abundance: A = 30–99, A = >10, B = 9–5, C = <5, E = earthworm eggs)*			80%, C, E	2%	80%, A, E	90%, A*, E
Fragmentation index (MNI/NR)			0.64	0.62	0.69	0.63
Density (MNI/l)			2	1	11	1
Preservation			Heterogeneous	Fair	Fair	Heterogeneous
Scientific name	*Common name*	*Plant part*	*MNI*	*MNI*	*MNI*	*MNI*
Wild herbaceous plants						
Chenopodium sp.	Goosefoot	seed	-	-	1	-
Chenopodiaceae	Goosefoot family	seed	1	-	2	-
Spergula sp.	Corn spurrey	seed	-	-	-	1
Caryophyllaceae	Pink family	seed	1	-	-	-
Polygonum sp.	Knotgrass	seed	1	-	-	-
Rumex sp.	Docks/sorrel	seed	1	-	-	-
Raphanus raphanistrum	Wild radish	capsule	-	1	-	-
Primulaceae	Primrose/pimpernel family	seed	-	-	1	-
Rosaceae	Rose family	seed	1	-	-	2
Trifoliae	Trefoil/medick/clover	seed	2	-	1	-
Odontites vernus	Red bartsia	seed	-	-	-	2
Anthemis arvensis tp.	Corn chamomile	seed	5	-	-	-
Anthemis cotula tp.	Stinking mayweed	seed	-	-	12	8
Juncus sp.	Rush	seed	1	-	-	-
Carex sp.	Sedge	seed	1	-	-	-
Cyperaceae	Sedge	seed	-	1	-	2
Lolium/Festuca	Rye-grass/fescue	grain	2	-	-	-
Poa/Phleum	Meadow grass/cat's tail	grain	1	-	-	1
Arrhenatherum elatius var. bulbosum	False oat-grass or onion couch	bulb	1	-	-	-
Avena/Bromus	Oats/brome	grain	-	-	1	-
Poaceae	Grasses	grain	5	-	13	4
Poaceae	Grasses	culm fragments	1	-	1	-
Other crops						
Vicia sp.	Vetch	seed	-	-	3	-
Vicia faba	Broad bean	seed	-	1	-	-
Vicieae	Vetch/grass pea	seed	-	15	4	-
Linum usitatissimum	Flax	seed	-	-	1	-
Cereals						
Avena sp.	Oat	grain	4	1	5	3
Avena sp.	Oat	awn fragment	2	-	1	-
Hordeum vulgare	Barley	grain	7	6	32	4
Hordeum vulgare	Barley	rachis segment	1	-	-	-

Scientific name	*Common name*	*Plant part*	*MNI*	*MNI*	*MNI*	*MNI*
Triticum aestivum/turgidum	Naked wheat	grain	-	45	19	4
Triticum aestivum	Bread wheat	rachis internode	-	-	1	-
Triticum spelta	Spelt	grain	4	-	-	-
Triticum sp.	Wheat	grain	6	-	-	-
Triticum sp.	Wheat	spikelet	4	-	1	-
Triticeae	Cereal	grain	3	16	12	5
Indet.						
Indeterminata		fruit	-	1	-	-
Indeterminata		root	1	-	-	-
Indeterminata		seed	3	-	1	1
Indeterminata		tuber	2	-	-	-
NR			86	139	161	57
MNI			55	86	111	36

Plant remain numbers by type and taxon are given as MNI except otherwise stated. NR = number of remains

stonewort, elder composite, pink and mint families, fumitory (*Fumaria* sp.), plum/sloe/damson (*Prunus* sp.), blackberry/raspberry and umbellifers.

The charred assemblages were best preserved from pits, spreads and a root disturbance. Seven samples from these features were fully analysed and quantified (**Table 7.16**). The analysis included a sample from pit 475 where charred plant remains were directly radiocarbon dated as Anglo-Saxon (AD 420–570).

The samples were dominated by the remains of cereal grains, mostly barley, which could be identified to the dense-eared hulled variety in two of the samples. Wheat (both naked and hulled) and possibly oats and garden pea are cultivated crops with a minor presence.

Habrough

With the exception of a few charred plant remains from an Iron Age or early Romano-British ditch (**Table 7.17**), all the other samples from this site have provided notably rich deposits of plant macroremains of medieval to post-medieval date associated with the moated settlement. Eight of these samples have been fully analysed and quantified (**Table 7.18**).

The medieval assemblage is dominated by the remains of cereal grains, mostly naked wheat (identified to bread wheat due to the presence of rachis internodes). Also cultivated was barley, probably oat, large-seeded legumes (including both broad bean and garden pea) and flax/linseed. The wild plant remains included seeds from a variety of taxa. Shell fragments of hazel (*Corylus avellana*) nut were also present.

One of the samples contained a 10 mm fragment of material with a heterogeneously porous matrix with some air bubbles, shiny areas and a surface on one of the sides, features which according to the experimental methodology devised by González-Carretero *et al.* (2017) suggest this could have been part of a porridge-like food accidentally carbonised.

Abundant plant remains preserved by waterlogging were recovered from a moat (3324; **Table 7.17**), including seeds from taxa such as pondweed (*Potamogeton* sp.), horned pondweed (*Zannichellia palustris*), buttercups and water-crowfoot (*Ranunculus* spp.), rushes (*Juncus* spp.), sedges, orache (*Atriplex* sp.), parsley-piert (*Aphanes arvensis* agg.), the mint family, dog violet (*Viola* sp.), Asteraceae, the pink family (Caryophyllaceae), the umbellifer family (Apiaceae), cinquefoil, docks/sorrel (*Rumex* sp.), henbane (*Hyoscyamus niger*), elder and hawthorn (*Crataegus* sp.). A range of seeds from wild plants preserved

Table 7.7 Summary of assessment plant remain data for Keelby Road

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*
Early Romano-British											
865	866	2316	110498_846	38	25	70%, B, E	C	-	*Hordeum vulgare,* Triticeae	C	Poaceae, *Avena* sp. awn
2121	2185	2326	110491_20141	20	30	10%, A	C	-	*Triticum* sp.	-	-
2157	2159	2326	110491_20128	9	4	5%, B	C	-	*Triticum* sp., Triticeae	C	*Poa/Phleum*
2312	2311	2326	110491_20147	36	15	10%, C, E	C	-	Triticeae	-	-
849	850	2330	110498_842	40	10	80%, B, E, I	C	-	*Triticum* sp., *Hordeum vulgare*, Triticeae	C	Vicieae, Cyperaceae, Poaceae
851	852	2330	110498_851	8	10	80%, C, E	-	-	-	C	*Arrhenatherum elatius* subsp. *bulbosum*
861	862	-	110498_844	36	20	70%, A, E, I, F	C	B	*Hordeum vulgare* grains, *Triticum* sp. glume bases	C	Cyperaceae, Polygonaceae, Poaceae, *Ajuga* sp., Poaceae roots
867	868	-	110498_847	34	30	80%, E, I	C	C	*Triticum* sp. (inc. *spelta)* grains and glume bases	A	Poaceae, *Avena* sp. awn, Asteraceae, Cyperaceae, Vicieae, *Viola* sp., indet.
873	874	-	110498_848	34	20	80%, B, E, F	C	-	*Triticum* sp.	C	Poaceae
Late Romano-British											
2034	2033	2313	110491_20108	17	20	30%, C, E	C	-	Triticeae	-	-
863	864	2317	110498_845	37	35	60%, C, E, I.	A*	-	*Triticum* sp., *Hordeum vulgare*, Triticeae	C	Poaceae, Vicieae
858	860	2318	110498_843	40	15	80%, B, E, I	C	B	*Triticum* sp. grains and glume bases	C	Cyperaceae, Polygonaceae, Poaceae root
884	885	2319	110498_849	40	30	80%, A*, E, I	B	C	*Triticum* sp. grains and glume bases	C	Poaceae, Cyperaceae
2009	2010	2319	110491_20101	20	10	10%, C, I	C	-	*Triticum* sp., *Hordeum vulgare*, Triticeae	C	Poaceae
68018	68021	2320	S68/3	10	40	++, I, C	C	C	*Triticum* sp. grain; *T. spelta* glume bases/ spikelet forks	B	*Rumex* sp., *Carex viridula* ssp. *oedocarpa, Eleocharis* sp., rhizome/tuber, Poaceae awn
2144	2142	2322	110491_20125	9	10	70%, C	C	-	Triticeae	-	-
68013	68015	2322	S68/4	8	30	++, C	C	-	*Triticum* sp., Triticeae grains	A	cf. *Bromus* sp., Poaceae, *Danthonia decumbens, Isolepis* sp., *Ranunculus flammula, Potentilla* sp., rhizome/tuber
68013	68017	2322	S68/5	10	50	++	C	C	*Triticum* sp., *Hordeum* sp. grain; *T. spelta* glume base/spikelet fork	B	cf. *Bromus* sp., rhizome/tuber
2236	2237	2332	110491_20148	7	10	30%, A	C	-	*Triticum* sp.	C	*Plantago lanceolata*
2250	2249	2334	110491_20149	20	15	75%, A*, E	C	A	*Triticum* sp. glume bases and grains, Triticeae grain	C	Poaceae
68007	68008	2342	S68/2	8	50	++, I	C	C	*Triticum* sp. grain; *T. spelta* glume bases/ spikelet forks	C	*Rumex* sp., Poaceae, cf. *Sparganium* sp., rhizome/tuber
2028	2032	2343	110491_20107	9	30	2%, A, I	C	-	Triticeae	-	-
2030	2043	-	110491_20111	9	10	80%, C, E	C	-	Triticeae	-	-
2094	2095	-	110491_20117	8	10	80%, C, E	-	-	-	C	Vicieae
Furrow											
900	901	-	110498_850	34	20	80%, C, E	C	-	*Hordeum vulgare*	-	-
Undated											
847	848	-	110498_841	10	10	80%, B, E	C	A	*Triticum* sp. grain, glume bases and spikelet forks	C	Asteraceae, *Poa/Phleum*, Polygonaceae, Poaceae root
912	913	-	110498_852	28	10	70%, C	C	C	*Triticum* sp., Triticeae grains, *Triticum* sp. glume bases	C	Roots/tubers, *Poa/Phleum*
68009	68010	-	S68/1	10	40	++, C	C	B	*Triticum* sp., Triticeae grains; *Triticum spelta* glume bases/spikelet forks	B	Fabaceae, Poaceae, *Danthonia decumbens, Rumex acetosella, Rumex* sp., rhizome/tuber
69008	69006	-	S69/1	14	60	++, I	B	B	*Hordeum* sp., *Triticum* sp., Triticeae grains; *T. spelta* glume bases/spikelet forks	A	*Vicia* sp., *Corylus avellana, Danthonia decumbens, Carex viridula* ssp *oedocarpa, Eleocharis* sp. Cyperaceae, cf. *Pisum sativum*, cf. *Sparganium* sp., monocot stem, rhizome/tuber
69016	69015	-	S69/2	13	55	++	C	C	*Triticum spelta* glume bases/spikelet forks	C	*Vicia* sp., Cyperaceae, rhizome/tuber

Key: Scale of abundance (WA): A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (% or PCAS scale of abundance: ++: occasional), uncharred seeds (WA scale of abundance), F = mycorrhizal fungi sclerotia, E = earthworm eggs, I = insects.

Table 7.8 Analysis results of charred plant remains from Keelby Road

Feature type			*Pit*	*Pit 2133*	*Spread*	*Ditch 2334*	*Ditch 2335*
Feature			845	2123	2027	2252	2174
Context			846	2124	2031	2251	2173
Sample			110498_840	110491_20121	110491_20105	110491_20150	110491_20135
Vol (l)			18	8	16	9	10
Flot size (ml)			20	10	50	30	40
Sub-sample			-	70% <5.6/4mm residue	No 5.6/4mm residue	35% <5.6/4mm residue	No 5.6/4mm residue
Bioturbation (roots %, uncharred seeds, scale of abundance: A = 30-99, A = >10, B = 9-5, C = <5, E = earthworm eggs)*			80%, C, E, F	10%, B, E	5%, C, E	40%, B	2%, C, E
Fragmentation index (MNI/NR)			0.48	0.30	0.44	0.48	0.49
Density (MNI/l)			13	19	1	20	15
Preservation			Fair	Heterogeneous	Heterogeneous	Poor	Heterogeneous
Scientific name	Common name	Plant part	MNI	MNI	MNI	MNI	MNI
Wild herbaceous plants							
Ranunculus sp.	Buttercup	seed	1	-	1	-	-
Stellaria sp.	Stitchwort	seed	-	-	-	1	-
Polygonum sp.	Knotgrass	seed	-	1	-	-	-
Rumex sp.	Docks/sorrel	seed	-	-	1	-	-
Trifoliae	Trefoil/medick/clover	seed	-	-	-	-	1
Plantago lanceolata	Ribwort plantain	seed	-	-	1	-	-
Odontites vernus	Red bartsia	seed	-	1	-	2	-
Centaurea sp.	Cornflower/knapweed/star thistle	seed	-	-	-	-	1
Anthemis cotula tp.	Stinking mayweed	seed	-	-	-	1	-
Juncus sp.	Rush	seed	1	-	-	-	-
Cyperaceae	Sedge	seed	-	1	2	1	1
Lolium/Festuca	Rye-grass/fescue	grain	-	2	3	1	-
Poa/Phleum	Meadow grass/cat's tail	grain	-	-	-	1	-
Avena fatua	Common wild oat	grain	-	1	-	-	-
Danthonia decumbens	Heath grass	grain	-	-	2	-	-
Poaceae	Grasses	grain	4	-	2	4	-
Poaceae	Grasses	culm fragments	-	-	2	-	1
Allium sp.	Garlic/leek/chive/onion/ramson	clove	-	-	1	-	-
Other crops							
Pisum sativum	Garden pea	hilum	-	-	-	1	-
Vicia faba	Broad bean	seed	3	-	-	-	1
Vicieae	Vetch/grass pea	seed	2	4	-	3	-
Fabaceae	Legume family	seed fragment	-	-	-	2	-
Cereals							
Avena sp.	Oat	grain	4	-	-	-	-
Avena sp.	Oat	awn fragment	-	12	-	2	2
Hordeum vulgare	Barley	grain	-	9	-	2	3
Triticum spelta	Spelt	grain	-	81	-	6	3 (1)
Triticum spelta	Spelt	spikelet	19	17	-	13	13
Triticum sp.	Wheat	grain	6	8	1	-	1
Triticum sp.	Wheat	spikelet	186	-	1	133	116
Triticum sp.	Wheat	rachis segment fragment	5	28	-	10	14
Triticeae	Cereal	grain	5	13	-	12	3
Triticeae	Cereal	detached embryo	-	1	-	-	5

Scientific name	*Common name*	*Plant part*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*
Triticeae	Cereal	detached germinated embryo	-	-	-	2	-
Triticeae		Cereal	coleoptile	3	4	-	-
Indet.							
Indeterminata		root	-	-	15	-	-
Indeterminata		seed	1	-	4	1	-
Indeterminata		stem	1	-	-	-	-
Indeterminata		tuber	-	-	3	-	-
NR			479	507	39	381	301
MNI			231	150	17	183	146

Plant remain numbers by type and taxon are given as MNI except otherwise stated. () indicates the MNI of germinated grains. NR = number of remains

Table 7.9 Summary of assessment plant remain data for Wells Road

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Sub-sample*	*Waterlogged*
Early Romano-British							
611	612	-	110498_600	34	250	125 ml	A** – *Juncus* spp., *Ranunculus* spp., Caryophyllaceae, Cyperaceae, *Sambucus* sp., Asteraceae, *Viola* sp., *Potentilla* sp., *Potamogeton* sp., Apiaceae, *Rubus* sp.
613	617	-	110498_601	10	400	125 ml	A** – Cyperaceae, *Juncus* spp., Apiaceae, Chenopodiaceae, Asteraceae, *Ranunculus* spp., *Alisma* sp., Caryophyllaceae, *Cochlearia* sp., *Sambucus* sp., *Viola* sp., *Solanum* sp., *Potamogeton* sp., *Sparganium erectum*
618	620	-	110498_602	10	400	125 ml	A* – Cyperaceae, *Sambucus* sp., *Ranunculus* sp., *Juncus* spp., *Alisma* sp., Lamiaceae, *Potamogeton* sp., *Sparganium erectum*
Undated							
60005	60008	-	S60/1	9	180	-	A* – *Urtica urens, U. dioica, Potentilla anserina*, Alismataceae, *Lemna* sp., *Ranunculus* subgenus *Batrachium, R.* subgenus *Ranunculus, Persicaria maculosa, Stellaria media, Rubus fruticosus* agg., *Carex* sp., *Mentha* cf. *aquatica, Rumex* sp., *Cirsium/Carduus* sp., Chenopodiaceae, Apiaceae, *Montia fontana*
60004	60007	-	S60/2	3	40	-	-

Key, scale of abundance: A** = 100+, A* = 30–99.

by waterlogging from a hedgerow (933) included brambles, elder, goosefoots (Chenopodiaceae and *Chenopodium* sp.), buttercups, composites, rushes, pink family and bugle (*Ajuga* sp.).

An exceptionally rich and well-preserved assemblage of charred plant remains was recovered from a post-medieval spread (944; **Table 7.18**), with some remains showing incomplete carbonisation and vivianite staining (indicative of organic, possibly faecal waterlogged deposits). The analysed sample was dominated by seeds of rye-grass/fescue, followed by grass and cereal chaff and other items in smaller proportions but still high numbers, such as cereal grains and other wild plant seeds. The number of plant remains in this sample neared 29,000 and characteristic signs of the good preservation were the presence of many *Lolium/Festuca*, *Atriplex* and Trifoliae seeds still preserving delicate husks, seed capsules or pods and oat grains with hairs. The several whole rachises of barley were all of the *distichum* variety. The good preservation allowed for the identification to species level of hairy buttercup (*Ranunculus sardous*).

Brooklands

The medieval samples provided little plant remain evidence, comprising a few poorly preserved charred cereal grains. However, rich evidence preserved by waterlogging in a ditch (150166; **Table 7.19**) comprised seeds of a range of wetland and nitrophilous species such as goosefoot, *Veronica* tp. *montana* (wood speedwell), sedges, water plantain, buttercups, Poaceae, composites, nettle, pondweed, rushes, pinks and bulrush.

Miscellaneous

Stonewort, goosefoot and bogbean seeds were retrieved from a peat sample from general watching brief section 11 (GWB section 11; **Table 7.20**). Close by, a few charred plant remains from cereals and grasses came from post-medieval ditches at NGR 524716 402728 (GWB area H). A similar assemblage came from NGR 531026 402236 (targeted watching brief 1; TWB1; **Table 7.20**).

Some plant remains preserved by waterlogging were recovered from one of the samples taken from ditches correlating with a modern boundary at NGR 522268 407032 (TWB17/GWB area W; see **Table 7.20**). This evidence comprised vegetative plant material, including moss, roots, wood and a leaf, and seeds from elder, sedges, rushes, goosefoot and birch (*Betula* sp.).

Table 7.10 Summary of assessment plant remain data for Station Road

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*	*Waterlogged*
Iron Age												
10607	10642	10711	110493_10524	20	4	70%, C	-	-	-	C	Indet. tubers	-
10641	10610	10711	110493_10525	20	2.5	40%, C, E	-	-	-	C	Poaceae, Cyperaceae	-
10698	10699	10712	110493_10546	18	10	10%, B, E	C	-	*Triticum* sp.	-	-	-
10653	10651	10720	110493_10538	16	20	60%, C, E	-	-	Triticeae	C	Poaceae, Cyperaceae	-
Early Romano-British												
1234	1232	-	110490_6	12	25	80%, C, E	-	-	-	C	Poaceae	-
1234	1233	-	110490_7	1.7	35	E	-	C	*Triticum* sp. glume bases	C	Vicieae	C - Caryophyllaceae, *Juncus* sp.
1058	1057	108	110490_4	23	30	60%, A, E	C	-	*Triticum* sp.	B	Poaceae, Chenopodiaceae, *Rumex* sp., indet. root	-
1011	1009	109	110490_1	5	10	60%, A*	C	-	Triticeae	C	Poaceae	-
1011	1010	109	110490_2	10	15	50%, A*	C	-	Triticeae	C	Poaceae, Vicieae	-
Late Romano-British												
1495	1494	103	110490_13	13	10	70%, A*, E, I	C	A	*Triticum* sp. (inc. *spelta)* grains (some sprouted) and chaff (glume bases and spikelet fork fragments), Triticeae	C	Poaceae	-
38023	38022	118	S38/3	10	60	++, C	C	C	*Triticum* sp. grains; Triticeae grain and awn, *Triticum spelta* glume bases	B	*Carex* sp., monocot stem, rhizome/tuber	-
37004	37005	127	S37/1	7	15	+, C	C	C	*Triticum spelta* glume bases; *Triticum* sp. and Triticeae grains	B	*Vicia* sp., monocot stem	-
37034	37035	127	S37/2	6	20	-	A	A*	*Triticum* sp. grains; *T. spelta* glume bases and spikelet forks	B	*Vicia faba, Pisum/Vicia* sp., *Danthonia decumbens*, *Carex* sp., Cyperaceae, Poaceae, *Rumex* sp.; rhizome/tuber	-
37043	37040	127	S37/4	8	15	-	C	C	*Triticum* sp. grains; *Triticum spelta* glume bases	C	*Carex* sp., Poaceae	-
1430	1429	-	110490_9	12	32	80%, A, E	-	C	*Triticum* sp. rachis fragment	C	Poaceae	-
Undated												
10004	10005	-	110493_10000	36	50	30%, B	C	-	Triticeae	-	-	-
36010	36009	-	S36/2	9	20	++, C	-	-	-	C	Cyperaceae, Brassicaceae	-
37023	37025	-	S37/3	7	30	+, C	C	C	Triticeae grain and awn, *Triticum spelta* glume bases			-
37048	37049	-	S37/5	7	15	+	-	B	*Triticum spelta* glume bases and spikelet forks	C	*Vicia* sp.	-
38035	38038	-	S38/4	7	30	+	A	A*	*Hordeum* sp., *Triticum* sp. (inc. cf. *spelta*), Triticeae grains; *Triticum spelta* glume bases and spikelet forks	A*	*Bromus* sp., *Centaurea* sp., *Avena* sp., *Danthonia decumbens, Persicaria maculosa, Carex* sp., Cyperaceae, *Persicaria lapathifolia*, Poaceae, *Potentilla* sp., *Rumex* sp., *Vicia* sp; Rhizome/ tuber, Monocot stem	-

Key: Scale of abundance (WA): A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (% or PCAS scale of abundance: +: rare; ++: occasional), uncharred seeds (WA scale of abundance), E = earthworm eggs, I = insects.

Table 7.11 Analysis results of charred plant remains from Station Road

Feature type			*Spread*	*Ditch*	*Hearth*	*Gully*	*Ditch*	*Pit*	*Pit*
Feature			1148	1702	1704	1324	1526	1512	1514
Context			1147	1703	1705	1323	1525	1511	1513
Sample			110490_5	110490_18	110490_17	110490_8	110490_15	110490_12	110490_14
Vol (l)			36	20	20	40	38	38	27
Flot size (ml)			20	30	40	15	40	50	15
Sub-sample			15% <5.6/4mm residue	20% <5.6/4mm residue	25% <5.6/4mm residue	15% <5.6/4mm residue	50% >1mm flot; 25% <1mm flot; 20% <5.6/4mm residue	30% <5.6/4mm residue; 12.5% <1mm flot	30% <5.6/4mm residue
Bioturbation (roots %, uncharred seeds, scale of abundance: A = >10, B = 9-5, C = <5, E = earthworm eggs, I = insects)			60%	70%, A*, E	40%, A, I	70%, A, E	50%, A*, E, I	10%, A*, E, I	70%, A, E, I
Fragmentation index (MNI/NR)			0.47	0.54	0.50	0.54	0.48	0.46	0.49
Density (MNI/l)			4	7	73	5	173	370	12
Preservation			Fair	Fair	Poor, some grains very eroded	Fair	Good	Good. Some brome germinated	Fair
Scientific name	*Common name*	*Plant part*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*
Wild herbaceous plants									
Ranunculus sp.	Buttercup	seed	1	-	2	1	2	-	-
Urtica urens cf.	Small nettle	seed	4	-	-	-	-	-	-
Atriplex sp.	Orache	seed	-	2	2	-	-	33	-
Chenopodium sp.	Goosefoot	seed	-	-	-	1	-	8	-
Chenopodiaceae	Goosefoot family	seed	-	-	2	1	-	16	-
Stellaria sp.	Stitchwort	seed	-	2	3	1	-	8	-
Spergula sp.	Corn spurrey	seed	-	-	-	-	-	-	-
Caryophyllaceae	Pink family	seed	-	2	-	-	-	8	-
Polygonum sp.	Knotgrass	seed	-	-	1	1	-	-	-
Rumex sp.	Docks/sorrel	seed	3	2	13	1	2	2	-
Polygonaceae	Dock/knotgrass family	seed	-	-	-	-	-	8	-
Malva sp.	Mallow	seed	2	-	-	-	-	-	-
Raphanus raphanistrum	Wild radish	capsule	-	-	1	2	3	15	1
Brassicaceae	Mustard family	seed	-	-	2	1	-	-	-
Rosaceae	Rose family	seed	-	-	-	3	-	-	-
Trifoliae	Trefoil/medick/clover	seed	-	2	3	2	6	-	-
Conium maculatum	Hemlock	seed	12	-	-	1	-	-	-
Apiaceae	Carrot family	seed	1	-	-	-	-	-	-
Lamiaceae	Mint family	seed	-	1	-	-	-	-	-
Plantago sp.	Plantain	seed	-	-	-	1	-		-
Odontites vernus	Red bartsia	seed	-	-	-	-	4	-	-
Galium cf. *aparine*	Cleavers	seed	-	-	7		-	-	-
Galium sp.	Cleavers/bedstraw	seed	-	1	-	-	-	-	-
Valerianella dentata	Narrow-fruited corn-salad	seed	-	1	-	-	-	-	-
Centaurea sp.	Cornflower/knapweed/ star thistle	seed	-	-	-	-	2	-	-
Anthemis cotula tp.	Stinking mayweed	seed	-	-	3	1	4	20	-
Asteraceae	Daisy family	seed	-	1	1	-	-	2	1
Juncus sp.	Rush	seed	1	2	3	2	-	-	-
Alisma	Water-plantain	seed	-	-	1	-	-	-	-

Scientific name	Common name	Plant part	MNI	MNI	MNI	MNI	MNI	MNI	MNI
Cyperaceae	Sedge	seed	5	2	7	30	2	22	2
Lolium/Festuca	Rye-grass/fescue	grain	1	11	1	5	14	2	-
Poa/Phleum	Meadow grass/cat's tail	grain	-	3	12	6	4	1	2
Arrhenatherum elatius var. bulbosum	False oat-grass or onion couch	bulb	-	-	-	1	-	-	-
Bromus sp.	Brome	grain	8	2	26	-	16	76 (4)	-
Danthonia decumbens	Heath grass	grain	-	-	-	8	-	-	2
Poaceae	Grasses	grain	5	6	-	-	42	127	5
Poaceae	Grasses	spikelet base with rachilla	-	-	-	-	20	-	-
Poaceae	Grasses	spikelet base	-	-	-	-	12	-	-
Poaceae	Grasses	culm fragments	-	-	-	2	-	-	-
Sparganium erectum	Branched bur-reed	fruit	-	-	-	2	-	-	-
Typha sp.	Bulrush	seed	-	-	19	-	-	1	-
Allium sp.	Garlic/leek/chive/onion/ ramson	clove	-	-	1	-	-	-	-
Other crops									
Vicia faba	Broad bean	seed	3	-	3	-	5	4	7
Vicieae	Vetch/grass pea	seed	5	1	103	6	11	19	3
Fabaceae	Legume family	seed fragment	-	-	26	-	-	-	-
Linum usitatissimum	Flax	seed	-	-	1	-	-	-	-
Cereals									
Avena sp.	Oat	grain		-	-	-	2	1	-
Avena sp.	Oat	awn fragment	6	3	154	3	136	49	-
Hordeum vulgare	Barley	grain	3	2	14	9	6	51	1
Hordeum vulgare	Barley	rachis segment	-	-	-	-	36	27	-
Triticum spelta	Spelt	grain	33 (15)	1 (1)	86 (20)	-	146 (14)	458 (161)	17 (3)
Triticum spelta	Spelt	spikelet	3	8	25	-	355	167	12
Triticum sp.	Wheat	grain	-	16	30	-	24	21	-
Triticum sp.	Wheat	spikelet	31	43	804	28	5626	12677	235
Triticum sp.	Wheat	rachis segment	-	5	-	-	-	-	-
Triticum sp.	Wheat	rachis segment fragment	2	8	93	6	442	2550	10
Triticeae	Cereal	grain	26	19	127	17	84	244	33
Triticeae	Cereal	chaff	-	-	1	-	-	-	
Triticeae	Cereal	detached embryo	1	1	9	2	68	61	1
Triticeae	Cereal	detached germinated embryo	1	-	8	-	34	190	-
Triticeae	Cereal	coleoptile	2	1	6	-	18	158	-
Indet.									
Indeterminata		fragment	-	1	2	2	-	3	-
Indeterminata		root	-	1	-	3	10	-	-
Indeterminata		seed	2	7	8	17	54	19	3
Indeterminata		stem	-	-	-	2	-	-	-
Indeterminata		thorn	-	-	1	1	-	-	-
Indeterminata		tuber	-	-	-	1	-	-	-
NR		328	256	2897	339	13,683	30,780	651	
MNI		153	138	1460	182	6564	14,067	321	

Plant remain numbers by type and taxon are given as MNI except otherwise stated. () indicates the MNI of germinated grains. NR = number of remains

Table 7.12 Summary of assessment plant remain data for Humberston Road

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*
Iron Age											
7293	7294	-	110491_715	17	15	30%, C	-	-	-	C	Poaceae, *Galium* sp., indet tuber
7441	7450	-	110491_740	20	10	80%, B, E, F	-	-	-	C	Polygonaceae, *Plantago lanceolata*, indet
Early Romano-British											
7404	7403	7634	110491_735	40	40	60%, A*	C	-	*Triticum* sp.	-	-
7414	7416	7634	110491_737	24	25	40%, A*** (Mainly *Sambucus*), E	C	-	*Triticum* sp.	-	-
3113	3114	7636	110490_3102	31	70	45%	C	A	*Triticum* sp. grain frags, glume base + spikelet fork frags (inc. *spelta*)	C	*Vicia/Lathyrus*
7475	7476	7636	110491_742	20	30	70%, B, E	-	-	-	C	*Avena/Bromus*
7477	7478	7636	110491_743	20	50	20%, B, E	C	C	*Triticum* sp. glume bases and grains	C	Cyperaceae
7038	7039	-	110491_700	10	50	80%, A**, I, F	-	-	-	C	Poaceae, Vicieae, *Galium* sp., indet.
7219	7220	-	110491_706	38	30	70%, C, E	C	A	Triticeae grain fragments, *Triticum* sp. glume bases	C	Poaceae, *Avena* sp. awn, Cyperaceae
7221	7222	-	110491_707	16	15	80%, B	C	C	Triticeae grain fragment, *Triticum* sp. glume bases	-	-
7356	7358	-	110491_725	20	35	30%, C, E, I	A	C	*Triticum* sp. glume base and grains, *Hordeum vulgare* grain (C)	A	*Raphanus raphanistrum*, Poaceae, indet. tubers, Vicieae, Cyperaceae, *Rumex* sp.
7356	7358	-	110491_749	4	<1	90%, C	-	C	*Triticum* sp. glume bases	-	-
Late Romano-British											
7226	7225	7622	110491_708	16	12	80%, A	-	A	*Triticum* sp. (inc. *spelta)* glume bases	C	Poaceae
3115	3116	7623	110490_3103	22	43	30%	-	A	*Triticum* sp. glume base frags	C	*Vicia/Lathyrus, Rumex*
3117	3118	7623	110490_3101	34	75	40%	C	A	*Triticum* sp. grain frags, glume base frags (inc. *T. spelta*)	C	*Avena/Bromus, Lolium/Festuca*
7042	7043	7625	110491_702	36	20	80%, B	C	-	*Hordeum vulgare, Triticum* sp. (sprouted), Triticeae	C	Poaceae (*Poa/Phleum*), Cyperaceae
3202	3203	7630	110490_3201	37	35	35%	C	A	*Triticum* sp. grain frags, glume base frags (inc. *spelta*)	C	*Vicia/Lathyrus*, Stem frags, tuber
7378	7380	7630	110491_745	27	45	50%, C, E	A	A	*Triticum* sp. (inc. *spelta)* glume bases and grains	A	*Avena* sp. awn, Poaceae, Vicieae, Cyperaceae, *Raphanus raphanistrum,* indet.
7407	7409	7716	110491_746	16	20	80%, C, E	-	-	-	C	Poaceae, indet.
7437	7438	7719	110491_747	37	20	80%, A*	-	-	-	C	*Corylus avellana*, Poaceae
120153	120155	120175	110498_120150	20	4	70%, C, E	C	-	*Hordeum vulgare*, *Triticum* sp., Triticeae	C	Poaceae
7316	7317	-	110491_721	36	40	60%, A, E, I	C	C	*Triticum* sp. glumes, *Hordeum vulgare* and Triticeae grain	C	Poaceae, Vicieae, *Rumex* sp.
7457	7458	-	110491_741	35	35	40%, B	C	-	*Triticum* sp., *Hordeum vulgare*, Triticeae	C	Poaceae, Vicieae, *Rumex* sp.
7008	7005	7629	110491_703	16	2	30%, C	-	C	*Triticum* sp. glume bases	C	*Avena* sp. awns
Undated											
7374	7375	-	110491_728	35	10	80%, C	C	B	*Triticum* sp. grain and glume bases, Triticeae grain	-	-
7243	7242	-	110491_710	20	30	60%, A*, E, I	-	C	*Triticum* sp. glume bases	-	-
7217	7218	-	110491_705	40	25	80%, C, E, I	-	-	-	C	Cyperaceae

Key: Scale of abundance (WA): A*** = exceptional, A** = 100+, A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (%), uncharred seeds (WA scale of abundance), F = mycorrhizal fungi sclerotia, E = earthworm eggs, I = insects.

Table 7.13 Analysis results of charred plant remains from Humberston Road

Phase			*Iron Age*		*AD 120–320*	*Early? Romano-British*	*Late Romano-British*		
Feature type			Ditch	Pit	Ditch 7624	Pit	Ditch	Pit	Pit
Feature			7282	7285	7074	7491	7298	7301	7301
Context			7283	7284	7075	7489/7490	7300	7302	7304
Sample			110491_713	110491_712	110491_711	110491_744	110491_716	110491_717	110491_718
Vol (l)			3	20	20	40	20	18	18
Flot size (ml)			10	20	35	40	40	25	40
Sub-sample			-	-	-	60% <5.6/4mm residue		-	-
Bioturbation (roots %, uncharred seeds, scale of abundance: A = 30-99, A = >10, B = 9-5, C = <5, E = earthworm eggs, I = insects, F = mycorrhizal fungi sclerotia)*			80%, C, E	80%, B, E, F	60%, B, E	40%, A*, E, I	75%, B, F	90%, A*, E	20%, C, E, I
Fragmentation index (MNI/NR)			0.50	0.49	0.48	0.43	0.56	0.62	0.53
Density (MNI/l)			17	3	38	39	4	4	75
Preservation			Heterogeneous	Poor	Heterogeneous	-	Heterogeneous, some vivianite staining.	Poor	Heterogeneous
Scientific name	Common name	Plant part	MNI	MNI	MNI	MNI	MNI	MNI	MNI
Wild herbaceous plants									
Ranunculus sp.	Buttercup	seed	-	-	-	-	1	-	-
Urtica urens cf.	Small nettle	seed	-	-	-	-	1	-	-
Rumex sp.	Docks/sorrel	seed	-	-		2	5	-	-
Raphanus raphanistrum	Wild radish	capsule	-	-	1	-	-	-	-
Aphanes arvensis agg.	Parsley-piert	seed	-	-	-	-	-	-	-
Rosaceae	Rose family	seed	-	-	-	-	-	1	-
Trifoliae	Trefoil/medick/clover	seed	-	-	-	3	4	-	-
Odontites vernus	Red bartsia	seed	-	-	-		1	-	-
Sherardia arvensis	Field madder	seed	-	-	-		3	-	-
Galium sp.	Cleavers/bedstraw	seed	-	-	-	1	1	-	-
Valerianella dentata	Narrow-fruited corn-salad	seed	-	-	-	1	-	-	-
Anthemis cotula tp.	Stinking mayweed	seed	-	2	-	-	-	-	1
Asteraceae	Daisy family	seed	-	-	2	-	-	1	-
Juncus sp.	Rush	seed	1	-	-	3	-	-	-
Cyperaceae	Sedge	seed	1	2	2	3	9	-	2
Lolium/Festuca	Rye-grass/fescue	grain	-	-	3	22	7	-	6
Poa/Phleum	Meadow grass/cat's tail	grain	-	1	3	-	1	-	-
Bromus sp.	Brome	grain	9	-	10	-	5	-	-
Avena/Bromus	Oats/brome	grain	-	-	1	5	-	-	-
Danthonia decumbens	Heath grass	grain	-	-	1	-	-	-	-
Poaceae	Grasses	grain	2	-	9	42	-	-	5
Poaceae	Grasses	culm fragments	-	-	-	-	1	-	-
Scrub/fruits									
Malus/Pyrus	Apple/pear	seed	-	-	-	-	-	-	1
Other crops									
Vicia faba	Broad bean	seed	-	-	1	-	2	-	-
Vicieae	Vetch/grass pea	seed	1	-	22	6	6	-	5
Fabaceae	Legume family	seed fragment	-	-	4	-	7	-	-
Linum usitatissimum	Flax	seed	-	-	-	-	-	1	-

Scientific name	*Common name*	*Plant part*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*
Linum usitatissimum	Flax	capsule fragment	-	-	-	1	-	-	-
Cereals									
Avena sp.	Oat	grain	-	-	-	-	-	1	20
Avena sp.	Oat	awn fragment	-	2	5	20	-	19	196
Hordeum vulgare	Barley	grain	-	1	4	7	1	1	1
Triticum aestivum/turgidum	Naked wheat	grain	-	-	-	-	-	-	1
Triticum spelta	Spelt	grain	4	-	20 (8)	97 (41)	4	-	16
Triticum spelta	Spelt	spikelet	5	1	109	105	6	-	57
Triticum sp.	Wheat	grain	-	1	10 (2)	18	1	2	9
Triticum sp.	Wheat	spikelet	25	54	549	1200	26	41	996
Triticum sp.	Wheat	rachis segment fragment	3	6	38	88	1	-	22
Triticeae	Cereal	grain	2	2	33	-	-	2	29
Triticeae	Cereal	detached embryo	-	1	5	1	-	-	4
Triticeae	Cereal	detached germinated embryo	-	-	8	4	-	-	-
Triticeae	Cereal	coleoptile	-	-	7	1	-	-	2
Indet.									
Indeterminata		fragment	-	-	2	2	5	-	-
Indeterminata		bud	-	-	-	1	-	-	-
Indeterminata		root	-	-	4	-	-	-	1
Indeterminata		seed	-	2	4	5	3	3	-
Indeterminata		stem	-	-	-	-	2	-	-
Indeterminata		tuber	-	-	1	-	-	-	1
NR			101	135	1600	3690	148	112	2552
MNI			50	66	769	1573	84	69	1345

Plant remain numbers by type and taxon are given as MNI except otherwise stated. () indicates the MNI of germinated grains. NR = number of remains

Table 7.14 Summary of assessment plant remain data for Tetney Lock Road

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*
Medieval											
9514	9515	9550	110493_9501	20	4	80%, C, I	C	-	Triticeae	-	-
9521	9540	-	110493_9502	10	50	70%, C, E	C	-	Triticeae	C	Polygonaceae
Undated											
22017	22016	-	S22/3	12	8	+	-	-	-	C	Monocot stem
22018	22021	-	S22/4	14	36	+	-	-	-	C	Monocot stem
-	22025	-	S22/5	13	120	++, I	-	-	-	B	*Sparganium* sp., Cyperaceae, monocot stem
-	22026	-	S22/6	17	450	++	B	-	*Triticum* sp., *Hordeum*, Triticeae	A*	*Avena* sp., *Anthemis cotula*, Cyperaceae, *Menyanthes trifoliata*, Poaceae, *Rumex* sp., *Vicia* sp., monocot stem
-	22031	-	S22/7	21	50	++, I	-	-	-	A	*Luzula* sp., Cyperaceae, monocot stem
-	22032	-	S22/8	11	60	+, I	-	-	-	B	Polygonaceae, Cyperaceae, monocot stem

Key: Scale of abundance (WA): A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (% or PCAS scale of abundance: rare; ++: occasional), uncharred seeds (WA scale of abundance), E = earthworm eggs, I = insects.

Table 7.15 Summary of assessment plant remain data for Laceby Beck

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*	*Waterlogged*
Anglo-Saxon												
790	789	21002	110498_506	32	100	30%, C, E, I	C	-	*Hordeum vulgare*, *Triticum* sp.	C	Asteraceae, Vicieae, Poaceae	-
484	465	21008	110498_467	35	20	80%, A*, E, I	A	-	*Hordeum vulgare*, *Triticum aestivum/turgidum* (C), Triticeae	-	-	-
577	578	21008	110498_490	38	10	80%, A	C	-	*Hordeum vulgare*, *Triticum* sp.	-	-	-
579	580	21008	110498_489	40	5	90%, A*, E, I	C		*Hordeum vulgare*	-	-	-
648	649	21008	110498_494	37	18	70%, A, E, I	C	-	Triticeae	C	Indet tuber	-
468	470	21012	110498_469	32	15	80%, B, E	C	-	*Hordeum vulgare*	-	-	-
819	820	21013	110498_505	40	20	60%, A, I	C	-	*Hordeum vulgare*, *Triticum* sp., Triticeae	C	*Raphanus raphanistrum*	-
666	667	21015	110498_497	34	20	75%, A	C	-	*Hordeum vulgare*	C	Poaceae, *Arrhenatherum elatius* ssp. *bulbosum*	-
824	825	21019	110498_514	36	60	60%, A*, E, I	B	-	*Hordeum vulgare*, *Triticum* sp., Triticeae	C	Poaceae	-
824	826	21019	110498_511	40	60	60%, A*, E	B	C	*Hordeum vulgare* var. *nudum*, *Triticum* sp. grain and glume base	C	*Arrhenatherum elatius* ssp. *bulbosum*, Poaceae	-
-	827	21020	110498_510	32	20	60%, C	-	-	-	C	Poaceae	-
836	837	21022	110498_516	10	20	80%, C	A	-	*Hordeum vulgare*, *Triticum* sp., Triticeae	C	Poaceae	-
471	472	-	110498_463	37	23	80%, A*, E	A*	-	*Hordeum vulgare*, Triticeae	C	*Arrhenatherum elatius* ssp. *bulbosum*, Vicieae	-
592	593	-	110498_488	37	25	80%, C, E	A	-	*Hordeum vulgare*, Triticeae	-	-	-
706	707	-	110498_501	36	20	70%, A, E	A	-	*Hordeum vulgare*	B	Poaceae (*Lolium/Festuca*), *Arrhenatherum elatius* ssp. *bulbosum*, Vicieae (inc. *Pisum sativum*)	-
791	792	-	110498_509	40	30	80%, B, E, I	C	C	*Hordeum vulgare* grains, *Triticum* sp. glume base	C	Poaceae, Caryophyllaceae	-
831	832	-	110498_515	18	35	40%, C, E	C	-	Triticeae	-	-	-
Undated												
740	741	21001	110498_503	38	10	60%, B, E	C	-	Triticeae	C	Poaceae	-
540	541	21003	110498_477	10	120	E	-	-	-	-	-	A*** - *Ranunculus* spp., *Juncus* spp., Cyperaceae, *Potamogeton* sp., Chenopodiaceae, Characeae oospores, *Sambucus* sp., Asteraceae, Lamiaceae, *Fumaria* sp., Caryophyllaceae, *Prunus* sp., *Rubus* sp., Apiaceae
640	639	21003	110498_493	38	13	70%, A, I	C	-	Triticeae	-	-	-
815	816	21004	110498_507	40	60	15%, B, E, I	C	-	*Hordeum vulgare*, *Triticum* sp.	-	-	-
509	516	21006	110498_476	40	18	80%, B, E	C	-	*Hordeum vulgare*	-	-	-
569	570	21007	110498_491	14	15	60%, A, I	C	-	Triticeae	C	Poaceae	-
652	653	21009	110498_496	40	12	80%, A, E	C	-	*Hordeum vulgare*, Triticeae	C	Vicieae	-
554	556	21023	110498_480	38	60	80%, A	C	-	Triticeae		-	-
465	466	-	110498_461	35	15	80%, A*, E	C	-	Triticeae	C	Poaceae	-
487	488	-	110498_468	38	50	80%, A**, E	B	-	*Hordeum vulgare*, Triticeae	C	Cyperaceae, Vicieae, Poaceae	-
567	568	-	110498_481	39	22	80%, A*, I	B	-	*Hordeum vulgare*	-	-	-
624	625	-	110498_492	36	15	60%, C, I	B	-	*Hordeum vulgare*, Triticeae	-	-	-
636	637	-	110498_485	30	175	15%, B, I	C	-	Triticeae	-	-	-
650	651	-	110498_495	40	15	60%, A	C	-	Triticeae	C	Poaceae	-

Key: Scale of abundance (WA): A*** = exceptional, A** = 100+, A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (%), uncharred seeds (WA scale of abundance), E = earthworm eggs, I = insects.

Table 7.16 Analysis results of charred plant remains from Laceby Beck

Feature type			*Pit*	*Root disturbance*	*Pit 21021*	*Pit*	*Pit*	*Pit*	*Pit*
Feature			475	491	822	571	493	493	493
Context			477	492	823	572	494	495	496
Sample			110498_462	110498_470	110498_512	110498_482	110498_471	110498_473	110498_474
Vol (l)			40	36	40	36	40	18	36
Flot size (ml)			23	35	100	15	50	100	30
Sub-sample			15% <5.6/4mm residue	30% <5.6/4mm residue	20% <5.6/4mm residue	10% <5.6/4mm residue	25% <5.6/4mm residue	20% <5.6/4mm residue	35% <5.6/4mm residue
Bioturbation (roots %, uncharred seeds, scale of abundance: A = 30-99, A = >10, B = 9-5, C = <5, E = earthworm eggs, I = insects)*			80%, A*, E, I	80%, A, E	40%, A, E	70%, A*	60%, C, E	60%, A, E, I	70%, A, E
Fragmentation index (MNI/NR)			0.65	0.61	0.78	0.57	0.53	0.66	0.68
Density (MNI/l)			1	1	1	1	1	3	1
Preservation			Poor	Poor	Poor	Heterogeneous	Heterogeneous	Heterogeneous	Poor
Scientific name	*Common name*	*Plant part*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*
Wild herbaceous plants									
Chenopodium sp.	Goosefoot	seed	-	-	-	-	-	1	-
Persicaria lapathifolia	Pale persicaria	seed	-	-	-	-	-	-	1
Polygonum sp.	Knotgrass	seed	-	-	-	10	-	-	-
Rumex sp.	Docks/sorrel	seed	1	-	-	-	-	-	-
Lepidieae	Pepperwort tribe	seed	-	-	-	-	-	-	1
Raphanus raphanistrum	Wild radish	capsule	1	-	-	-	-	-	-
Brassicaceae	Mustard family	seed	-	-	-	-	1	-	-
Trifoliae	Trefoil/medick/clover	seed	-	-	-	-	1	-	-
Hyoscyamus niger	Henbane	seed	-	-	-	-	1	-	-
Lolium/Festuca	Rye-grass/fescue	grain	-	-	-	3	-	-	-
Poa/Phleum	Meadow grass/cat's tail	grain	-	-	-	1	-	-	-
Arrhenatherum elatius var. bulbosum	False oat-grass or onion couch	bulb	-	-	-	1	2	1	-
Poaceae	Grasses	grain	-	-	2	-	3	-	1
Scrub/fruits									
Prunus spinosa	Sloe	fruit half	-	-	-	-	1	-	-
Other crops									
Vicieae	Vetch/grass pea	seed	1	1	-	-	-	-	-
Cereals									
Avena sp.	Oat	grain	-	2	2	-	8	4	5
Hordeum vulgare	Barley	grain	31	12	19	16	-	-	12
Hordeum vulgare	Barley	rachis segment	-	-	-	-	-	-	-
Hordeum vulgare var. vulgare	Hulled barley	grain	-	-	-	-	25	46	-
Triticum aestivum/turgidum	Naked wheat	grain	-	-	-	-	1	-	1
Triticum spelta	Spelt	grain	3	-	-	5	-	-	-
Triticum spelta	Spelt	spikelet	1	-	-	5	-	-	-
Triticum sp.	Wheat	grain	-	-	1	-	2	4	-
Triticeae	Cereal	grain	1	12	1	2	2	5	3
Triticeae	Cereal	detached germinated embryo	-	-	-	10	-	-	-
Indet.									
Indeterminata		seed	-	1	-	1	1	1	-
Indeterminata		tuber	-	-	-	1	-	1	-
NR			60	44	32	75	88	92	37
MNI			39	27	25	43	47	61	25

Plant remain numbers by type and taxon are given as MNI except otherwise stated. NR = number of remains

Table 7.17 Summary of assessment plant remain data for Habrough

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal Notes*	*Charred Other*	*Charred Other Notes*	*Waterlogged*
Late Iron Age/early Romano-British												
963	964	-	110498_960	38	15	70%, C, E	C	-	*Hordeum vulgare*, *Triticum* sp.	C	Poaceae, indet. tubers	-
Medieval												
933	934	-	110498_930	10	60	E	C	-	*Triticum aestivum/turgidum*	C	Poaceae, Cyperaceae, stems and thorn	A - *Rubus* sp., *Potentilla* sp., Chenopodiaceae, *Ranunculus* sp., Asteraceae, *Juncus* sp., Caryophyllaceae, *Sambucus* sp., *Ajuga* sp.
3015	3016	3203	110491_301	20	10	70%, A	B	-	*Triticum* sp. (inc. *aestivum/turgidum*)	B	Poaceae (*Avena, Avena/Bromus*), Vicieae	-
3333	3334	3204	110493_3310	36	40	60%	B	-	*Triticum aestivum/turgidum*, *Hordeum vulgare*, *Avena* sp. (large seeded),Triticeae	B	Poaceae, Vicieae (inc. large seeded)	-
3306	3307	3316	110493_3302	14	5	70%, C, E	B	-	*Triticum aestivum/turgidum*	C	*Avena* sp.	-
3310	3310	3316	110493_3303	36	15	80%, C, E	B	C	*Triticum aestivum/turdidum* and *Hordeum vulgare* grains, Triticeae culm node	C	Poaceae, Vicieae	-
3312	3313	3316	110493_3304	38	5	80%, C	C	-	*Triticum aestivum/turgidum*	C	Poaceae	-
3314	3315	3316	110493_3305	40	15	80%, B, E	B	-	*Triticum aestivum/turgidum*	C	Vicieae	-
3037	3035	-	110491_315	10	15	50%, A, I, E	A	-	*Triticum aestivum/turgidum*, *Hordeum vulgare* (C)	A	Asteraceae, Poaceae (*Avena/Bromus, Lolium/Festuca*), Vicieae, Cyperaceae	-
3304	3305	-	110493_3301	17	3	80%, C	C	-	*Triticum aestivum/turgidum*, Triticeae	-	-	-
3169	3168	-	110491_314	6	15	80%, C, I	C	-	*Triticum* sp., Triticeae	C	Vicieae	-
3169	3201	-	110491_311	5	10	80%, A	-	-	-	-	-	-
3170	3172	-	110491_312	7	10	75%, C, I	A	-	*Triticum aestivum/turgidum*, *Hordeum vulgare* (C)	B	Poaceae, *Ranunculus* sp.	-
3187	3186	-	110491_313	5	10	80%, B	C	-	*Triticum* sp.	-	-	-
3320	3321	-	110493_3307	8	3	10%, B	C	-	*Triticum aestivum/turgidum*, Triticeae	C	Poaceae, Vicieae (inc. large seeded), *Valerianella* sp.	-
3087	3088	-	110491_307	5	5	80%, C	C	-	*Triticum* cf. *aestivum/turgidum*	-	-	-
Medieval/post-medieval												
-	3303	-	110493_3300	20	10	90%, C	C	-	*Triticum aestivum/turgidum*	-	-	-
Post-medieval												
3324	3325	-	110493_3309	10	125	E	-	-	-	-	-	A*** - *Ranunculus* spp., Cyperaceae, *Atriplex* sp., *Aphanes* arvensis agg., *Juncus* spp., Lamiaceae, *Viola* sp., *Potamogeton* sp., Asteraceae, *Zannichellia palustris*, Caryophyllaceae, Apiaceae, *Potentilla* sp., *Rumex* sp., *Hyoscyamus niger*, *Sambucus* sp., *Crataegus* sp., indet.
80006	80013	3202	S/80/1	15	800	-	-	-	-	-	-	++++

Key: Scale of abundance (WA): A*** = exceptional, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (% or PCAS scale of abundance: ++++; abundant), uncharred seeds (WA scale of abundance), E = earthworm eggs, I = insects.

Table 7.18 Analysis results of charred plant remains from Habrough

Phase			*Medieval*							*Post-med*
Feature Type			Pit	Pit	Pit	Ditch	Ditch	Pit	Pit	Spread
Feature			3318	3085	3031	3037	3037	3142	3160	
Context			3319	3086	3032	3035	3036	3143	3155	944
Sample			110493_3306	110491_306	110491_304	110491_302	110491_303	110491_308	110491_310	110498_940
Vol (l)			38	5	20	14	8	20	16	40
Flot size (ml)			30	10	35	25	15	40	25	3000
Sub-sample			-	-	65% <5.6/4mm residue	-	70% <5.6/4mm residue	-	-	30% <5.6/4mm residue; 7.25% flot
Bioturbation (roots %, uncharred seeds, scale of abundance: A = 30-99, A = >10, B = 9-5, C = <5, E = earthworm eggs, I = insects)*			10%, B, E	30%, A, I	50%, A*, I	60%, A*, E	60%, A, E, I	60%, A*, I, E	70%, A*	<1%, C, E
Fragmentation index (MNI/NR)			0.50	0.61	0.60	0.62	0.47	0.61	0.70	0.96
Density (MNI/l)			5	6	12	7	23	24	6	699
Preservation			Heterogeneous	Fair	Fair	Fair, some incomplete carbonisation.	Very poorly preserved fragments.	Fair	Fair	Exceptionally good, some vivianite and incomplete carbonisation
Scientific name	*Common name*	*Plant part*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*	*MNI*
Wild herbaceous plants										
Ranunculus sp.	Buttercup	seed	1	-	-	-	-	1	-	42
Ranunculus sardous	Hairy buttercup	seed	-	-	-	-	-	-	-	518
Atriplex sp.	Orache	seed	-	-	-	-	-	-	-	210
Chenopodium sp.	Goosefoot	seed	-	-	-	-	-	-	-	14
Spergula sp.	Corn spurrey	seed	1	-	-	-	-	-	-	-
Caryophyllaceae	Pink family	seed	1	-	-	-	-	-	-	14
Dianthus sp. cf.	Deptford/maiden pink	seed	1	-	-	-	-	-	-	-
Polygonum sp.	Knotgrass	seed	1	-	1	-	1	-	-	-
Rumex sp.	Docks/sorrel	seed	4	2	2	1		5	1	-
Polygonaceae	Dock/knotgrass family	seed	-	-	-	-	-	-	-	14
Malva sp.	Mallow	seed	-	-	1	-	-	-	-	-
Lepidieae	Pepperwort tribe	seed	2	-	-	-	-	-	-	-
Brassica/Sinapis	Mustards/charlock	seed	-	-	1		2	3		84
Raphanus raphanistrum	Wild radish	capsule	-	-	-	1	-	-	-	-
Trifoliae	Trefoil/medick/clover	seed	4	-	3	-	-	1	-	518
Plantago sp.	Plantain	seed	-	-	-	-	-	-	1	-
Odontites vernus	Red bartsia	seed	-	1	-	-	-	5	-	-
Sherardia arvensis	Field madder	seed	-	-	-	-	-	-	-	28
Anthemis arvensis tp.	Corn chamomile	seed	1	-	-	-	-	-	-	-
Anthemis cotula tp.	Stinking mayweed	seed	1	2	7	1	4	11	-	-
Asteraceae	Daisy family	seed	-	-	-	-	-	2	-	-
Juncus sp.	Rush	seed	1	-	-	-	-	4	-	-
Carex sp.	Sedge	seed	-	-	-	-	-	-	-	31
Cyperaceae	Sedge	seed	4	1	15		10	6	-	-
Lolium/Festuca	Rye-grass/fescue	grain	2	-	4	2	6	12	-	16,033
Poa/Phleum	Meadow grass/cat's tail	grain	1	1	1		1	2	-	280
Avena fatua	Common wild oat	grain	-	-	-	-	-	-	-	28
Avena fatua	Common wild oat	pedicel	-	-	-	-	-	-	-	1358

Scientific name	Common name	Plant part	MNI	MNI	MNI	MNI	MNI	MNI	MNI	MNI
Bromus sp.	Brome	grain	-	-	1	-	-	-	-	-
Avena/Bromus	Oats/Brome	grain	-	-	1	-	10	-	-	-
Poaceae	Grasses	grain	6	3	6	-	-	8	3	-
Poaceae	Grasses	culm fragments	2	-	-	-	-	3	-	6597
Sparganium erectum	Branched bur-reed	fruit	-	-	-	-	1	-	-	-
Scrub/fruits										
Corylus avellana	Hazelnut	whole pericarp	-	-	1	-	-	-	-	-
Other crops										
Pisum sativum	Garden pea	hilum	1	-	-	-	-	-	-	-
Vicia sp.	Vetch	seed	-	-	-	-	-	-	1	-
Vicia faba	Broad bean	seed	1	-	-	1	-	-	1	-
Vicieae	Vetch/grass pea	seed	46	6	33	13	8	80	2	-
Fabaceae	Legume family	seed fragment	20	-	6	-	-	60	-	-
Linum usitatissimum	Flax	seed	1	-	-	-	-	-	-	-
Cereals										
Avena sp.	Oat	grain	11	2	5	8	33	33	-	182
Avena sp.	Oat	awn fragment	-	-	-	-	1	2	-	-
Hordeum vulgare	Barley	grain	8	-	13	12	18	19	5	-
Hordeum vulgare	Barley	rachis segment	-	-	-	-	-	1	-	1064
Hordeum vulgare var. vulgare	Hulled barley	grain	-	-	-	-	-	-	-	210
Triticum aestivum/turgidum	Naked wheat	grain	52	11	109	32	80	273	59	224
Triticum aestivum	Bread wheat	rachis internode	10	-	-	-	-	12	1	353
Triticum sp.	Wheat	grain	17	-	-	-	-	-	-	-
Triticum sp.	Wheat	rachis segment	1	-	-	-	-	-	-	-
Triticum sp.	Wheat	rachis segment fragment	4	-	-	-	-	-	-	-
Triticeae	Cereal	grain	4	1	42	21	12	4	16	91
Triticeae	Cereal	chaff	-	-	-	-	-	-	-	84
Triticeae	Cereal	detached embryo	2	-	-	-	-	1	-	-
Indet.										
Indeterminata		fragment	-	1	-	-	-	-	-	-
Indeterminata		bud	1	-	-	-	-	-	-	4
Indeterminata		fruit	-	-	-	-	-	-	-	14
Indeterminata		seed	8	4	5	-	2	6	1	182
Indeterminata		stalk	-	-	-	-	-	-	-	31
Indeterminata		stem	-	-	-	-	-	-	-	28
Indeterminata		thorn	-	-	-	-	-	-	-	28
Indeterminata		tuber	-	-	-	-	-	-	1	-
Indeterminata cf.		grub	-	-	-	-	-	-	-	14
Indeterminata		charred insect pellet	-	-	-	-	-	-	-	84
NR			369	49	411	149	398	794	129	29,075
MNI			185	30	247	92	187	487	90	27,977

Plant remain numbers by type and taxon are given as MNI except otherwise stated. NR = number of remains

Table 7.19 Summary of assessment plant remain data for Brooklands

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Sub-sample*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*	*Waterlogged*
Medieval													
140203	140204	140208	110498_140162	13	20	-	20%, A, I	B	-	*Triticum* sp. (inc. *aestivum/turgidum*), Triticeae	-	-	-
160155	160157	-	110498_160151	18	4	-	70%, A*	-	-	-	C	Cyperaceae	-
9088	9090	-	110493_9005	20	15	-	70%, A*	C	-	*Triticum aestivum/ turgidum*	-	-	-
Undated													
-	9286	-	110493_9036	21	12	-	60%, C	C	-	*Hordeum vulgare*	-	-	-
150166	150168	-	110498_150150	20	2000	125	E	-	-	-	C	Poaceae, *Myriophyllum* sp.	A* - Chenopodiaceae, *Veronica* tp. *montana*, Cyperaceae, *Alisma* sp., *Ranunculus* sp., Poaceae, Asteraceae, *Urtica* sp., *Potamogeton* sp., *Juncus* sp., Caryophyllaceae
150166	150168	-	110498_150151	20	60	-	E	-	-	-	-	-	A** - *Alisma* sp., Characeae oospores (A**), Chenopodiaceae, *Juncus* spp. (A*), Cyperaceae, Poaceae, *Veronica* tp. *montana*, Caryophyllaceae, *Typha* sp.
7005	7015	-	S7/1	8	15	-	+	-	-	-	C	*Vicia* sp.	-
7004	7012	-	S7/4	9	20	-	++	-	-	-	C	Monocot stem	-
8004	8016	-	S8/3	14	45	-	++	C	-	Triticeae	C	Rhizome/tuber	-
8008	8010	-	S8/4	8	350	-	++, I	C	-	*Hordeum* sp., *Triticum* sp.	C	Cyperaceae, *Schoenoplectus* sp.; rhizome/tuber	-
8018	8011	-	S8/5	9	50	-	++, I	C	-	Triticeae	-	-	-
8019	8020	-	S8/6	10	100	-	C	-	-	-	C	Monocot stem	-
8021	8022	-	S8/7	10	25	-	++	-	-	-	C	Rhizome/tuber	-
9005	9006	-	S9/1	17	140	-	++, C	-	-	-	C	*Menyanthes trifoliata*	-
10006	10007	-	S10/2	7	100	-	+, C	C	-	*Triticum* cf. *spelta*, Triticeae	C	Rhizome/tuber	-
10021	10020	-	S10/3	8	150	-	++, C	-	-	-	C	Cyperaceae	-
10005	10004	-	S10/4	19	150	-	+, C	-	-	-	C	*Betula* sp., Cyperaceae, *Eleocharis* sp; rhizome/ tuber	-
11006	11005	-	S11/1	6	40	-	+	C	-	Triticeae	C	Rhizome/tuber	-
-	16003	-	S16/2	17	530	-	++, I	-	-	-	C	*Carex* sp., monocot stem	-
16011	16012	-	S16/3	8	150	-	+	-	-	-	C	Cyperaceae, *Eleocharis* sp.; rhizome/tuber, monocot stem	-
16004	16040	-	S16/6	8	450	-	+	-	-	-	C	Cyperaceae, *Ranunculus* subgenus *Ranunculus*; rhizome/tuber, monocot stem	-

Key: Scale of abundance (WA): A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (% or PCAS scale of abundance: +: rare; ++: occasional), uncharred seeds (WA scale of abundance), E = earthworm eggs, I = insects.

Table 7.20 Summary of assessment plant remain data for miscellaneous features outside of main sites

Feature	*Context*	*Group*	*Sample*	*Vol (l)*	*Flot (ml)*	*Sub-sample*	*Bioturbation*	*Charred grain*	*Charred chaff*	*Charred cereal notes*	*Charred other*	*Charred other notes*	*Waterlogged*
GWB section 11, near NGR 524716 402728 (undated)													
-	20253	-	110498_20250	10	3500	125 ml	-	-	-	-	-	-	A - Characeae oospores, Chenopodiaceae, *Menyanthes trifoliata*
GWB area H, NGR 524716 402728 (post-medieval)													
252=254	253	-	110498_251	34	30	-	80%, A*, E	C	B	*Triticum* sp. rachis internodes	C	Poaceae	-
252=254	255	-	110498_252	35	20	-	80%, A*	C	-	*Triticum* sp., Triticeae	-	-	-
TWB1, NGR 531026 402236 (post-medieval)													
100152	100153	-	110498_100150	20	10	-	40%, A*, E, F	C	-	*Triticum* sp.	C	*Poa/Phleum*	-
TWB17/GWB area W, NGR 522268 407032 (possibly post-medieval)													
433	434	-	110498_430	10	120	-	E, F	-	-	-	-	-	A - *Sambucus* sp., Cyperaceae, *Juncus* sp., Chenopodiaceae, *Betula* sp.

Key: Scale of abundance (WA): A = >10, B = 9–5, C = <5; Bioturbation proxies: roots (%), uncharred seeds (WA scale of abundance), F = mycorrhizal fungi sclerotia, E = earthworm eggs, I = insects.

Microfauna

John E Whittaker

The results are shown in **Tables 7.21** and **7.22**; the upper part of the table in each case lists the material of potential ecological value present, the lower parts the species of ostracods and foraminifera identified. The ecological signatures are based on Murray (2006) and the author's own experience for the foraminifera, and Athersuch *et al.* (1989) for the ostracods.

Tetney Lock Road

A sample was examined from context 9527 (**Table 7.21**), a late medieval ditch fill, indicating brackish tidal estuarine conditions with a slight nuance, in that the ostracods were dominated by *Cyprideis torosa*.

Table 7.21 Microfauna (ostracods and foraminifera) from Tetney Lock Road

Context	*9527*
Sample no.	*110493_9505*
Contained material	
Plant debris + seeds	x
Insect remains	x
Brackish foraminifera	x
Brackish ostracods	x
Mollusc fragments	x
Bithynia opercula	x
Freshwater ostracods	x
Ecology	Brackish estuarine creek; some freshwater influence
Brackish foraminifera	
Elphidium williamsoni	xxx
Haynesina germanica	xxx
Ammonia sp. (brackish)	xx
Brackish ostracods	
Cyprideis torosa	xxx
Leptocythere castanea	x
Freshwater ostracods	
Ilyocypris bradyi	xx
Candona angulata	x

Key: Contained material is recorded on a presence (x)/absence basis only. Foraminifera and ostracods: o – one specimen; x – several specimens; xx – common; xxx – abundant.

Brooklands

Four contexts, each relating to a separate pit, contained an almost identical brackish estuarine foraminiferal and ostracod fauna (**Table 7.22**). Only one specimen of a typical mid-high saltmarsh foraminifer was found; saltmarsh species are almost absent in these samples. In addition, a few freshwater ostracods were found in one sample, but these could have been washed out of a nearby ditch. Fuel ash slag and burnt clay were in evidence in two samples.

Three samples from evaporation hearths contained the same three species of brackish estuarine foraminifera, but brackish ostracods are very rare and only found in two of them (**Table 7.22**). Freshwater ostracods were also found in two samples. The flots from the samples themselves were all full of charcoal, fuel ash slag and burnt clay; in addition, one had bone fragments and two earthworm granules. The two with freshwater ostracods also contained charophyte oogonia (the fruiting bodies of the stonewort plant).

Table 7.22 Microfauna (ostracods and foraminifera) from Brooklands

Features			*Pits*				*Hearths*	
Context	*9104*	*9183*	*9240*	*9255*	*140166*	*140183*	*140168*	
Sample no.	*110493_9002*	*110493_9003*	*110493_9016*	*110493_9025*	*110493_9027*	*110498_140161*	*110498_140154*	*110498_140156*
Contained material								
Charcoal/slag/burnt clay	-	-	-	-	-	x	x	x
Plant debris + seeds	x	x	x	x	x	x	x	x
Insect remains	x	-	-	x	-	x	x	x
Brackish foraminifera	x	x	x	x	x	x	x	x
Brackish ostracods	x	x	x	x	x	x	x	-
Bone fragments	-	-	-	-	-	x	-	-
Earthworm granules	-	-	-	-	-	x	x	-
Mollusc fragments	x	x	x	x	x	x	x	x
Testate amoebae	-	-	-	-	-	x	-	-
Charophyte oogonia	-	-	-	-	-	-	x	x
Slag/burnt clay	-	-	x	-	x	-	-	-
Freshwater ostracods	-	-	-	x	-	-	x	x
Cladoceran ephippia	-	-	-	-	-	-	x	
Ecology	Brackish estuarine mudflat environments, with occasional freshwater influence					Microfauna brackish estuarine with a freshwater component; human occupation/industry with burning (salt making?)		
Brackish foraminifera								
Elphidium williamsoni	xxx	xxx	xxx	xxx	xx	xx	xx	xx
Haynesina germanica	xx	xxx	xxx	xxx	xxx	xx	xx	xx
Ammonia sp. (brackish)	x	xx	x	o	x	x	x	-
Mid-high saltmarsh foraminifera								
Trochammina inflata	-	-	-	-	o	-	-	-
Brackish ostracods								
Loxoconcha elliptica	xx	xx	x	-	x	o	-	-
Leptocythere lacertosa	xx	xx	-	-	-	-	o	-
Leptocythere porcellanea	x	x	-	-	x	-	-	-
Leptocythere castanea	x	x	x	x	x	-	-	-
Freshwater ostracods								
Candona neglecta	-	-	-	xx	-	-	x	x
Cypria ophthalmica	-	-	-	o	-	-	x	x

Key: Contained material is recorded on a presence (x)/absence basis only. Foraminifera and ostracods: o – one specimen; x – several specimens; xx – common; xxx – abundant.

Molluscs

Matt Law

Shells were generally well-preserved, although in most samples numbers of molluscs were low, the exceptions being those from Tetney Lock Road and Brooklands (see **Tables 7.23** and **7.24**). Of the mollusc remains that were found, as an aid to interpretation, non-marine mollusc species were grouped into ecological groups (EG), based on those of Evans (1972), with the addition of Group 6e. The groups are:

- 3. **Catholic**. Taxa tolerant of a wide range of habitats. Represented here by *Cochlicopa* sp., Limacidae, and *Trochulus hispidus*.
- 4a. **Commonly open country**. Snail species commonly found in relatively open, grassland habitats. Represented here by *Pupilla muscorum*, *Vallonia costata*, *Vallonia cf. excentrica* and *Vertigo pygmaea*.
- 5a. **Amphibious/freshwater**. Snails associated with freshwater habitats prone to seasonal drying-out. Represented here by *Galba truncatula*.
- 6a. **Freshwater slum**. Species associated with poor-quality freshwater habitats. Represented here by *Anisus leucostoma*.
- 6b. **Freshwater catholic**. Species found in a wide range of freshwater habitats. Represented here by *Gyraulus crista* and *Radix balthica*.
- 6c. **Freshwater ditch**. Species associated with well-vegetated still to lentic water bodies. Represented here by *Planorbis planorbis*.
- 6d. **Moving water**. Species associated with lotic water bodies. Represented here by *Bithynia tentaculata*.
- 6e. **Brackish water**. Species associated with brackish water contexts such as estuaries and lagoons. Represented by *Ecrobia ventrosa, Peringia ulvae* and *Scrobicularia plana*.
- 8. **Subterranean**. Burrowing species. Represented here by *Cecilioides acicula.*

Table 7.23 Molluscs from Tetney Lock Road

Context		*9527*
Sample		*110493_9505*
Context description		*Ditch fill*
Phase		*Post-medieval*
Taxon	*Ecological group*	*Count*
Cochlicopa sp.	3	1
Limacidae sp.	3	7
Vallonia cf. *excentrica* Sterki, 1893	4a	2
Galba truncatula (O. F. Müller, 1774)	5a	4
Anisus leucostoma (Millet, 1813)	6a	3
Gyraulus crista	6b	141
(Linnaeus, 1758)		
Radix balthica (Linnaeus, 1758)	6b	4
Planorbis planorbis (Linnaeus, 1758	6c	3
Bithynia tentaculata (Linnaeus, 1758)	6d	123
Opercula		*123*
Shell		*66*
Ecrobia ventrosa (Montagu, 1803)	6e	17
Peringia ulvae (Pennant, 1777)	6e	12
Cecilioides acicula (O. F. Müller, 1774)	8	-
cf. *Cerastoderma* sp. Cockle	-	1

Table 7.24 Molluscs from Brooklands

Context		*9104*	*9104*	*9183*	*9240*	*9255*	*140163*	*140166*	*140168*
Sample		*110493_9002*	*110493_9003*	*110493_9016*	*110493_9025*	*110493_9027*	*110498_140154*	*110498_140161*	*110498_140156*
Context		*Pit fills*					*Hearth fills*		
Phase		*Medieval*							
Taxon	*Ecological group*	*Count*	*Count*	*Count*	*Count*	*Count*	*Count*	*Count*	*Count*
Cochlicopa sp.	3	-	-	-	3	-	2	2	-
Limacidae sp.	3	1	-	1	1	2	-	-	-
Trochulus hispidus (Linnaeus, 1758)	3	1	2	1	4	13	21	30	1
Pupilla muscorum (Linnaeus, 1758)	4a	2	1	1	-	-	8	5	-
Vallonia costata (O. F. Müller, 1774)	4a	1	-	-	-	-	-	-	-
Vallonia cf. *excentrica* (Sterki, 1893)	4a	1	-	2	5	4	6	30	1
Vertigo pygmaea (Draparnaud, 1801)	4a	-	-	1	-	2	1	2	-
Anisus leucostoma (Millet, 1813)	6a	-	-	2	2	-	-	-	-
Ecrobia ventrosa (Montagu, 1803)	6e	9	28	-	-	1	-	-	-
Peringia ulvae (Pennant, 1777)	6e	7	1	2	2	1	2	2	2
Scrobicularia plana (da Costa, 1778)	6e	-	-	-	-	-	-	-	-
Left valve	-	*1*	-	-	-	-	-	-	-
Right valve	-	*1*	-	-	-	-	-	-	-
Cecilioides acicula (O. F. Müller, 1774)	8	4	20	21	5	21	-	4	1
Egg	-	-	-	-	-	-	-	4	-
cf. *Cerastoderma* sp.	-	-	1	1	1	1	1	1	-
cf. *Modiolus* sp.	-	-	-	-	-	1	-	-	-

Pollen

Alex Brown

East Field Road

The pollen diagram for monolith 5006 (from early Romano-British enclosure ditch 5151; **Table 7.25**) is divided into two zones (**Fig. 7.1**). The raw pollen data is tabulated in **Table 7.25**. The basal zone corresponds to 5138 with the upper comprising 5137–5135, where the pollen assemblages are broadly similar.

1.2–0.75 m (5138): Pollen is dominated by non-arboreal pollen (NAP) (>95%), largely comprising lettuce family (Lactuceae) (65–80%) with smaller quantities from the grass family (Poaceae; ~10%) and low values (<2%) for a range of herb taxa including sedge family (Cyperaceae), goosefoot family (Chenopodiaceae), buttercup family (Ranunculaceae), common knapweed (*Centaurea nigra*), ribwort plantain (*Plantago lanceolata*). Small quantities of arboreal pollen (AP) include pine (*Pinus sylvestris*), hazel (*Corylus avellana*-type) and oak (*Quercus* sp.) with intermittent pollen grains of lime (*Tilia* sp.), alder (*Alnus glutinosa*) and maple (*Acer* sp.).

0.75–0.14 m (5137–5135): The pollen is characterised by a slight increase in arboreal pollen (AP), principally pine (*Pinus sylvestris*) and a gradual decline in lettuce family with an increase in grasses, sedges and goosefoots. There is a large increase in cereal pollen at 0.14 m. Fern spores increase from 0.75 m onwards.

The source area of pollen is linked to the size of the deposition basin, and although the relationship is non-linear, smaller basins such as ditches, as here, will derive the majority of their pollen from a smaller source area than larger basins such as lakes or mires. Consequently, the pollen in monolith 5006 is most probably indicative of the immediate environment with a proportion derived from the extra-local/regional pollen rain.

The pollen assemblage (**Fig. 7.1**) is consistent with an overwhelmingly open, mixed pastoral and arable landscape in the vicinity. Pastureland is indicated in particular by the high values for pollen of lettuce family along with ribwort plantain, with occasional cereal-type pollen grains and weed/ruderal taxa (corncockle, *Agrostemma githago*; cabbage family, Brassicaceae; common knotgrass, *Polygonum aviculare*) derived from arable and disturbed ground. A proportion of the grass pollen is likely to reflect grazed grassland, along with sedges growing in wet ditches and nearby wetland. The increase in goosefoots through the sequence is likely to reflect some expansion from nearby saltmarsh habitats.

Table 7.25 Raw pollen data

Latin name	*Common name*		*Sample 5006*						
		Depth (cm)	*16*	*40*	*67*	*72*	*80*	*100*	*119*
Betula	Birch		2	0	0	0	0	0	0
Pinus sylvestris	Pine		18	17	14	19	3	6	4
Corylus avellana type	Hazel		4	2	3	2	6	1	2
Quercus	Oak		1	0	0	0	1	1	1
Tilia	Lime		1	0	0	0	0	1	0
Alnus glutinosa	Alder		1	3	0	0	1	1	0
Acer	Maple		1	0	0	0	0	1	1
Calluna vulgaris	Heather		0	1	0	0	0	0	0
Ericaceae	Heather family		0	0	0	0	1	0	0
Cerealia type	Cereal undiff		23	0	1	0	0	0	0
Hordeum type	Barley		2	0	0	0	0	0	0
Agrostemma githago	Common corn-cockle		0	0	0	0	0	0	1
Rumex acetosa	Common sorrel		0	0	0	0	0	0	3
Chenopodiaceae	Goosefoot family		1	26	13	5	12	1	5
Brassicaceae	Cabbage family		15	1	2	3	0	0	1
Polygonum aviculare	Common knotgrass		2	2	0	2	10	4	2
Poaceae	Grass family		62	26	19	38	43	16	39
Cyperaceae	Sedge family		52	36	7	36	9	12	1
Ranunculaceae	Buttercup family		3	0	1	0	0	6	10
Caryophyllaceae	Pink family		3	0	0	5	0	0	0
Silene type	Campion		2	1	5	3	3	2	2
Rosaceae	Rose family		4	6	4	5	3	2	1
Filipendula	Meadowsweet		0	0	0	1	0	1	0
Potentilla	Cinquefoil		1	0	0	0	0	0	0
Trifolium type	Clover		0	0	0	0	0	1	1
Apiaceae	Carrot family		2	1	0	0	1	1	2
Centaurea nigra	Lesser knapweed		3	1	1	6	12	5	5
Plantago lanceolata	Ribwort plantain		13	3	3	9	4	5	12
Rubiaceae	Bedstraw family		0	0	0	0	0	0	1
Valeriana dioica	Marsh valerian		1	0	0	0	0	0	0
Cirsium	Thistle		5	2	0	0	0	2	2
Lactuceae	Lettuce family		75	184	230	180	211	233	212
Asteraceae	Daisy family		6	2	4	0	6	3	5
Pteropsida undiff	Undifferentiated fern spore		75	38	38	58	12	8	2
Pteridium aquilinum	Bracken		5	8	10	7	3	13	1
Polypodium vulgare	Common polypody		8	9	1	3	0	0	0
Potamogeton natans type	Pondweed		0	0	0	0	1	0	0
Sparganium emersum type	Unbranched bur-reed		3	2	0	0	4	0	0
Typha latifolia	Bullrush		0	0	0	0	1	0	0
Total land pollen (TLP)			303	314	307	314	326	305	313
Exotic			479	346	1012	267	272	224	95
Indeterminables			5	50	52	34	21	26	33

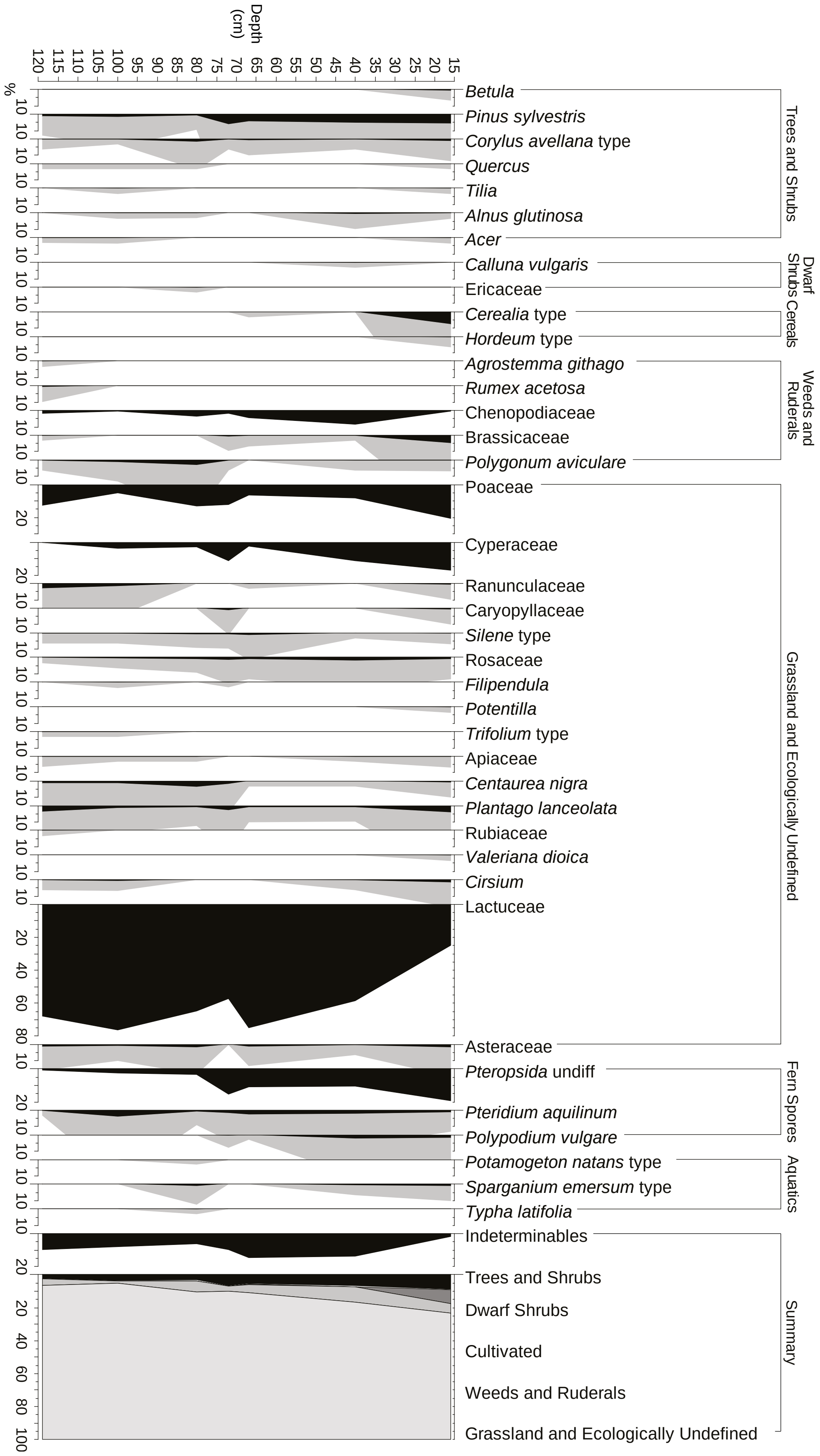


Figure 7.1 Sample 5006 pollen diagram

Discussion

Charred and waterlogged plant remains

Overall, the environmental macroremain assemblages recovered from the samples from the different sites in the scheme have provided generally positive results that provide information about past environmental changes and the evolution of agricultural techniques and crop choices over time.

Two types of preservation conditions have been identified. The plant remains are mostly preserved by carbonisation, better suited to interpretations of human use, and a smaller proportion by waterlogging, better suited to palaeoenvironmental reconstruction. Each type of condition has different biases associated with formation pathways and differential preservation processes.

Most of the well-preserved charred assemblages are by-products from crop-processing activities, and analysis of the different proportions of types of plant remains and the ecological characteristics of the weedy taxa can offer invaluable information in understanding agricultural techniques and other plant exploitation processes. Carbonisation is a non-deliberate process which mostly occurs as a result of cooking accidents (such as roasting) or the incomplete combustion of debris disposed of into hearths. More rarely, stored products can catch fire. This factor leads to the under-representation of plants or plant parts that are not processed with the help of fire or do not produce remains that may be discarded into fire. In addition, the differential preservation of different types of plant remains is difficult to interpret, as not all plant parts and taxa are equally suited to becoming carbonised instead of completely burnt when in contact with fire. There is under-representation of those plant parts that are watery or leafy. In all, it is estimated that only 20% of the plants used by a given population are represented in the charred archaeological record, and therefore abundance of charred plant remains in an assemblage does not necessarily represent an actual major or minor role of any specific resource in past subsistence (see van der Veen 2007).

In addition, once plant remains are carbonised, they may follow different deposit formation processes (see Fuller *et al.* 2014) and may be deposited immediately after carbonisation, become mixed with remains from other activities before being deposited, or may become mixed after deposition. As a result of this, any interpretations of the origin of assemblages need to rely on careful examination of the depositional conditions and can only be speculative when remains from different activities are known to be present in a single sample (most cases). In this scenario, it is very difficult (if not impossible) to distinguish when remains of different crops appear in the same samples as a result of their mixed cultivation or merely due to the admixture of by-products of separate crops after deposition.

Waterlogged plant remains, on the contrary, are more likely to represent the vegetation immediately surrounding the deposits where they are found. Although it is difficult to prove, some of these plants growing naturally near sites could have been exploited, since many would have produced edible berries or green leaves and other plant parts that have known medicinal uses (see Fern 1995–2019). In addition, some plants may be intentionally brought to domestic areas for particular purposes and their by-products may be discarded, making their way into ditches and channels; and some seeds of plants can be transported by the wind, water or animals from very variable distances and therefore be present in the wider landscape.

With these limitations in mind, this section will discuss how the specific samples and assemblages from the different sites are important for the understanding of palaeoenvironmental dynamics and human–plant resource interaction in the region over the different phases of activity. To better understand the significance of the sites and the evidence now obtained, regional comparisons (eg, Carruthers and Hunter Dowse

2019; Chadwick 2019; Hall and Huntley 2007) will be sought where appropriate and, in particular, with reference to the evidence originating from other lowland sites both north, eg, Holderness, (O'Meara 2016); Easington to Salt End (López-Dóriga 2018) and south of the Humber (eg, Alldritt 2010; Jaques *et al.* 2000; Wyles 2015).

Iron Age

Plant macroremain assemblages relevant to this phase were recovered in the samples from a series of sites (Chase Hill Road, East Field Farm, Westfield Farm, Station Road and Humberston Road), although in most cases these are very restricted and probably represent residual remains from the disposal of possible crop-processing by-products in a domestic settlement. Only those assemblages from East Field Farm and Humberston Road are possibly rich enough to be minimally representative of routine activities – although the ideal minimum number is higher, as set out by van der Veen and Fieller (1982), the samples each had at least 100 remains. Comparable sites in the area with evidence from the period are not abundant, particularly in comparison with southern England. A well-preserved example is Dragonby, with both carbonised and waterlogged plant remains (van der Veen *et al.* 1993; van der Veen 1996), but methodological issues (see Hall and Huntley 2007) make it difficult to compare the sites in detail. Further away, the area north of the Humber (López-Dóriga 2018; O'Meara 2016) has also provided some evidence.

The dominant crop in the charred assemblages from this period at the sites investigated is hulled wheats. Although both types of wheats (hulled and naked or free-threshing) were present in continental Europe from the Neolithic, different hulled species are usually associated with prehistoric and Romano-British agriculture in Britain. Of the several hulled wheat species, two (emmer and spelt) were cultivated in Britain in the Iron Age (eg, van der Veen and Jones 2007). Here and at sites in South Yorkshire (Chadwick 2019), spelt was the only species positively identified, as it was in those of Easington to Salt End (López-Dóriga 2018). The dominance of spelt is consistent with the evidence from other Iron Age sites from the Midlands and generally across Britain, with some localised exceptions (Carruthers and Hunter Dowse 2019). Spelt is better suited to heavy soils, which are dominant in the area. At Dragonby (van der Veen 1996) and Holderness (O'Meara 2016), both spelt and naked wheat were recovered in deposits attributed to the Late Iron Age, but the latter are always minor finds. A number of Midlands sites with early occurrences of naked or free-threshing wheats exist (Carruthers and Hunter Dowse 2019), but the evidence for the cultivation is tenuous until the Romano-British period.

Other minor crops (in terms of abundance of charred plant remains) were barley and broad bean (and possibly other large-seeded vetches). Their limited presence may be explained by differences in use of the crop (eg, fodder, boiling rather than roasting, etc.) and consequently of processing (not requiring the use of fire, conducive to carbonisation).

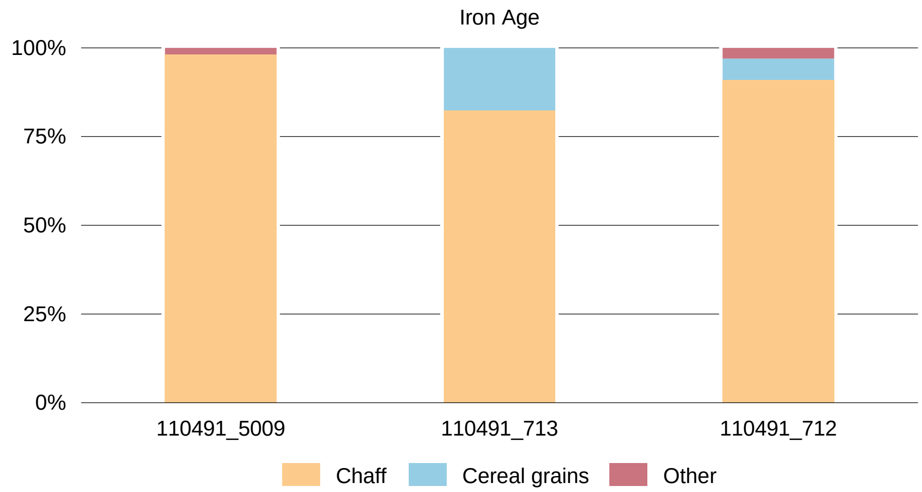
The analysed samples are generally dominated by chaff (**Fig. 7.2**), particularly wheat glume bases, suggestive of the typical by-product of crop-processing (dehusking) that would have been carried out in a domestic area, on a piecemeal basis – again consistent with typical settlement evidence elsewhere (Carruthers and Hunter Dowse 2019).

No remains of fruits or nuts were identified in the samples but again this could be due to differential preservation and not necessarily absence of exploitation. At Doncaster (Pelling 2019a) and north of the Humber (López-Dóriga 2018), there is evidence for the exploitation of wild resources, probably managed, such as hazelnuts.

Most of the wild plant remains were probably accidentally introduced, being present as weeds in the crop fields. They indicate the cultivation of wet meadows with heavy soils. However, some of the assessed samples from Chase Hill Road and Westfield Farm had a taxonomical composition (heath grass, sedges, rhizomes, etc.) representative of the burning of turves (see Hall 2003), a pattern also seen at Dragonby (Hall and Huntley 2007) and north of the Humber (López-Dóriga 2018).

In general, the environmental evidence from the sites is consistent with previous information that suggests the area was subject to increasing woodland and heathland clearance, largely made of open landscape with a mixture of arable fields and wet pastures (eg, Greig 2007; Pelling 2019b), suggesting a previously higher water table only lowered as a result of late medieval and post-medieval drainage (Chadwick 2019).

Figure 7.2 Categories of plant remains in the analysed Iron Age samples from East Field Farm and Humberston Road



Early to mid-Romano-British (1st and 2nd centuries AD into 3rd century AD)
Although samples with macroremains from features attributed to this phase were obtained from a number of sites (East Field Farm, Westfield Farm, Keelby Road, Wells Road, Station Road, Humberston Road), and these are generally representative of the discard of crop-processing by-products, only a few samples provided rich assemblages suitable for a more detailed approach to reconstructing agricultural practices (Westfield Farm and Humberston Road) and landscape (Wells Road). Of these, only the sample from Westfield Farm is attributed to the early Romano-British period and those from Humberston Road may be later (<110491_711> has been radiocarbon dated to the 2nd–3rd centuries: Poz-123510; 120–320 AD, see Radiocarbon Dating, below). Most of the well-preserved Romano-British evidence at the sites, as well as from comparison sites in the surrounding area, seem to be from the 3rd century or after.

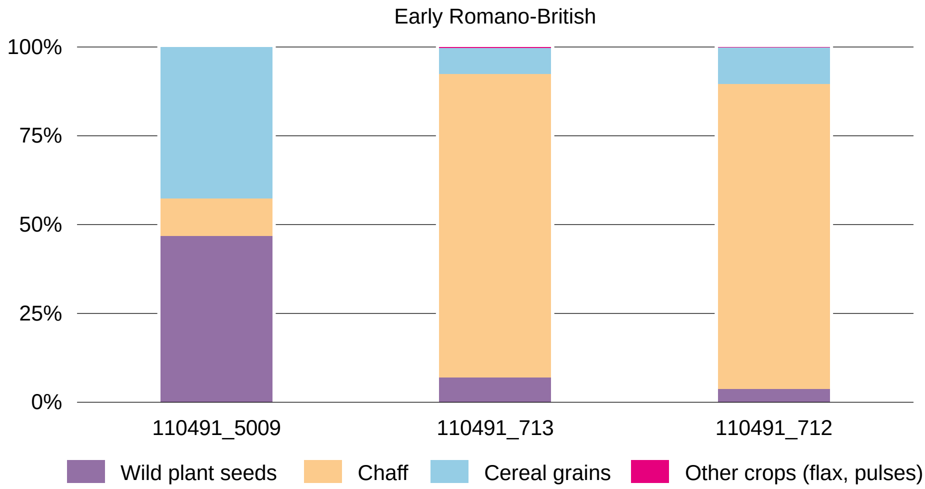
Analysis of the charred assemblage and the proportions of types of remains (**Fig. 7.3**) reveal different formation processes taking place at the two analysed sites.

At Westfield Farm there were less than 100 remains, so interpretation is tentative. The similar proportions of chaff and possible crop weeds could suggest an origin in dehusking and sieving for weed seeds. The taxa suggest the cultivation of a fairly damp meadow.

At Humberston Road, chaff dominates but grains are present too and a relatively high ratio (0.7) are sprouted in both samples. This phenomenon could have been produced through different processing activities, namely crop-drying or malting, and is also observed as a more widespread phenomenon in later Romano-British deposits (in Humberston and other sites such as Keelby Road and Station Road). For malting, deliberate sprouting would be sought, and as a consequence a certain degree of homogeneity in the lengths of the coleoptiles would be expected (van der Veen 1989). This was not observed in the present assemblage, suggesting sprouting is more likely to be accidental (as a result of a wet season, for example, when some of the grains sprout before being collected) and explains the need to dry the crop before storage. The high chaff-to-grain ratio of the assemblage suggests the chaff may have been used as a fuel in drying; this would have been a preferred fuel because of the pleasant taste it would give to the dried grain. This evidence could suggest pit 7491 may have been a possible dismantled kiln, similar to the ones identified for the late Romano-British/Anglo-Saxon period by Ross *et al.* (2017).

The wild plant seeds from both samples from Humberston Road have a notably different taxonomical composition, probably resulting from the mixture of by-products from different activities, suggesting different ecological provenance and formation processes. It is likely that one of the samples (with seeds of sedges and heath grass, roots and tubers) has an origin in turf burning (see Hall 2003). The burning of turves has also been observed in earlier Iron Age deposits in the wider area (Chase Hill Road and Westfield Farm; Dragonby) and early Romano-British Rossington, Doncaster (Stevens and Grant 2020). The other assemblage is more likely to originate in weedy conditions, with some typical arable weeds such as field madder and corn-salad, an archaeophyte (Preston *et al.* 2004).

Figure 7.3 Categories of plant remains in the analysed early–mid-Romano-British sample from Westfield Farm and Humberston Road



The dominant crop in the charred assemblages from this period continues to be hulled wheat, probably restricted to the only positively identified species, spelt. Again, barley and broad bean have a minor relative importance and flax makes an appearance. The presence of flax as a capsule is suggestive of seeds being exploited for oil, although the use of fibres cannot be ruled out either.

There is no evidence for the exploitation of other resources at the site in this period; however, comparable sites such as Rossington (Stevens and Grant 2020) evidenced a range of wild exploited resources and the same may have occurred here.

At Wells Road, well-preserved waterlogged assemblages provide a glimpse of the surrounding landscape, suggesting an open area with scrub patches and permanently wet ditches.

Late Romano-British (3rd–early 5th centuries AD)

Charred plant remain assemblages relevant to this phase were recovered in the samples from Keelby Road, Station Road and Humberston Road, with several samples from each site analysed. Similar to the samples from the previous phase, the dominant type of remain is chaff (**Fig. 7.4**).

In general, the dominant crop in the charred assemblages from this period is hulled wheat, probably spelt, as no other species was positively identified. Spelt was also the only wheat positively identified at Immingham (Alldritt 2010; Wyles 2015), but both emmer and spelt were still cultivated in the wider area – eg, Thurnscoe (Giorgi 2004) and Rossington (Wyles 2019) – so perhaps the single presence of spelt here is an adaptation to local conditions (heavier soils).

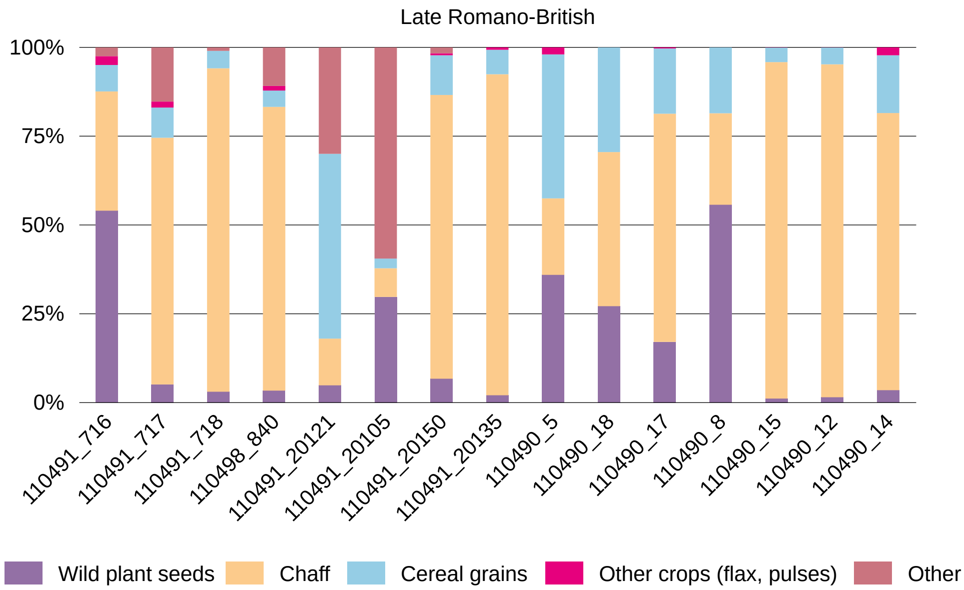


Figure 7.4 Categories of plant remains in the analysed late Romano-British samples from Humberston Road, Keelby Road and Station Road

Samples with small proportions of sprouted grains suggest accidental germination in the ears and are probably related to crop-drying activities (see previous discussion of similar deposits). Crop-drying ovens are not rare in rural contexts from the north of England (Hall and Huntley 2007) and very good examples of assemblages have been retrieved from Rossington (López-Dóriga 2019). One of the Station Road deposits, originating from a 'spread' (1147), had a larger proportion of sprouted grains (0.8 ratio) and may have been the remains of a truncated or dismantled crop-drying kiln or oven. A similar explanation was put forward by Ross *et al.* (2017) to explain similar scoops of charred material with a high degree of germination, although barley was dominant there and the deposits were dated to the 4th and 5th centuries. Van der Veen (1989) suggests these types of features may have had a double function, as crop-dryers and malting ovens. At Staniwells Farm near Hibaldstow (Allison *et al.* 1990), a mixture of sprouting grains of spelt (80% of the grains, at two thirds of their length) and barley (30% of the grains, just started to sprout) were found in an ash deposit associated with a 3rd century oven, suggesting that malting may have been in progress at that site.

One grain of naked wheat was identified in one of the samples, suggesting either intrusion or the beginning of the cultivation of one of the species in this group in the area. Although this crop (often *T. aestivum*) does not become widespread in Britain and the Midlands until the early medieval period (Carruthers and Hunter Dowse 2019), a number of Romano-British sites in the wider area have contained finds of naked wheat – eg, Thurnscoe (Giorgi 2004), Rossington (Stevens and Grant 2020; Wyles 2019) and Immingham (Wyles 2015) – and there is undoubted consumption of the crop by the army at sites such as South Shields, Tyneside, in northern England (van der Veen 1994) and Colchester, Essex (Murphy 1992).

Barley was present in lesser numbers, possibly suggesting its use as fodder, as the Romans considered it an inferior food for humans (Carruthers and Hunter Dowse 2019). Grains of possible rye/wheat were also recovered in one assessed sample, but there was no robust evidence for the cultivation of rye at the sites, although hulled wheat (emmer and spelt), naked wheat and traces of oats and rye were found at Thurnscoe (Giorgi 2004) and rye seems to have been a minor crop in the West Midlands (Carruthers and Hunter Dowse 2019). Oat remains, both grains and particularly awns, were present in several of the samples, but there was no firm indication of its cultivation, which would be impossible to ascertain without lemma bases that allow a positive identification.

Domesticated legumes in addition to broad bean, such as garden pea, appear at several sites during this phase; broad bean is present in earlier samples and was also recovered from the villa at Winterton, near Scunthorpe (Williams 1977). Both broad bean and pea are likely to have been widely cultivated in the East Midlands (Carruthers and Hunter Dowse 2019). Flax was also found in a number of the samples, but it is unclear if it was used as an oil or a fibre crop or both.

Evidence for the exploitation of other wild resources is again rare, probably due to taphonomic issues, but pear or apple was at least consumed at Humberston Road. Apples and hazelnuts have been found in deposits at Rossington (Wyles 2019) and hazelnuts at Thurnscoe (Giorgi 2004).

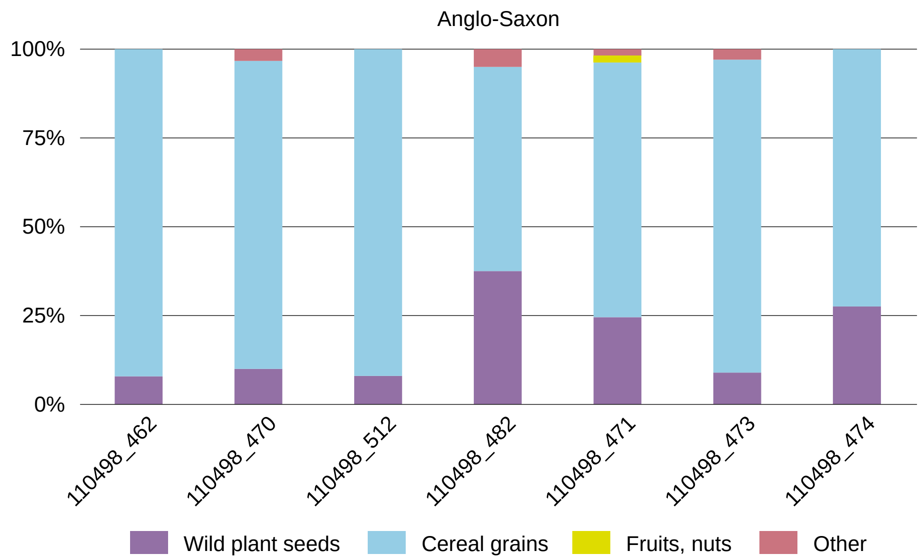
There is no trace of exotic imports typical of wider Romano-British trade (van der Veen *et al.* 2008) that were available at other sites in the immediate region (Carruthers and Hunter Dowse 2019; Hall and Huntley 2007), not only the large well-connected places like York, but also more modest locations such as the villa at Winterton, where remains from fig and grape were retrieved (Williams 1977). An experimental vineyard was possibly uncovered at North Thoresby (Carruthers and Hunter Dowse 2019).

There seems to be a greater range and abundance of weeds in comparison to earlier and later phases at the sites, which might correspond to differences in farming techniques, or a larger diversity of soils being put into use. In addition, several samples strongly suggestive (sedges, heath-grass, rhizomes, etc.) of turf burning (Hall 2003) came from Keelby Road, Station Road and Humberston Road. Other sites in the area suggest transported peat was also being used as an alternative source of fuel (Jaques *et al.* 2000).

Early and Middle Saxon

A well-preserved plant macroremain assemblage relevant to the understanding of this period was retrieved from Laceby Beck, from where a number of samples were analysed, providing abundant remains dominated by cereal grains (**Fig. 7.5**). One of the analysed samples (<110498_462>) and two of the assessed samples (<110498_488> and <110498_516>) were directly dated to the early 5th to mid-/late 6th century AD (Poz-123508, Poz-124392 and Poz-123509; see Radiocarbon Dating, below), which makes this assemblage particularly important as there is a reported rarity of environmental evidence dating to the early post Romano-British period in northern England (Hall and Huntley 2007; Ross *et al.* 2017) and the Midlands (Carruthers and Hunter Dowse 2019).

Figure 7.5 Categories of plant remains in the analysed Anglo-Saxon samples from Laceby Beck



Traditionally, Anglo-Saxon agriculture has been understood to involve a complete discontinuity from the Roman tradition, which was focused on spelt, to one focused on the cultivation of free-threshing wheats; however, the sequence may be more complex (eg, Carruthers and Hunter Dowse 2019) and the transition not so abrupt. The evidence suggests there was more crop diversity and intraregional and local differences during this period (Carruthers and Hunter Dowse 2019).

In contrast with previous periods when wheat was the principal cereal in terms of charred grain abundance, barley was now the dominant crop at Laceby Beck. When determination was possible, barley was identified as hulled and of dense-eared varieties. This is the most common type of barley for both fodder and malting uses, but it had other uses in human food. Barley was also the main crop at Easington to Salt Lane (López-Dóriga 2018), at Flixborough (Dobney *et al.* 2007) and in the Gosberton area, and may be associated with the cultivation of saline soils (Carruthers and Hunter Dowse 2019). Barley is more salt-tolerant (ie, to sea spray) than other cereals and hulled barley produces better yields than naked barley.

The wheat remains, which have a very minor presence in Saxon deposits at Laceby Beck, are of both hulled and naked taxa. The hulled wheats (spelt, when identified) could be residual from earlier activities in the area; however, evidence for this is limited and the presence of hulled wheat remains in a number of different samples suggests the more likely possibility of both types of crops being cultivated at the same time. Hulled wheats would eventually become replaced by naked wheats (van der Veen and Jones 2007), a transition which starts to be observed from the late Romano-British period (eg, Carruthers and Hunter Dowse 2019; Hall and Huntley 2007). Hulled wheats had the advantage of better resistance to wet weather, but required more processing effort (roasting and dehusking) than naked wheats, which are easier to process and produce higher yields in rich soils. Other Anglo-Saxon sites in the region with a mixture of hulled and naked wheats include, for example, Easington to Salt Lane (López-Dóriga 2018).

Although oats were present and this may have been an important crop because of its tolerance to salinity, often grown together with barley as a maslin (Carruthers and Hunter Dowse 2019), its domestic status could not be ascertained due to the absence of chaff. Furthermore, no remains of pulses were positively identified as belonging to any domestic species. Therefore, no firm evidence for the cultivation of crops other than barley and wheat was obtained in the Laceby Beck samples from this period, but this could suggest the adoption of different preparation techniques that involved less chance of carbonisation. At Flixborough (Dobney *et al.* 2007) the most commonly found grain was barley, followed by free-threshing wheat, rye and oats, and at Barrow Road, Barton-on-Humber (Rackham and Giorgi 2002) free-threshing wheat, then barley, oats and possible bean and flax. In addition to barley, and small amounts of wheats (naked and hulled), rye and oats, broad bean, opium poppy and flax were found at Easington to Salt Lane (López-Dóriga 2018).

The negligible presence of cereal chaff is typical of medieval and later assemblages, where mostly free-threshing cereals were cultivated (eg, Hall and Huntley 2007). This lack of chaff is not surprising since hulled barley could have been used without dehusking (for fodder and brewing) and the chaff of naked wheat tends to be destroyed more easily by fire and would be largely removed at the threshing stage, which would have been carried out away from settlements and on threshing floors near crop fields. Some other differences can be observed between the 'weedy' assemblage of the Saxon period and those of earlier phases, such as the absence of some 'noxious' arable weeds (for example, cleavers, corn-salad and stinking mayweed, which seem to have been a persistent problem in both earlier and later phases). Only a few arable weed seeds seem to have arrived at the settlement together with the grains, and most of the seeds of wild plants present are indicative of waste ground and could, therefore, have been growing around the inhabited areas. The ruderal vegetation reflects the appearance of henbane, an archaeophyte (Preston *et al.* 2004). Although this is a plant that can become naturalised in such habitats, it has medicinal properties and was cultivated in some medieval herb gardens. It was also found north of the Humber (López-Dóriga 2018) in Romano-British deposits and in other deposits across the Midlands (Carruthers and Hunter Dowse 2019).

Remains of sloe point to the exploitation or management of woodland or orchard resources at Laceby Beck, and hazelnuts were found at Easington to Salt Lane (López-Dóriga 2018). The waterlogged macroremains from one of the boundary ditches indicated the existence of a permanent body of shallow and eutrophic water with nitrophilous plants in the vicinity, as well as some shrub/hedgerow species, including plum/cherry/sloes that may have originated in a managed orchard.

Medieval

A significant charred plant assemblage for this period was recovered in the samples from moated sites at Blow Field and Habrough. Similar to the assemblage of the Anglo-Saxon phase, little chaff was present, the proportion of weed seeds is moderate and the dominant type of remain are cereal grains (**Fig. 7.6**). The assemblage as a whole suggests the crop was almost clean for the later stages of preparation, but the presence of other remains indicates some mixing of materials from different activities and informs about the disposal of by-products from plant processing activities carried out within settlement areas. Therefore, although the assemblage originates from moated sites, there is limited evidence for the consumption of plant foods, with an under-representation of plants not processed using fire. Hall and Huntley (2007) reported a rarity of environmental evidence from moated sites in northern England, and most of it is preserved by waterlogging in the moat ditches, the assemblages representative of the natural environment rather than of the use of plant resources.

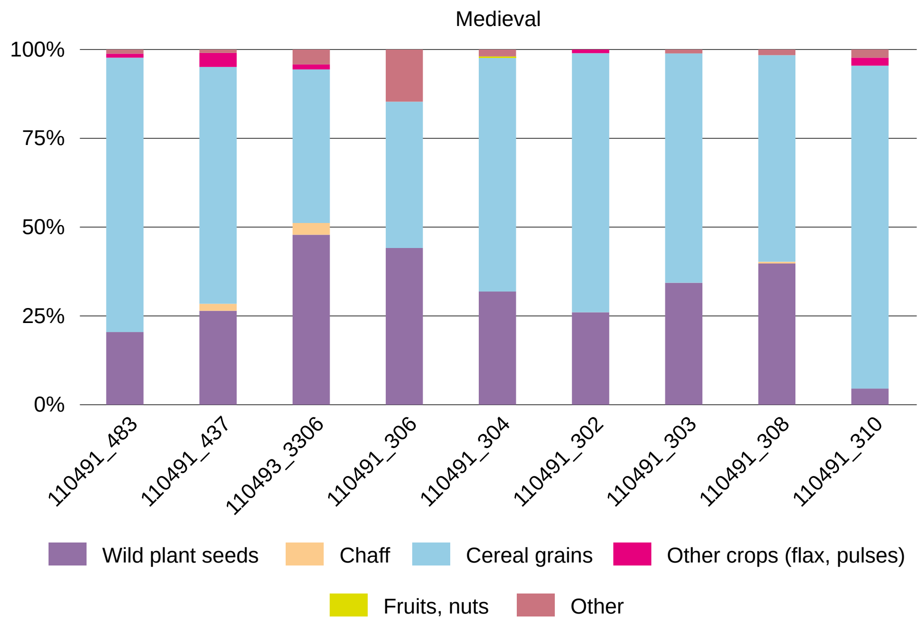


Figure 7.6 Categories of plant remains in the analysed medieval samples from Blow Field and Habrough

The main crops of the period at the sites were naked wheat and barley. Naked wheat, identified to the bread hexaploid species due to the presence of internodes, is dominant in most samples (Habrough) except one (from Blow Field), where barley is more abundant. At other medieval sites in the Midlands, tetraploid naked wheat (*T. turgidum*) starts to make an appearance in this period, with the most northerly site so far identified in the east being in Grimsby (Carruthers and Hunter Dowse 2019). Although residual hulled wheats are also reported at other Midlands sites (Carruthers and Hunter Dowse 2019), none was observed in the medieval sites studied here.

The rarity of rye, only identified at Blow Field (one rachis), could indicate that this may have been a minor crop or just a contaminant, suggesting that the area escaped the problems of impoverished soils across the Midlands (Carruthers and Hunter Dowse 2019) and northern England (Hall and Huntley 2007), where rye, typical of poorer soils and lower quality bread, was becoming widespread. Bread wheat, which tends to be a more demanding and high-yielding cereal, is dominant, perhaps indicative of the cultivation of reclaimed fertile soils or a higher status of consumption, possibly associated with households linked to the moated settlements. Rye could have been just used for fodder and, therefore, have less chance of becoming carbonised (Carruthers and Hunter Dowse 2019). Burnt seaweed, together with remains of wheat, rye, oats and barley, with some weeds, especially stinking mayweed, were found at Bottesford, near Scunthorpe (Hall and Huntley 2007).

Although its wild or domestic status cannot be fully ascertained in the absence of distinctive chaff (lemma bases), most of the oat grains are of a large size, suggesting this taxon might have become by then one of the major crops. Interestingly, charred porridge-like (see criteria of González Carretero *et al.* 2017) food remains were found in one of the samples from Blow Field, although no cereal inclusions were identified.

In addition to cereals, there was evidence at Blow Field and Habrough for the cultivation of other crops, namely garden pea, broad bean and flax. These same species were also found north of the Humber (López-Dóriga 2018), and evidence of flax retting was possibly retrieved from Beverley (Hall and Huntley 2007). Although poor preservation (absence of seed testa and hila) prevented precise identification in many remains of large-seeded legumes, other species in the vetch tribe could have been cultivated. Vetch (*Vicia sativa*) and other fodder pulses were present at various Midlands sites (Carruthers and Hunter Dowse 2019), and the increased ubiquity of pulses is thought to be either representative of generalised practices of crop rotation or mixed cultivation.

Although possible higher status consumption might be indicated by the dominance of bread wheat, both moated settlements lack evidence of exotic foods. Whether this is a result of differential preservation (areas of processing identified, rather than areas of consumption) or because of the more rural nature of the area is not possible to tell. At Normanby Park (Carrott *et al.* 2003), cannabis/hemp (*Cannabis sativa*) and walnut (*Juglans regia*) were identified, together with flax, hazel, rye and arable weeds (corncockle and corn marigold).

There appears to be a smaller diversity of weeds in the medieval period in comparison to the Romano-British phases at Westfield Farm, which could suggest different agricultural conditions and techniques. Waterlogged plant remains representing the vegetation growing in the surrounding environment were recovered from a hedgerow, including seeds from wetland plant taxa, shallow-water habitats, and a range of nitrophilous herbs and shrubs.

Post-medieval

An exceptionally well-preserved assemblage of charred plant remains was recovered from a post-medieval deposit at Habrough, likely indicating the deposition of a burnt store of a fodder crop (rye-grass/fescue) or a single burning event of crop-processing by-products. A relatively rich sample from Blow Field was also analysed to provide information on more recent land use in the area. Both samples have important assemblages of wild plant seeds but have little else in common (**Fig. 7.7**).

Unfortunately, there is very little comparable material for this period and area (Carruthers and Hunter Dowse 2019). Whilst at other more distant sites there is an increase in the diversity of exotic products, some incorporating American plants, the evidence from the moated sites points to their more rural, perhaps isolated character, with no indication of any exotic products being used. Hemp and teasel were found at Waterton, near Scunthorpe, and fig, strawberry and hemp in Doncaster (Hall and Huntley 2007). In Cartergate within the old town at Grimsby, deposits of 16th/17th-century date yielded fragments of hemp seeds, fig and apple, as well as evidence for cereal bran, hay and straw, and saltmarsh material (Carrott *et al*. 1994). Further material from another site in Grimsby yielded some unusual taxa, such as chicory (*Cichorium intybus*) and hemp, while fig and other medicinal plants were found at Hull (Hall and Huntley 2007).

For the moat deposits at Blow Field, of likely medieval or post-medieval chronology, the waterlogged evidence is representative of scrubby/hedgerow vegetation and nitrophilous/wet-loving taxa growing by the moat with at least seasonal water (this is further supported by the existence of water-flea egg cases and ostracods). However, there is no definite indication of a permanent body of water as at Habrough.

Well-preserved plant macroremains were retrieved from one of Habrough moat's post-medieval deposits. These suggest a permanent body of shallow water with different eutrophic aquatic species such as pondweed and horned pondweed, surrounded by low wetland vegetation and shrubs or small hedgerow trees.

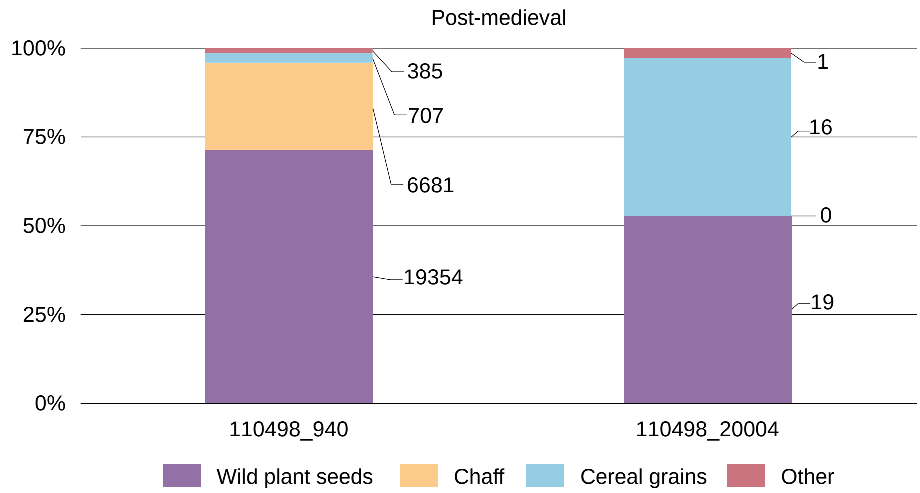


Figure 7.7 Categories of plant remains in the analysed post-medieval samples from Habrough and Blow Field

Microfauna

Tetney Lock Road, Tetney
The ostracods were dominated by a species (*Cyprideis torosa)* which tends to frequent quiet, muddy creeks, and the presence of freshwater ostracods suggests that the creek was probably fed by a small stream.

Brooklands
All four contexts, each relating to a separate pit, contained an almost identical brackish estuarine foraminiferal and ostracod fauna, particularly indicative of tidal mudflats. Fuel ash slag and burnt clay in two samples suggests human activity.

In the hearth samples, there are clear signs of human industry evidenced by burnt clay, charcoal and fuel ash slag. The presence of brackish, freshwater and terrestrial components indicates the collection of sand and mud from intertidal and adjacent areas for salt extraction through heating in shallow pits (evaporation hearths). The charophyte oogonia (the fruiting bodies of the stonewort plant) suggests freshwater pools.

Molluscs

Tetney Lock Road, Tetney
The sample derives from a ditch fill. It is dominated by *Gyraulus crista,* a freshwater generalist, and *Bithynia tentaculata*. The *Bithynia* opercula occurring in higher numbers than the shells suggest there has been winnowing by a current. It is clear that as the sediment accumulated in the ditch, the water was permanent, not seasonal, with some flow. The terrestrial molluscs present again reflect a wider environment of open grassland. Brackish water snails may either be derived from underlying material or introduced by estuarine deposits along the ditch.

Brooklands
Four samples came from a series of medieval brine-pit fills. Molluscan assemblages from pit fills can be difficult to interpret, as they can include shells from the material excavated to dig the pit in the first instance, snails from the immediate vicinity who entered the pit while it was open and shells accidentally introduced on material from elsewhere, as well as intrusive shells from overlying layers (Allen 2017, 41). The pit fills that were sampled date to a period after abandonment, and contain relatively low numbers of group 4a taxa, which likely represent the wider environment, and suggest open grassland. *Pupilla muscorum* and *Vertigo pygmaea* in particular are favoured by close grazing and trampling, which reduce the vegetation cover. The group 3 taxa may have been favoured by slightly more humid conditions within the open pits. There are also a number of group 6e brackish water taxa contexts, in particular *Ecrobia ventrosa*, which is associated with brackish water contexts away from direct tidal influence, such as creeks and lagoons. These may derive either from underlying estuarine deposits, or from estuarine flooding of the pits. Freshwater taxa are present, which also imply seasonal flooding of pits. An alternative interpretation, however, is that terrestrial and freshwater shells may derive from turves used in the filtration of brine.

The remaining samples are from hearth deposits, most likely used to evaporate brine. These are dominated by open country taxa, reflecting a grassland environment. There is probably imported material here, in particular the clay lining for the pits, although the snails are likely to represent the wider local environment.

Pollen

East Field Road
Significant parts of the landscape in the Humber were almost entirely cleared of woodland by the Iron Age. However, a phase of marine regression during the Late Iron Age and early Romano-British period allowed for expansion into previously wet areas with access to fertile soils along the wetland margins (van de Noort 2004). Many of these low-lying sites show evidence for periodic flooding from the mid-2nd century, and the gradual infilling of the early Romano-British enclosure ditch from which the pollen samples were obtained (**Table 2.26**) is likely to reflect both the expansion of wetland habitats but also continued mixed arable/pastoral land use on nearby adjoining land.

Pollen data are sparse for the Romano-British period in the Humber region. However, the evidence for mixed arable/pastoral land use from monolith 5006 corresponds broadly with palynological data from nearby Romano-British sites, including Rossington (Daniel 2019; Powell *et al.* 2020) and Balby Carr (Jones 2007). Interestingly, at Rossington the evidence for mixed arable/pastoral land use is also contrasted by additional pollen evidence for mixed-deciduous woodland from the fill of a Late Iron Age/early Romano-British waterhole, with up to 65% arboreal pollen (Daniel 2019). Although the landscape was predominantly open in the Romano-British period, it is clear that localised patches of woodland remained on areas of dry ground fringing the wetland.

Environmental Summary

The environmental assessment and analysis have provided complementary information that allows reconstruction of some aspects of the local landscape and the human–environmental interactions during the occupation of the sites.

The diverse and rich plant macrofossil evidence (**Table 7.27**) offers a dynamic picture of cereal and pulse agriculture (with several crops being adopted and abandoned throughout time), largely productive soils and wet pastures, turf burning from the Iron Age and Romano-British periods, and the absence of exotic remains testifying to the rural nature of the activities and sites investigated.

Table 7.26 Sediment descriptions and sub-samples taken from East Field Road

Location: Ditch 5151 (intervention 5139)			*Monolith sample 5006*	*Drawing: 562*	
Depth (m)	*Context*	*Sub-samples*	*Sediment description*	*Interpretation*	
0–0.14	VOID		VOID	VOID	
0.14–0.69	5135 and 5136	3 pollen	Firm 10YR 4/2 dark greyish brown silty clay. Rare small inclusions (manganese, subangular flint), very rare large inclusions (rounded flint 23 mm). Rare fibrous roots, rare molluscs (complete and comminuted). Frequent iron staining increasing down profile with a concentration at the base of the unit from 0.55–0.69m (10YR 4/3 brown). Fine and very fine pores (2–5%). Sharp boundary with underlying unit. Troels-Smith classification: Ag3, As1, Gmin+, Moll+; Nig.0; Str.0; Elas.0; Sicc.4.	This is one unit deposited over a long period, rather than two separate contexts. It represents the gradual infilling of the ditch (or ditch recut). The size of inclusions and presence of organics indicate some water activity and/or colluviation. The increase in redoxymorphic features down profile suggests an increase in water activity over time.	Deposit representing periods of use and gradual water-related silt deposition, ending in disuse of feature.
0.69–0.75	5137	1 pollen	Firm 7.5YR 4/1 dark grey clay. No inclusions. Rare fibrous roots. Very fine pores (0.1%). Abrupt boundary with underlying unit. Troels-Smith classification: As4 Ag+; Nig.0; Str.0; Elas.0; Sicc.4; Lim.3.	Unoxidised sediment. Period of wetting (lack of laminations indicate this is not seasonal/intermittent but lack of inclusions suggests this is not a high-energy event). Boundary observations (from this unit and unit beneath) suggest this is the result of deliberate action.	Possible recut or 'lining' – therefore base of new ditch in a wetter period and representative of initial infill, rapid burial.
0.75–1.20	5138	3 pollen	Firm 10YR 4/2 dark greyish brown silty clay. Rare–occasional small inclusions (rounded chalk), very rare medium inclusions (rounded chalk, flint). Rare–occasional complete and comminuted molluscs throughout, fossil shells present (very rare). Frequent iron staining throughout, almost fully oxidised towards base (slight iron panning evident around rootholes) – 10YR 4/3 brown clay. Fine and very fine pores (2–5%). Moister towards base of unit. Troels-Smith classification: Ag2 As2 Moll+; Nig.0; Str.0; Elas.0; Sicc.4-3; Lim.3.	Lack of large inclusions and organics shows low energy, probably a mixture of water- and gravity-related episodes. Redoximorphic features and low energy events suggest dry for longer periods than wet. Also, molluscs and extent of oxidisation indicate the feature was open for a longer period than the unit above.	Initial period of trample/silting after ditch was cut followed by gradual infilling from surrounding area.

Troels-Smith (1955) classification: Argilla steatodes (As), Argilla granosa (Ag), Grana minora (Gmin), Grana majora (Gmaj), Mollusca (Moll) – 0=absence of, 4=maximum; Nigror (Nig.), Stratification (Str.), Elasticitas (Elas.), Siccitas (Sicc.), Limes superior (Lim.); Nig. 0=white, 4=black; Str. 0=homogeneous, 4=strong laminations; Elas. 0=clay, 4=peat, Sicc. 0=water, 4=dry; Lim. 0=>1 cm, 1=<1 cm and >2 mm, 2=<2 mm and >1 mm, 3=<1 mm and >0.5mm, 4=<0.5 mm.

Table 7.27 Summary of activities identified from the plant macrofossil evidence

	Iron Age	*Early RB*	*Late RB*	*Anglo-Saxon*	*Medieval*	*Post-medieval*
Processing of cereal crops						
Barley	✓	✓	✓	✓	✓	✓
Spelt	✓	✓	✓	✓	-	-
Bread wheat	-	-	✓	✓	✓	✓
Rye	-	-	-	-	?	-
Oats	-	?	?	?	?	?
Rye-grass/fescue	-	-	-	-	-	✓
Processing of other crops						
Broad bean	✓	✓	✓	-	✓	-
Garden pea	-	-	✓	-	✓	-
Flax/linseed	-	✓	✓	-	✓	-
Exploitation of fruits and nuts						
Apple/pear	-	-	✓	-	-	-
Hazelnut	-	-	-	-	✓	-
Sloe	-	-	-	✓	-	-
Other activities						
Turf burning	✓	✓	✓	-	-	-

The underlying microfaunal (foraminifera and ostracoda) ecology strongly indicates that the sites of Tetney Lock Road and Brooklands were located in a brackish, tidal estuarine inlet area in the medieval period.

The molluscan medieval assemblages identified at Brooklands are generally suggestive of open grassland. In particular, there are indications of close grazing and trampling and potential episodes of inundation from estuarine brackish water, as well as freshwater seasonal flooding. An alternative interpretation, however, is that terrestrial and freshwater shells may have derived from turves used in the filtration of brine. The molluscan evidence from a ditch fill at Tetney Lock Road, Tetney, suggests the ditch had permanent water with some flow and a wider environment of open grassland, with potential inundation of estuarine deposits.

The pollen evidence from East Field Road suggests a predominantly open, mixed pastoral and arable landscape in the vicinity during the early Romano-British period. A proportion of the pollen is likely to reflect grazed grassland with wet ditches and nearby wetland. The increase in some taxa through the sequence is likely to reflect some expansion from nearby saltmarsh habitats.

Radiocarbon Dating

Inés López-Dóriga

Introduction

Sixteen samples were submitted for radiocarbon dating, following the recommendations set up in the assessment and based on published research priorities (eg, Research Frameworks 2023). The results, in particular, provide a chronological 'anchor' for the archaeobotanical and osteoarchaeological analyses and the typology of Iron Age pottery.

Aims

The samples were proposed for radiocarbon dating with the aim of achieving an improved understanding of the chronology of human activity at the site. The sample proposal (Wessex Archaeology 2020) was based on published research priorities (eg, Knight *et al.* 2012), and was constrained by the availability of suitable entities (that is, samples likely to supply reliable dates for the deposits they were recovered from and with a secure stratigraphic provenance within those deposits).

The undated (potentially Iron Age, Romano-British or Anglo-Saxon) enclosure ditches of Laceby Beck were targeted for radiocarbon dating using short-lived plant remains and articulated animal bone to establish their chronology.

In addition to the samples of charred plant remains from Laceby Beck, radiocarbon dating of charred plant material from a ditch deposit at Humberston Road was proposed to provide a chronology for the substantial crop-processing assemblage obtained from this otherwise undated feature.

Radiocarbon dating of a residue present on an Iron Age sherd from Chase Hill Road, North Killingholme (RPS 2013e) was proposed to refine Iron Age ceramic chronologies.

Seven radiocarbon dates were recommended to enhance the analysis of human bone and the comparative study of the mortuary rites undertaken, as well as to contribute to the understanding of attitudes to the dead within the confirmed temporal sphere. These samples also had potential to refine the general stratigraphic chronology.

A pair of dates on material from a monolith sample from the medieval moat at Westfield Farm, North and South Killingholme, was proposed, to help refine the chronology of the moat and enhance environmental analysis of its fills.

Methods

The 16 radiocarbon samples were selected by the post-excavation lead (Ashley Tuck) in conjunction with the relevant project specialists (Jacqueline McKinley, Inés López-Dóriga, Lorrain Higbee). In line with best practice, pairs of dates from features were obtained where possible, with each pair comprising different non-residual entities, eg, short-lived plant remains. Samples were taken from at least moderately-rich charred plant remain assemblages and articulated bone groups.

The radiocarbon samples were submitted to the 14Chrono Centre, Queen's University, Belfast (UBA), the Scottish Universities Environmental Research Centre (SUERC), University of Glasgow, and the Poznan Radiocarbon Dating Laboratory (Poz). Reporting of the radiocarbon dating (see **Table 7.28**) results follows international conventions (Millard 2014).

In the case of bone, collagen extraction was performed, with the quality of the collagen assessed based on the C/N atomic ratio and collagen extraction yield. The plant

Table 7.28 Radiocarbon dating results from Hornsea, calibrated with IntCal20 and MarineCal20

Lab. reference	*Sample reference*	*Material*	*Radiocarbon age (BP)*	*Stable isotopes (IRMS)*		*% Marine*	*Age calibrated BC/AD (2σ 95.4%)*	
				$\Delta^{13}C$‰	*$\Delta^{15}N$‰*		*Calibrated*	*Modelled*
Poz-123508	Laceby Beck (110498 TWB4) Pit [592] (593) <488>	Charred plant remain: Triticeae grain	1570 ± 30	-	-	-	AD 420–570	*AD 430–570*
Poz-124392	Laceby Beck (110498 TWB4) Ditch 21022 [836] (83) <516>	Charred plant remain: Triticeae grain	1610 ± 30	-	-	-	AD 410–550	*AD 420–550*
Poz-123509	Laceby Beck (110498 TWB4) Pit [475] (477) <462>	Charred plant remain: *Hordeum vulgare* grain	1555 ± 30	-	-	-	AD 420–580	*AD 430–580*
Poz-123812	Laceby Beck (110498 TWB4) Ditch 21016 [730] (732)	Bone (animal): dog ulna (1.2 g)	1530 ± 30	-	-	10 ± 10%	AD 430–660	*AD 430–650*
SUERC-95458(GU56062)	Laceby Beck (110498 TWB4) Ditch 21003 [540] (541)	Waterlogged plant remain: 4x *Rubus* sp. seeds	2296 ± 22	-28.4‰	-	-	400–230 BC	- (Outlier)
GU56063	Laceby Beck (110498 TWB4) Ditch 21002 [757] (758)	Human bone: skull vault (2.9 g)	Failed					
Poz-126497	Blow Field (SPE4) Moat 4059 [4405] 1.31–1.32 m	Sediment: Humic fraction	3050 ± 35	-	-	-	1410–1220 BC	Fails χ^2 test
Poz-126653	Blow Field (SPE4) Moat 4059 [4405] 1.31–1.32 m	Snail: Planorbidae	450 ± 30	-	-	-	AD 1410–1480	
SUERC-95456(GU56060)	Blow Field (SPE4) Ditch [4237] (4236)	Human bone: left humerus (1.5 g)	855 ± 24	-19.4‰	12.9‰	19% ± 10%	AD 1170–1310	-
GU56056	Station Road (SPE1) Ditch 106 [1006] (1005)	Human bone: right tibia (2.6 g)	Failed					
SUERC-95454(GU56057)	Station Road (SPE1) Ditch 1801 [1256] (1257)	Human bone: right femur (3.9 g)	1761 ± 24	-19.9‰	12.6‰	13 ± 10%	240–420 AD	-
SUERC-95455(GU56058)	Keelby Road (SPE2) Ditch 2319 [884] (885)	Human bone: parietal vault (3.5 g)	2115 ± 24	-20.7‰	11‰	1 ± 10%	200 BC–AD 10	-
GU56059	Keelby Road (SPE2) Ditch 2324 [2718] (2179)	Human bone: right radius (2.2 g)	Failed					
SUERC-95457(GU56061)	Humberston Road (SPE7) Ditch 7636 [7475] (7476)	Human bone: clavicle (1.3 g)	2061 ± 22	-20.7‰	11.9‰	1 ± 10%	150 BC–AD 70	-
Poz-123510	Humberston Road (110491 SPE7) Ditch 7624 [7074] (7075) <711>	Charred plant remains: *Triticum* sp. grain	1845 ± 30	-	-	-	120–320 BC	-
UBA-44163	Chase Hill Road (Trench 104, SPE6) (104029)	Carbonised residue on pottery (40 mg)	2002 ± 21	-27.5‰	12 ‰	-	40 BC–AD 70	-

macrofossil samples, the shell and the bulk sediment sample were treated with AAA (acid-alkali-acid) washes; the pottery residue with acid only. Detailed descriptions of the methods employed by the Poznan and the SUERC Radiocarbon Laboratories can be found in Goslar (2015) and Dunbar *et al.* (2016). In the case of samples of unburnt bone measured at SUERC and the sample of pottery residue measured at 14Chrono, ^{13}C and ^{15}N stable isotopes were measured on the IRMS and are expressed as δ^{13}C‰ and δ^{15}N‰ values. The measurements were made on bulk collagen extracted as part of the radiocarbon dating process, in order to be able to infer any potential reservoir effects affecting the dates.

The calibrated age ranges were calculated with OxCal 4.4 (Bronk-Ramsey and Lee 2013). Due to the high values of ^{13}C and ^{15}N stable isotopes measured via IRMS in human remain samples, suggestive of a reservoir offset, and the proximity of the sites to the coast, a marine input between 1 ± 10 and 19 ± 10 was estimated for all samples. The percentage contribution of this marine component is calculated using C end-members of -21.0‰ (fully terrestrial) and -12.5‰ (fully marine) with an uncertainty of 10% applied. The calibrations were made using the IntCal20 and Marine 20 mixed curves (Reimer *et al.* 2020), with the local average ΔR for the English Channel and North Sea -137 ± 41 (weighted mean of the 10 nearest values). In the case of the dog bone sample, stable isotopes were not directly measured but a 10% marine input (an average of the other values for human remains in the area) was assumed, based on the hypothesis that domestic dogs would have a very similar diet made of human food refuse.

All radiocarbon dates are quoted as uncalibrated years before present (BP), followed by the lab code and the calibrated date range (cal. BC/AD) at the 2σ (95.4%) confidence, with the end points rounded out to the nearest 10 years. The ranges in plain type in the radiocarbon tables have been calculated according to the maximum intercept method (Stuiver and Reimer 1986), modelled dates (posterior density estimates) are given in italics (Bayliss 2015) and the models used are given in the footnote of each figure. The degree of reliability of the radiocarbon date and the event which is aimed to be dated is assessed following Waterbolk (1971).

Results

Thirteen of the samples were successfully measured, providing results from the Bronze Age to the medieval periods (**Table 7.28**; **Figs 7.8** and **7.9**). Three of the samples of human bone (GU56056, GU56059, GU56063), one attempted twice, failed due to insufficient carbon.

Discussion

Dietary offsets can have a considerable impact on radiocarbon dates when the individuals measured had an important aquatic diet component (usually observed in high ^{15}N values), whether marine or freshwater (eg, Hart *et al.* 2013; Keaveney and Reimer 2012). Once a dietary offset is suspected, a series of likely assumptions on the sources of the offset need to be made. In this case, due to the proximity of the sites to the coast, the marine curve has been applied when a dietary offset has been hinted at by the stable isotope data. The correction applied here could be inaccurate if the source of the aquatic component is not marine. Several freshwater bodies are also found near the sites, and fish and mollusc faunas (Chapter 6) suggests these were exploited, but unfortunately a local freshwater reservoir correction is not available. Calibration with a mixed atmospheric and marine curve for any results with a presumed marine dietary input (human and dog remains, in this case) is subject to possible further inaccuracy issues associated with the absence of a local ΔR value based on paired dates from contemporary samples of terrestrial and marine remains.

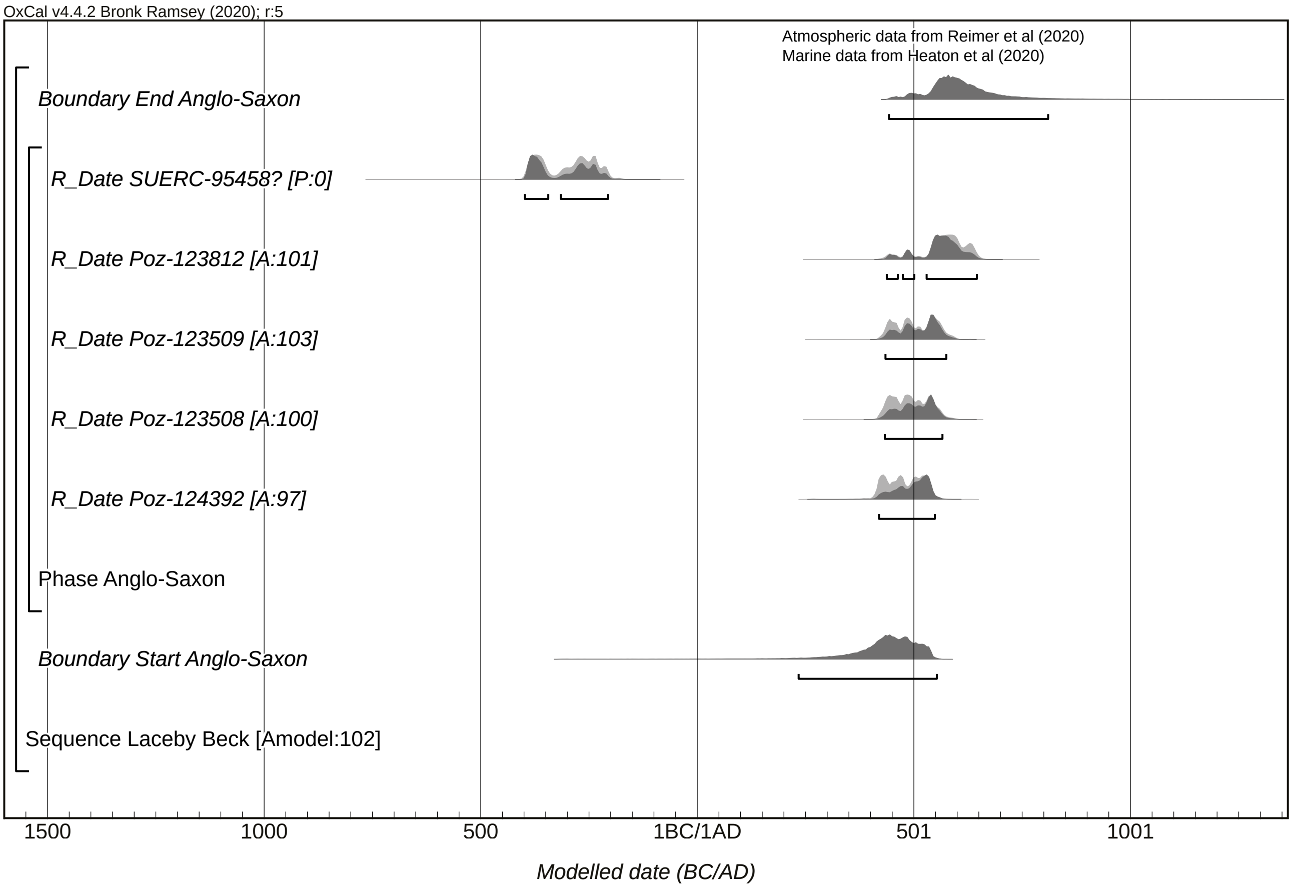


Figure 7.8 Radiocarbon dating results for ditches in Laceby Beck, modelled as a single phase with an outlier

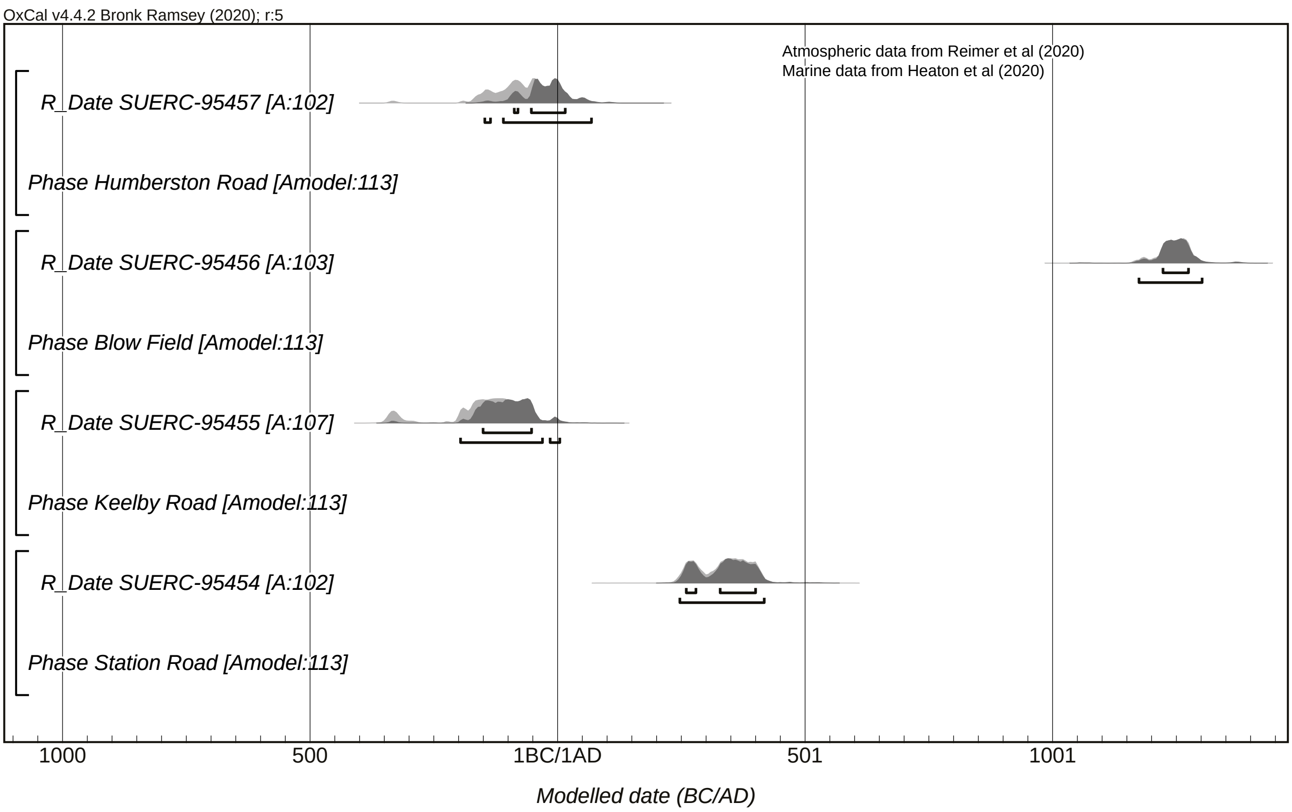


Figure 7.9 Radiocarbon dating results on human remains from the different Hornsea sites modelled as separate phases

With the exception of the probably residual material from an early cut of linear boundary ditch 21003 (SUERC-95458), which provided an Iron Age result, the radiocarbon dates from two undated ditches and two pits at Laceby Beck (see **Fig. 7.8**) indicate they were infilled (ie, abandoned) in the Anglo-Saxon period. The four dates fall into a single phase of activity during the early Anglo-Saxon period (Poz-124392; Poz-123508; Poz-123509 and Poz-123812), therefore providing a *terminus post quem* after the 4th century AD for the use of the features. A failed attempt at measuring the age of a skull (GU56063) found in a ditch did not allow its presumed Anglo-Saxon chronology to be positively established, although this deposit was stratigraphically later than another that was successfully measured (Poz-123508).

The paired samples (Poz-126497 and Poz-126653) of sediment and snail shell from a moat deposit at Blow Field returned highly inconsistent results (these failed the χ^2 test when attempted to be combined in OxCal). Neither sample was ideal due to potential hard water/old carbon offsets. Although a difference in age between the samples was expected, the large difference requires a taphonomical explanation indicative of the redeposited nature of at least one of the deposits. These results were therefore eliminated from the environmental analysis.

The result on the charred plant remain from Humberston Road (Poz-123510) is imprecise due to the nature of the calibration curve for the period; however, the largest area of the 2σ probability (93%, at 120–250 cal. AD) confirms the later Romano-British age of the deposit.

The dates on human bone come from three periods: Late Iron Age (SUERC-95455 and SUERC-95457), later Romano-British (SUERC-95454) and medieval (SUERC-95456) (**Fig. 7.9**). Overall, the ^{13}C and ^{15}N stable isotope data, which represent the average diet of the individuals during their lifetime, show a progressive increase in the input of marine food in the diet with time (from 1% in the Late Iron Age to 19% in the medieval period). The rate of marine food decreases with proximity to the sea (Humberston Road was situated on the contemporary shoreline and Blow Field is the furthest inland). All the dated human remains were redeposited and are, therefore, of limited value for stratigraphical purposes, although they serve as *terminus post quem* for the infill of the features where they are found.

There is abundant information from the organic residue analysis (Chapter 4) on the use of cooking vessels from the sites, which informs on the use of terrestrial animal fats. In addition, stable isotopes measured on the charred residue from Chase Hill Road offer a complementary insight into culinary practices, suggesting a potential input of aquatic resources in the diet (indicated by high ^{15}N values and high C/N ratio), which is consistent with the enriched values also observed in the human remains. However, these high ^{15}N values are found with low values of ^{13}C, suggesting an aquatic offset may not apply. Other sources of high ^{15}N values may also be found on floodplain crops or where land has been fertilised with midden material (eg, Hart *et al.* 2013); therefore no reservoir offset correction has been applied.

Chapter 8
Discussion

Neolithic and Bronze Age

The earliest significant concentrations of remains from the scheme date from the Iron Age, although there were 26 sherds of earlier prehistoric pottery that provide some evidence for Neolithic and Bronze Age activity in the Middle Marsh. All but one sherd was recovered from Laceby parish, either from the Laceby Beck site or from a findspot 1.25 km to the south. The remaining sherd was recovered alongside later material a further 5 km south-east in Brigsley parish (**Fig. 8.1**; see Chapter 2).

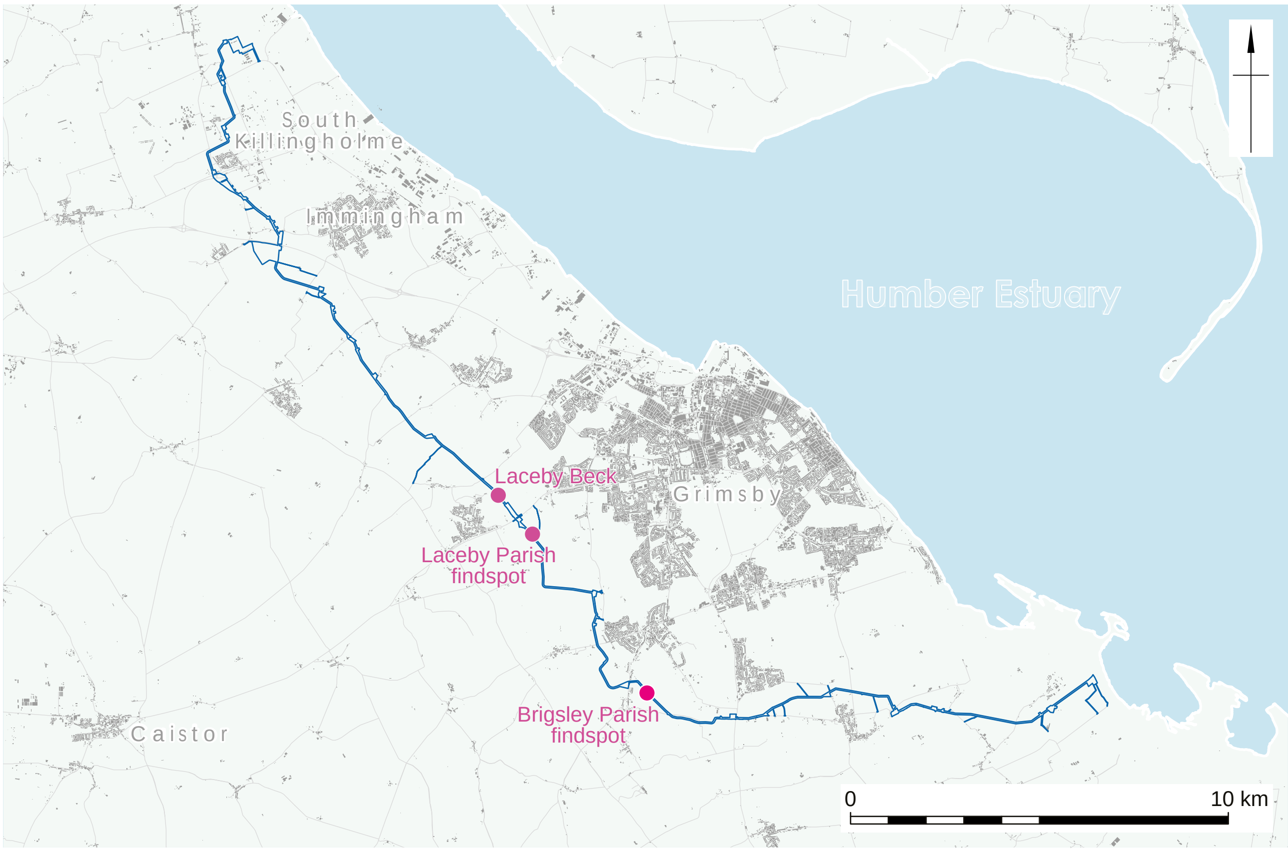


Figure 8.1 Distribution of Neolithic and Bronze Age finds

Although Neolithic and Bronze Age findspots and funerary remains are known from the region, the overall trend appears to be one of limited occupation in this period (Research Frameworks 2023). At this time, activity may have comprised foragers exploiting the plant, animal and fish resources of the Humber littoral (Cavanagh in prep.). Existing records for Neolithic and Bronze Age activity in Laceby parish are thin on the ground: Middle Bronze Age, Iron Age and Romano-British pottery were found with a Saxon burial in the west of the parish (HE monument 81499), while pottery of either Bronze Age, Iron Age or early medieval date, as well as flints and a bone pin, were recovered from an unknown location elsewhere (HE monument 81523).

All of the Neolithic and Bronze Age pottery recovered by Hornsea Project One was small, fragmentary and probably residual, and none was well stratified. Even features such as pit 646, phased as Beaker in previous chapters, contained only a single small sherd of pottery which may in fact have been residual, with the pit perhaps contemporary with the Anglo-Saxon remains that dominated that site, or with one of the many other periods of activity evidenced at Laceby Beck.

The Laceby parish findspot material was recovered from the subsoil in the area of a series of cropmarks (RPS 2013b, site 13) that corresponded with an excavated undated ditch (274=276). The overall form of the cropmarks is unclear but is broadly of 'washing-line' form (*sensu* Boutwood 1998b) and may represent a boundary or enclosures. The site resembles earlier prehistoric forms given in Boutwood 1998b, but also Iron Age/Romano-British forms illustrated by Winton in the same volume (Winton 1998, fig. 6). The results of Hornsea Project Two have revealed that these remains lie on the periphery of an Iron Age/Romano-British settlement (Network Archaeology 2022, 75–97) that was undetected by the Hornsea Project One works. The presence of residual Bronze Age pottery among the Hornsea Project One results may suggest that this settlement had origins pre-dating the Iron Age.

Laceby is situated on a spur of relatively high ground (though at only 10–15 m OD) that extends to Grimsby/Cleethorpes, providing access to the sea by avoiding the lower, wetter ground of the Outmarsh (Ellis *et al.* 2001; May 1984, 20). It may therefore have been attractive for occupation in prehistory. The Laceby Beck itself (which becomes the River Freshney, the principal river in Grimsby) may also have been important in the prehistoric landscape (RPS 2013a, 9). A pattern of association of prehistoric sites with watercourses has been noted in the wider area (*ibid*.; Cavanagh in prep.).

The pre-Iron Age potential of the region is demonstrated by the results of the recent A160/A180 Port of Immingham Works (Cavanagh in prep.), which included a 10 m-diameter ring ditch at the Brocklesby Interchange, interpreted as a Bronze Age barrow rather than a roundhouse. This was only 1.5 km from the Hornsea Project One cable route, but even closer to the cable route (only a few hundred metres away) at the junction of the A160 and Habrough Road was a gully containing residual Mesolithic and Neolithic flint and pottery.

The scattered regional evidence for earlier prehistoric activity confirms that the Middle Marsh was subject to human occupation prior to the Iron Age, extending the archaeological narrative in the region by some millennia. There may be a minor concentration of this early activity in Laceby parish.

Iron Age and Romano-British

Regional Settlement

In recent years, recognition of the Iron Age and Romano-British potential of the Lincolnshire Marsh has increased. In 1984, although there was little information available, May was optimistic about Iron Age Lincolnshire, asserting that it was 'well known that a rich and culturally advanced people lived in this region', but knew of no sites between Kirmington and Grimsby (May 1984, 18). Accounts of the Iron Age marshes (eg, Fenwick *et al.* 2001a) have relied on proxies from the Wolds (eg, at Kirmington, Jones and Whitwell 1991; at Nettleton and Rothwell, Willis 2013) or the Ancholme Valley (at Dragonby, May 1996). Boutwood (1998b, 32) felt that the absence of Iron Age evidence from the Lincolnshire Marsh was archaeologically significant rather than a bias of preservation or investigation. Even as late as 2013, when the desk-based assessment for Hornsea Project One was compiled (RPS 2013a), settlement was thought to have been more significant on the edge of the Wolds than in the Middle Marsh itself.

Recent investigations have shown that Palmer-Brown was closer to the truth when he lamented that the 'Lincolnshire marshland has received relatively little archaeological consideration' (1994, 10). Following recent work (eg, Cavanagh in prep.; Davies and Millward 2014, 19–20; Fenwick *et al.* 2001a) we know that Iron Age sites and finds are 'common in northern Lincolnshire, representing a settled agrarian landscape with a well-defined settlement hierarchy including isolated farmsteads, hamlets and extensive regional centres' (Cavanagh in prep.).

Although Iron Age and Romano-British sites are increasingly well-known in the Lincolnshire Marsh, the current picture of their distribution may primarily be a product of the pattern of developer-funded archaeology, with a bias in detection towards the increasingly industrialised Port of Immingham. The developer-funded Hornsea Project One partly reinforces this bias, but also provides a valuable transect away from Immingham as the cable route runs to Horse Shoe Point through a series of less-investigated parishes. The Lincolnshire Marsh has enormous archaeological potential, and we are only just standing at the threshold of future discoveries in the region.

Taking into account these biases in investigation, it is likely that the whole of the Middle Marsh supported a general pattern of low-density settlement from the Iron Age onwards (Allen *et al.* 2018; RPS 2013a, 9–10).

Many of the regions' Romano-British sites had Iron Age origins and, as discussed in greater detail below, the transition between the periods is primarily characterised by continuity rather than change. The pattern of distribution of Iron Age sites is therefore substantially the same as that of Romano-British sites.

Previous authors have emphasised the distribution of these sites at the littoral fringe (Davies and Millward 2014; RPS 2013a, 9–10; van de Noort *et al.* 2001). The results of Hornsea Project One contain only one example to confirm this trend (Humberston Road), two examples of sites on the fringe of alluvial wetlands (East Field Road and probably Station Road), two examples of sites by rivers (Keelby Road and Laceby Beck) and two examples of sites on the highest ground of the Middle Marsh (Chase Hill Road and Westfield Road). Iron Age and Romano-British settlement therefore appears to have been unspecific about landscape, exploiting a variety of local circumstances, perhaps with each settlement employing strategies tuned to their particular situation as discussed further below.

Environmental evidence generally indicates an Iron Age and Romano-British landscape of open arable fields and wet pastures. At Wells Road, away from significant settlement, there were scrub patches and permanently wet ditches during this period. The Lincolnshire Marsh was poorly served with communications until the 19th century (Middleton 2001, 13) and this would have given the region a remote, inaccessible character.

Looking beyond the marshland, the Iron Age and Romano-British settlement at Kirmington, 6 km to the south-west of the cable route, is the nearest known substantial settlement of the period that was connected to wider communications infrastructure. It lies in a gap in the Lincolnshire Wolds that has long been used to access the Humber coast from the interior (RPS 2013a). Access to wider river and sea transportation networks was probably also important and may have been facilitated in places such as Grimsby, where higher ground extends to the modern coastline (Ellis *et al.* 2001).

Hornsea Project Two has added two additional Iron Age and Romano-British settlements to the corpus of such sites. These were undetected by Hornsea Project One and comprise an Iron Age and Romano-British settlement close to the Laceby parish findspot, as well as a series of Iron Age features in the north-west of the scheme at targeted watching brief 24 (TWB24; Network Archaeology 2022).

Economy

Introduction

During the Iron Age and Romano-British periods, the regions bordering the Humber estuary are characterised by less wealthy sites (Cavanagh in prep.; Davies and Millward 2014, 19–20). It may be that it is status, expressed in both the form of settlements and in their material wealth, that distinguishes the Iron Age and Romano-British marshland from the rest of Lincolnshire (Davies and Millward 2014; van de Noort *et al.* 2001). Villas, for example, are common on areas of higher ground such as the Wolds (Jones 1998), but are unknown in the area of Hornsea Project One. The lower status of the sites in these regions may have historically caused a bias in their identification and investigation.

Pastoral

The animal bone, environmental evidence and organic residue analysis of pottery recovered from Iron Age and Romano-British sites indicates a subsistence economy consistent with the isolation of the marshes. Cattle were chiefly exploited alongside sheep, with smaller numbers of pig, as well as horse and dog, and occasionally other animals such as fowl and deer. Isotope analysis of human remains yielded results consistent with diets high in animal protein, possibly including freshwater fish (Jay and Richards 2006), although beyond the isotopic analysis there was no further evidence for the consumption of fish. The economy became more specialised during the Romano-British period, with an increase in the proportion of cattle, a pattern seen at other sites in the region (ASWYAS 2007; Fenwick *et al.* 2001b, 81–93; Hall 2005; Muldowney *et al.* 2009; Peachey 2010; Williams 2010). However, other than this relatively minor variation in livestock proportions there was little overall change to subsistence strategies from the Iron Age into the Romano-British period, and as at the A160/A180 Port of Immingham project, the 'main picture that emerges is one of continuity' (Cavanagh in prep.). Neither was there much change between the pastoral economy of the early and late Romano-British periods, although organic residues do reveal that there was more vessel specialisation in the later period.

An emphasis on cattle within the animal bone assemblage is typical of the period and of the marshland, where the fen carr is well suited to cattle (Defoe 1727; Fenwick *et al.* 2001b, 68; Owen 1971). Pigs were primarily raised for meat, but sheep were mostly managed for wool (or possibly milk), and cattle for milk, manure and traction. There was pathological evidence for the use of cattle for traction and a large cattle femur from late Romano-British ditch 2317 at Keelby Road may be evidence of a breed improved for this purpose (Albarella *et al.* 2008; Allen 2017, 99–104 and 139; Rizzetto *et al.* 2017, 540–2; van der Veen and O'Connor 1998, 132).

Butchery marks show that both cattle and horse carcasses were processed for meat and that shoulder joints were cured. A broad range of carcass parts were attested, including bone marrow and tongues, indicating local slaughter and consumption in a closed subsistence economy. Consumption of horseflesh may have been confined to special events (Allen 2017, 126) or may indicate food shortage. Use of horseflesh is perhaps not that far removed from the consumption of beef from traction animals, and the use of both may express the pressures of life in the marsh. The Lincolnshire Marsh was probably rather remote from Tacitus' objections to the consumption of horseflesh (Annals II, 24 and Histories IV, 60; quoted in Luff 1982), yet it can be identified as an indicator of an absence of Romanised culture.

May (1984, 18–20) believed that stock keeping may 'explain the rapid growth of large, rich nucleated settlements during the 1st century BC' in Lincolnshire. Stock keeping appears to have been crucial to the economies of the marsh; however, the animal bone evidence presented here also reveals the importance of arable agriculture. This is supported by the palynological evidence from East Field Farm, which indicates mixed agriculture. Contemporary mixed economies have been identified at Hobson Way, Stallingborough (Field and McDaid 2011), and the Heron Renewable Energy Plant (Headland Archaeology 2010, 56).

The organic residue analysis adds important evidence for the consumption of dairy products consistent with the management of animals for secondary products suggested by the animal bone analysis. However, at the Hornsea Project One sites, as well as other unpublished comparable sites (see Chapter 4), dairying, though an important component of Romano-British farming practices, was secondary in importance to the consumption of carcass products. Roughly a third (34%) of vessels were used to process dairy fats and two thirds (66%) for ruminant carcass products. Variation between the results from comparable unpublished sites (eg, East Midlands Gateway, Daniel in prep; Highfield Farm, Valdez-Tullett 2021) suggest that agricultural practice in northern Lincolnshire included specialised animal husbandry practices not evident in more central areas of the country, consistent with the isolation and character of the marsh.

Contrary to the evidence from the animal bone assemblage, there was very little evidence in the organic residue analysis (only two vessels) for the processing of porcine fat. Dunne (Chapter 4) suggests that consumption of pork may have been an indicator of status or of Romanised culture. Pigs may have been raised in the un-Romanised marsh as a 'cash crop' for export to more refined or Romanised areas such as the Wolds. Dunne (pers. comm.) alternatively suggests that, as in Neolithic assemblages such as at Durrington Walls, the disparity between the animal bone assemblage and organic residue results may have been due to processing pork by roasting, which does not require ceramic vessels.

It may be worth reiterating that organic residue analysis, both at Hornsea Project One and elsewhere (eg, Dunne and Evershed 2018a; 2018b), has revealed that so-called 'cheese presses' were used to strain both ruminant and non-ruminant fat. This does not mean that dairy was not processed at the Hornsea settlements, where lipid evidence shows that certain bowls were used for this purpose, and an imitation samian cup was used as a drinking vessel for milk.

Arable

Through the Iron Age and Romano-British periods, environmental evidence demonstrates that wheat was the chief arable crop and may have been restricted to spelt (rather than emmer), which may be a reflection of the heavy soils of the marsh. Barley was also cultivated, and broad beans were an additional crop, with peas introduced in the late Romano-British period. Flax was also exploited throughout these periods. Assemblages of wild plants represent arable weeds, including oats, which were probably not cultivated at this time. At Westfield Farm there was evidence for dehusking cereals and the sieving out of weed seeds. Quantities of weeds appeared to increase in the late Romano-British period, perhaps indicating an expansion of agriculture into different habitats or soil types. However, there was little evidence for the exploitation of wild foods, although apple/pear was recorded at Humberston Road. More generally, cultivation of a narrow range of cereals and legumes was a staple of the economy of the Iron Age and Romano-British Lincolnshire Marsh.

There is also some evidence for ploughing in the form of Romano-British plough scars at Humberston Road, indicating that arable agriculture possibly extended right up to the littoral fringe.

There was archaeobotanical evidence for two probable dismantled crop drying kilns (1148 at Station Road and 7491 at Humberston Road). These kilns were not used for malting; evidence of sprouting is more consistent with accidental germination. Chaff may have been intentionally used as fuel to improve the taste of dried grain. Romano-British crop dryers are not rare (Hall and Huntley 2007; Ross *et al.* 2016), and an example was recorded locally at Chase Hill Farm (Fenwick *et al.* 2001a, 81–93).

There was greater archaeobotanical evidence for arable farming in the 3rd and 4th centuries than in earlier periods, consistent with a regional pattern of intensification and expansion from the 2nd century onwards (Albarella 2007, 396–9; Allen 2017, 112; Allen and Lodwick 2017, 143–7; Maltby 2016; van der Veen and O'Connor 1998). Locally there is evidence from a farmstead at Immingham (Williams 2010) for a shift in emphasis from sheep farming in the Late Iron Age to arable cultivation by the mid-2nd century, and a general emphasis on cattle farming during the Romano-British period at other locations within the Lincolnshire Marsh (Hall 2005; Muldowney *et al.* 2009; Peachey 2010; ASWYAS 2007).

Household-level grain processing is evidenced by rotary querns from Westfield Farm (pit 4508, object number 49; ON 49) and Humberston Road (inhumation 7393, ON 78), as well as a saddle quern from Westfield Farm (from Early Iron Age ditch terminus 8027, ON 66). Beyond Hornsea Project One, querns have been recovered from sites including Weelsby Avenue (Sills and Kinsley 1990, 50).

Roman millstone fragments were also found at Keelby Road (pit 2056, ON 34), Humberston Road (pit 7302, ON 74/5) and Laceby Beck (layer 826, ON 121). These are evidence for more centralised cereal processing using animal power or water power. The *Rural Settlement of Roman Britain* project (Allen *et al.* 2018) recorded no millstones in the vicinity, suggesting that these are the first evidence for centralised grinding in the area. Millstone fragments are not likely to have been moved very far from their original point of use, and it is therefore possible that there was a mill in the vicinity of each of these three sites during the Romano-British period.

Beyond grain, plant lipids indicate the processing of plants. Dunne (Chapter 4) speculates that this may have included plants introduced by the Romans such as cabbage and leek, although there is no archaeobotanical evidence for these species from Hornsea Project One. Archaeobotanical assemblages included peas and beans and it may be possible that the plant lipids were derived from such legumes.

Marine resources

Isotope analysis (see Chapter 6) of human remains suggests low rates of marine diet in the Iron Age and Romano-British periods. This appears to be consistent with the limited presence of other indicators of marine resource exploitation (marine shell and briquetage). This is surprising given the proximity of the cable route to the sea.

Only moderate quantities of oyster shell were recovered from Humberston Road (814 valves), situated on the former littoral fringe, and a short distance inland at Station Road (551 valves), with smaller quantities from sites further inland at Keelby Road (270 valves) and Westfield Farm (128 valves). Quantities of shells from other species were insignificant. This result is echoed from comparable sites (eg, Chase Hill Farm; Fenwick *et al.* 2001b, 81–93). The relative frequency of shell from each site broadly reflects their distance from the sea. A total lack of marine shell from Chase Hill Road and East Field Road might indicate that the inhabitants of these sites had restricted access to marine resources, either due to the accessibility of the sea in the locality, or restrictions such as territorial extent or status.

Contrasting with the lower-status sites of the Hornsea Project One scheme, the results from a higher-status site at Brocklesby Junction included oyster shells with evidence of parasites that may indicate they were imported, perhaps from the Thames (Cavanagh in prep.).

Evidence for salt production (discussed separately below) was extremely limited, with only a few pieces of briquetage recovered from the large sites of Westfield Farm and Station Road, and probably indicating consumption rather than production.

Textiles
Scattered evidence for textile working is consistent with an agricultural economy where the production of textiles would have been a necessary domestic activity. Twelve grooved and polished sheep/goat metapodials associated with textile working were recovered across five sites, as well as a spindlewhorl from Humberston Road (ditch 7637). From the same site, the remains of an older woman (skeleton 7392) revealed that she had used her teeth as a 'tool', probably in the pulling of broad thread. This pattern of domestic textile working is comparable to other sites in the region (eg, Chase Hill Farm; Fenwick *et al.* 2001a, 81–93).

Trade and status
Although the Iron Age and Romano-British settlements along the Hornsea Project One route were not completely isolated from the outside world, evidence for trade was infrequent.

Pottery imports include fossil shell wares, small amounts of foreign amphora, a Colchester-type mortarium, sherds of samian, some Nene Valley wares and another import from the Vale of Pickering. The presence of these sherds in the Middle Marsh is evidence of trade but their very small quantities conversely attest to the remoteness of the Iron Age and Romano-British marsh. An almost complete wine-strainer recovered during Hornsea Project Two at Humberston Road (Allen Archaeology 2022, 58–59) is another higher-status, probably traded item. Fragments of hypocaust box tile from Laceby parish (Network Archaeology 2022) and Westfield Farm (Allen Archaeology 2022, 56–58) are also indicators of status and Romanisation, although the quantities of these materials are small as a proportion of the total assemblage.

What trade there was may have come through nodal settlements such as Kirmington or South Ferriby (eg, for fossil shell wares, if these were not produced locally, and the small amounts of other pottery produced west of the Wolds). Coastal trade is also a possibility, although the small quantities of Black Burnished wares in the assemblage (0.5%) argue against this being significant (*cf.* Darling and Precious 2014, fig 86; Rush 2000). Coastal trade may nevertheless be the origin of the relatively few sherds from the Hornsea Project One assemblage with more remote origins, the coastal settlement of Humberston Road providing the greatest, albeit still tiny, quantity of imported samian.

The Dressel amphora (see Chapter 4) is an unusual occurrence in the Lincolnshire Marsh and may have military associations, in a region where evidence for such activity is not common. A military patera was recovered from the Hornsea Project Two excavations at Humberston Road (Allen Archaeology 2018b, 2), although this is an unusual exotic within an assemblage from a rural farming community. Elsewhere in the marsh, the site at East End Farm (North Lincolnshire HER MLS20152) was defended by a triple ditch that may have been either a military defence or an architectural pretension (RPS 2013a).

Both the Dressel amphora and the other amphora fragments may represent material re-used for other purposes (cf. Rowlandson and Fiske 2016; 2019b; Rowlandson *et al*. 2017; Peňa 2007; Precious and Vince 2005), while the Colchester-type mortarium might have been a personal possession (Rowlandson and Fiske, Chapter 4) imported through the movement of a person instead of evidence for trade. The low level of samian consumption is commensurate with a rural settlement predominantly based on an agrarian economy (Willis 2005, section 8.2.6).

The low level of trade is consistent with low status and also an indicator of isolation. The Hornsea Project One pottery assemblage is comparable with others recovered locally such as at the A160/A180 Port of Immingham scheme (Rowlandson and Fiske 2016; 2019b), Able UK scheme at North Killingholme (Rowlandson *et al.* 2017), Chase Hill Farm (Fenwick *et al.* 2001a, 81–93), Heron Renewables site (Headland Archaeology

2010, 56) and Conoco CHP site (Precious and Vince 2005). Each of these projects recorded a minority of fine wares with few exotics. The few fine wares recovered from the Hornsea Project One assemblage were dominated by grey wares, suggesting local production, and providing little information on the status or function of the sites.

However, at Brocklesby Junction there were more indicators of trade and status, including brooches (with examples from Castleford and from the Rhine/Danube frontier), a stone column, roof tile, tesserae, painted wall plaster, a slate paint palette, an iron bridle ring, German Mayen-type pottery and oysters perhaps imported from the Thames (Cavanagh in prep.). It may be that Brocklesby Junction was producing a greater surplus of exportable goods such as meat, grain, salt and horses, but it is certainly true that it was better situated, with a potentially easy route westwards to the Wolds and the local trading centre of Kirmington (*ibid*.). It could be that the low levels of trade from some of the Hornsea Project One settlements, such as Westfield Farm, were mediated through middlemen at Brocklesby Junction.

The majority of the Roman coins from Hornsea Project One were recovered unstratified by metal detecting at Station Road (12 coins), with another from Keelby Road, and one as an isolated findspot (see Chapter 6). These coins provide very limited evidence of some connection with wider trade routes. The absence of coins at Westfield Farm is perhaps surprising given the proximity (only 250 m from the cable route) of the 'Killingholme Hoard' recovered in 1993 (RPS 2013a; North Lincolnshire HER monument MLS16344); however, the higher-status site at Brocklesby Junction (Cavanagh in prep.), with a moderate assemblage of coins, is closer to the findspot. The pottery from Westfield Farm indicates that it was a basic rural settlement (though not a small one), and interestingly may have decreased in status as the site approached its most stratigraphically complex phase in the late Romano-British period (Rowlandson and Fiske, Chapter 4).

Metalworking

Although there is evidence for some metalworking on other sites in the marsh (eg, Cavanagh in prep.; Fenwick *et al.* 2001a, 73–81; Headland Archaeology 2010, 56), there was very little evidence of this activity retrieved from the Hornsea Project One scheme. A single 3 g sherd of crucible from Westfield Farm was probably used for copper alloy working, while less than 600 g of slag from Iron Age or Romano-British contexts elsewhere might represent iron-smithing waste.

Fuel

Evidence for the consumption of fuel was sparse. Environmental remains indicate that turves were burnt at Chase Hill Road and Westfield Farm. These were probably sourced locally, though they may possibly have been imported, perhaps (as in the medieval period) from the Humberhead levels.

Saltmaking

Salting has been crucial for the preservation of foods, alongside drying and smoking. In addition to preserving fish, meat and vegetables, salt also plays an essential role in bread-making and in the production of butter and cheese. Saltfish was one of Britain's most important trading commodities in the medieval period (Historic England 2018a, 1; Thomas and Fletcher 2001, 215). Supplementary salt is not necessary to a balanced diet (Carter 1975, 13; Grady 1998, 91; Thomas and Fletcher 2001, 215), though it becomes more important as an additional nutrient in an arable economy (Thomas and Fletcher 2001, 215). Beyond foodstuffs, salt was vital to some tanning and cloth dying processes and was used in ceramic glazes (Historic England 2018a, 1; Thomas and Fletcher 2001, 215), while its importance for the preparation of leather for tents, clothing and equipment for military use has also been highlighted (Owen 1984, 48; Whitwell 1970, 119).

A significant Bronze Age/Iron Age saltmaking site at Tetney Sewage Works (Palmer-Brown 1994) was located only 1.3 km north of the cable route and (prior to recent unpublished discoveries in North Yorkshire) provided the earliest evidence for saltmaking nationwide (Thomas and Fletcher 2001, 216). The location of this site is remarkable, at odds with the complex quaternary stratigraphy of the Outmarsh, but it may have occupied an island within a landscape of 'saltmarshes, creeks and open sea' in a 'relatively stable coastal environment' (*ibid*., 221). The site was primarily Bronze Age in date, but continued in use into the Iron Age, when the industry underwent 'explosive growth' prior to the Roman invasion (Historic England 2018a, 5). There is abundant evidence for Iron Age and Romano-British saltmaking in the region south of Humberston (Owen 1984, 48), which may have been more extensive in the 1st/2nd centuries AD than in the 3rd/4th (Shotter 2005, 47).

It is generally assumed that the open-pan method of simply boiling seawater was employed for salt production in the prehistoric and Romano-British periods on the Lincolnshire coast (Lane and Morris 2001; Palmer-Brown 1994). This is the method still employed at Maldon, Essex, and requires a large amount of fuel in comparison to sandwashing (Grady 1998, 83).

Solar evaporation has been largely dismissed as unfeasible at Lincolnshire latitudes (Fenwick 2001, 233; Grady 1998, 81; Palmer-Brown 1994, 9), although it is possible that some solar evaporation assisted in the early stages of saltmaking (Historic England 2018a, 4). A postulated solar evaporation site at Sutton-on-Sea, Lincolnshire (Rudkin 1975) was an incorrect interpretation (Grady 1998, 81).

Use of sandwashing methods (described in the discussion of the medieval period below) has also been largely rejected for the prehistoric and Romano-British periods (Grady 1998, 86; Palmer-Brown 1994, 8; Thomas and Fletcher 2001, 221 but *contra* 219–220). Palmer-Brown (1994, 7–8) considers, but seems to reject, the possibility of prehistoric sandwashing at Tetney Sewage Works, although the method used for saltmaking at that site remains unclear. Grady had more certainty, stating that (in Lincolnshire) 'No evidence for a phase of filtering salt-impregnated sand before boiling has been recognised in prehistoric or Roman contexts… On available evidence there does not appear to have been anything similar to the sandwashing process in the prehistoric or Romano-British periods' (Grady 1998, 86). He lists what he considered dubious claims for early sandwashing (*ibid*., 92).

Briquetage was recovered from Romano-British contexts at Westfield Farm (23 fragments, from the fills of ditches 8273, 8296, 8314 and gully 4952). However, this quantity is small in the context of the extensive site from which it was recovered. It is possible that this material was Iron Age in origin and was present residually in Romano-British contexts (see Chapter 6). Westfield Farm lies in North Lincolnshire, an area where saltmaking is less well-known than between Humberston and Saltfleet, which is the usual focus of Lincolnshire saltmaking studies (eg, Fenwick 2001; Grady 1998; Palmer-Brown 1994; Pattison and Williamson 1986). It occupies a local high point over 1.5 km from the boundary of the superficial geological tidal flats deposits (British Geological Survey 2020), taken as a proxy for the approximate Romano-British shoreline. Although the recovery of briquetage is primarily associated with salt production (pans were single-use and were broken to recover the salt; eg, Lane and Morris 2001; Palmer-Brown 1994), the small briquetage assemblage from Westfield Farm may instead represent salt consumption. Thomas and Fletcher (2001, 215) follow Fawn *et al.* (1990) in providing examples from the south coast of England, where the transportation of salt occurred alongside the single-use briquetage pans it had been made in. The same situation was encountered on the A160/A180 Port of Immingham project, where salt may have been brought to the settlement in briquetage containers (Lane in prep.). It is probable that Westfield Farm was part of a wider community that practised saltmaking, though as on the A160/A180 Port of Immingham project, it is 'highly likely that the actual saltern or production area lay on the Humber littoral' rather than where the briquetage was recovered (Cavanagh in prep).

Buildings

Relatively few Iron Age and Romano-British buildings were apparent in the results of Hornsea Project One compared to the complexity and intensity of agricultural activity. Only two structures (roundhouse sites 2 and 3 at Westfield Farm) were dated to the Romano-British period and these were firmly in the native roundhouse building tradition. Further roundhouses were identified at Westfield Farm during Hornsea Project Two (Allen Archaeology 2019). Beyond structural features, there was little material evidence for buildings. The Romano-British CBM assemblage was small and did not indicate the presence of any substantial masonry buildings in the vicinity; evidence for less well-preserved materials such as wattle and daub was equally infrequent. Roundhouses are not well represented in the archaeological record in Lincolnshire as hut circles, and post-built structures are subject to preservation biases compared to ditches and enclosures (Winton 1998, 47). In the marshes, where flooding and rotting would have been major concerns, there may have been a tendency for buildings to be set directly on the land surface rather than secured by earth-fast posts (Fenwick *et al.* 2001a, 81–93). However, this does not explain an apparent general lack of eaves drip gullies unless completely truncated by ploughing.

The Iron Age farmstead at Chase Hill Road contained three partial ring ditches interpreted as either eaves drip gullies or foundation trenches of Late Iron Age roundhouses. One roundhouse (in the east, including context 6030) was rebuilt at least three times and was large at 12 m in diameter. The diameters of the other two ring ditches were unmeasurable but smaller.

There was no evidence for roundhouses at East Field Road, though a sub-rectangular arrangement of gullies (5200) with interior postholes could represent a structure, if not a small fenced enclosure or corral. It was 10 m long, 6 m wide and open to the north-west. Animal bone in the fill of the gully may have been a deliberately placed deposit. The potential structure may have had a function related to the corralling of livestock, pastured in the adjacent wetlands, rather than a domestic function, which might explain its atypical form.

The identified possible buildings at Station Road were of Iron Age chronology. Four small, partial ring gullies (three intercutting) had diameters in the region of 4 m, probably too restricted for habitation. An oval of postholes may be a more promising candidate for a house; however, this was still quite small (6.2 m by 5 m). Concentrations of postholes and pits probably indicate up to three other structures, although their level of preservation does not allow for detailed interpretation. Again, these were small, perhaps around 3 m to 5 m in diameter, and possibly had an agricultural function, for example stores or pigsties.

Measurable diameters of roundhouses at Westfield Farm were 5.25–6 m, 7 m, 9 m and 12 m. A perforated dog tooth recovered from a ring gully may have been an amulet. The Iron Age roundhouse 1 appeared to have been deliberately decommissioned when Romano-British gullies 8303–8306 were dug across it.

Beyond Hornsea Project One, some comparable roundhouses in the Middle Marsh include those at Weelsby Avenue that were accompanied by a four-post structure (Fenwick *et al.* 2001a, 73–81). Based on the site plan, one of these roundhouses was a little under 8.5 m in diameter and the other unmeasurable, but much larger. At Brocklesby Junction, roundhouses with diameters of 6 m, 7.25 m and 9 m were accompanied by four-post structures, and later beam slots were also recorded. The same project recorded two roundhouses, one 10 m in diameter and the other larger, at the junction of the A160 and Rosper Road (Cavanagh in prep.). The results of investigations at Chase Hill Farm (Fenwick *et al.* 2001a, 81–93) were particularly informative, revealing beam slots, burnt daub with wattle impressions and keying for plaster, carpentry studs and nails, and a stone floor tile. Here the small number of beam slots and lack of postholes was interpreted as an aversion to earth-fast foundations due to wet conditions. There were some postholes at Brick Pit Farm, Stallingborough, where Davies and Millward (2014, 19) recorded approximately 10 roundhouses that were typically 6–9 m in diameter, although one was only 3.1–4 m diameter. Roundhouses and rectangular buildings were also present at Hobson Way, Stallingborough (Field and McDaid 2011), and a further roundhouse was present at the Conoco CHP site (Precious and Vince 2005). In contrast, stone building materials including a dwarf column and a chalk block were recovered from Brocklesby Junction (Cavanagh in prep.). A diversity of buildings are, therefore, evidenced from the region, with native-tradition roundhouses dominant amongst recorded examples.

The layout of buildings on the Hornsea Project One sites shows no particular pattern, no entrances were recorded, and no comment can be made about their orientation (*cf*. Brück 2008, 261). At Brocklesby Interchange (Cavanagh in prep.), Hobson Way, Stallingborough (Field and McDaid 2011), Brick Pit Farm, Stallingborough (Davies and Millward 2014, 30–33) and Dragonby (May 1996), roundhouses were separated by ditched boundaries but there were no similar boundaries here. If areas of the sites were associated with particular domiciles, as at Dragonby (May 1996, 625–7), this was not clear.

As the houses of the Iron Age and Romano-British population are not themselves well represented in the archaeological record, the intensity and complexity of agriculture should be considered as proxy evidence for settlement. The level of activity appears to be well in excess of that which could be sustained by the inhabitants of the recorded dwellings. It is most likely, therefore, that the enclosures at East Field Road, Humberston Road, Keelby Road, Station Road, Westfield Farm (and perhaps Laceby Beck) are settlement enclosures that contained houses for which there was no below-ground component, or where no evidence has survived. Hornsea Project Two has also provisionally adopted the same interpretation (Allen Archaeology 2018a, 4).

Iron Age Farmsteads

North Lincolnshire

The form of the Chase Hill Road site is distinct from the others along the Hornsea Project One route, comprising a sub-rectilinear enclosure containing roundhouses as opposed to a palimpsest of irregular enclosures and boundaries. There are good regional parallels (**Fig. 8.2**) for this form: the site at Weelsby Avenue, Grimsby (Fenwick *et al.* 2001a, 73–81) was also a sub-rectilinear enclosed roundhouse settlement. Another closely comparable site has recently been excavated at the junction of the A160 and Rosper Road as part of the A160/A180 Port of Immingham project (Cavanagh in prep.). The Rosper Road ditch was the narrowest at 2.3 m, the Weelsby Avenue enclosure ditch was 3.5 m wide and that at Chase Hill Road was the broadest at 4.6 m. All three ditches were the same depth, 1.2 m, and all three (at least in their final phases) had 'V'-shaped profiles. Extrapolating from the site plan, the Weelsby Avenue enclosure appears to have been around 45 m across (west to east); at Chase Hill Road this was around 47 m (north to south) and at Rosper Road the enclosure was a maximum of 46 m wide. The enclosure ditches, therefore, show remarkable similarity of form. Aylesby, in North East Lincolnshire, may be another parallel example, although it was less completely excavated (Steedman and Foreman 1995, 26).

There were postholes within the ditch at Weelsby Avenue, an arrangement that might parallel the palisade suggested by the interior gully (6001) at Chase Hill Road. Two earlier phases of enclosure were recorded at the entrance to the Weelsby Avenue enclosure. There was no parallel for this at Chase Hill Road, where the entrance is unknown.

In contrast to the other sites, Weelsby Avenue is best known for having 'developed overnight' into a 'regional centre for the production of [bronze] horse and chariot fittings' (Fenwick *et al.* 2001b, 73–81). It seems that these sites may all have begun as farmsteads, home to a single family or small group of people, before Weelsby Avenue eclipsed its origins.

The chronology of the enclosure at Chase Hill Road is also distinct from the other Hornsea Project One sites, occupied for a short time in the Late Iron Age and 1st century AD, and 'abandoned some time before the introduction of Roman wheel-made wares after the Roman conquest' (Rowlandson and Fiske, Chapter 4). This is similar to the Weelsby Avenue settlement, which did not persist far into the Romano-British period, suggesting that this form of farmstead was peculiarly Iron Age.

The Chase Hill Road site is located firmly within the Middle Marsh, almost 2 km from the boundary with the tidal flats geology, on the relatively dry land of the Skitter Beck Ridge at 12.5 m to 13 m OD. In this respect it follows the suggestion of May (1984, 18) that Iron Age settlement was focused on higher ground, contrary to more recent suggestions of associations with water courses (RPS 2013a; Cavanagh in prep.). However, the hydrology of the Iron Age landscape surrounding the Chase Field Road site is not well understood (the site may have been situated at the head of a minor valley prior to construction of the Immingham terminal). The comparable Rosper Road farmstead (Cavanagh in prep.) lay between the Chase Field Road farmstead and the littoral fringe, neither on relatively high ground nor adjacent to a water course.

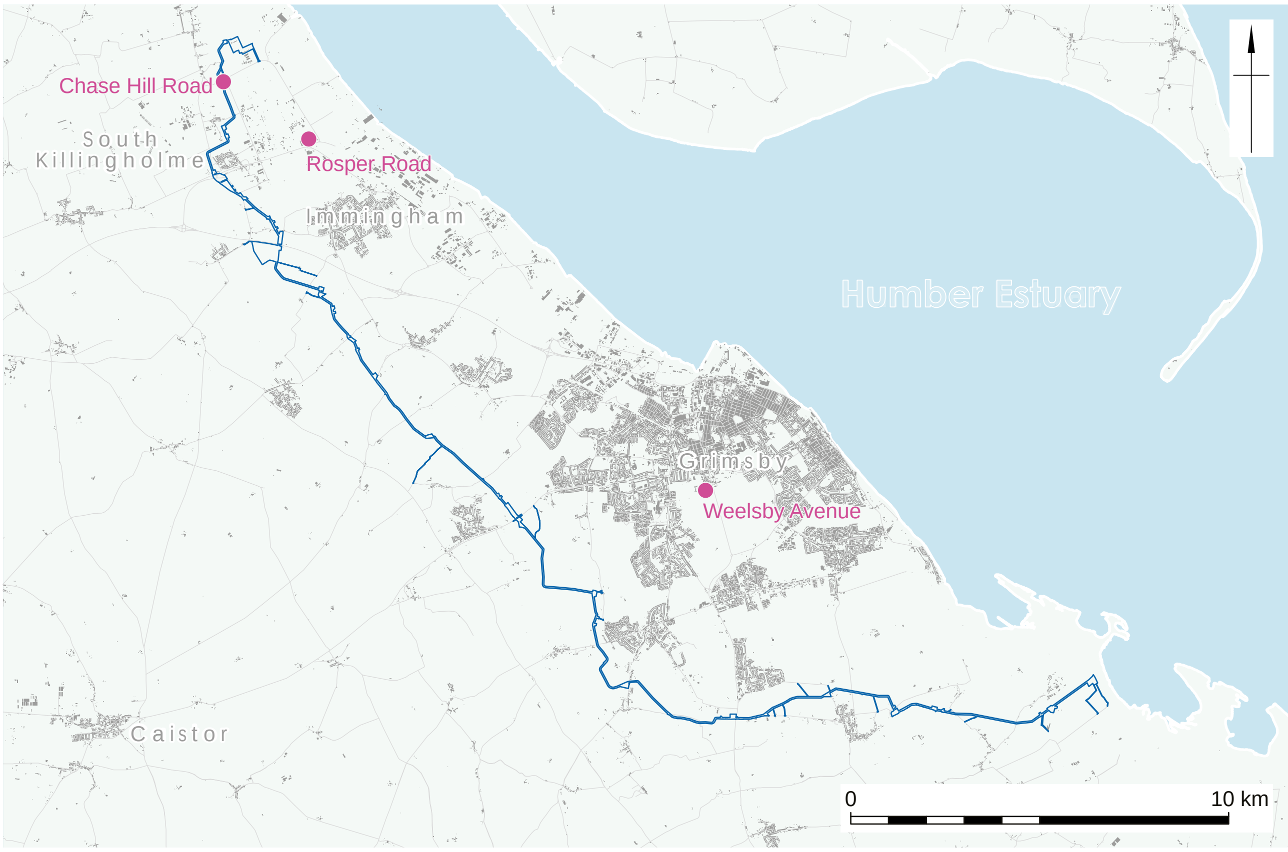


Figure 8.2 Location of selected regional Iron Age farmsteads

Iron Age Villages and Agriculture

Five or six Iron Age/Romano-British sites excavated during Hornsea Project One shared similarities of form and development. These were East Field Road, Humberston Road, Keelby Road, Station Road, Westfield Farm, and possibly a largely undated component of the Laceby Beck site. These sites comprise the bulk of the results both for this period and from the project as a whole. The Iron Age phases of these sites are discussed here, with further discussion in the Romano-British section below.

Three sites (East Field Road, Humberston Road and Station Road) were located on the fringes of alluvial or littoral wetlands, presumably to enable exploitation of marshland resources. However, only Humberston Road was actually situated at the tidal limit, whilst the other two, East Field Road and Station Road, were probably located on the fringes of alluvial wetland within the Middle Marsh. The Humberston Road site was situated on the border of the Middle Marsh and Outmarsh at 3.2–3.9 m OD, the others on higher, drier land in the Middle Marsh at heights in the range 10–17.5 m OD. The latter may have been located here to avoid flooding and for access to arable land.

North Lincolnshire

The East Field Road site was a little over 300 m south of the broadly contemporary Iron Age farmstead at Chase Hill Road and as such could be considered part of the same complex or site. Both settlements had their origins in the Late Iron Age, but with the East Field Road site continuing until the late 1st or 2nd century AD. Among the Hornsea Project One Romano-British sites, East Field Road was the only one that did not persist into the 3rd century. In other respects, however, East Field Road closely resembled the other Hornsea Project One Romano-British sites, with no major differences in material culture or economy.

East Field Road occupied a liminal location on the boundary with an area of freshwater alluvial wetland to the south-east. This wetland silted up some time after the occupation of the site and is fairly level today, although the wet character of the ground was an obstacle to excavation and the area still feeds a drain. In the Iron Age there would have been a perceptible change in topography and environment, which the site was probably developed here to exploit. The layout of the East Field Road site was focused on the wetland fringe, comprising a series of irregular enclosures separated from the wetland by a ditched boundary that was maintained over centuries. The enclosures were laid out in relation to the wetland margin, and a sub-rectangular Iron Age building was sited at the margin but with an opening facing away from it. In contrast to this, there is little artefactual or environmental evidence to support a particular exploitation of wetland resources. The function of the site may have been as a set of stock enclosures acting as a gateway from higher, drier arable land into the wetland pastures.

Westfield Farm (around 1 km to the south-west of East Field Road) contained a heavily truncated group of Iron Age features. The significant quantity of residual Iron Age pottery stands in contrast to the small number of preserved features of this date. The site may represent a settlement beyond a simple farmstead; however, the surviving boundaries and roundhouses are insufficiently preserved to comment further on its layout.

Around 600 m to the south-west, and very close to the Hornsea Project One cable route, the A160/A180 Port of Immingham scheme revealed a site at the junction of the A160 and Habrough Road that may have been purely agricultural in character. Two substantial Iron Age enclosures were defined by 'V'-shaped ditches and continued in use into the 1st century AD (Cavanagh in prep.). It is possible that these represent a satellite of the Westfield Farm site (or some other undiscovered settlement), although they could equally indicate an independent farmstead.

These North Lincolnshire sites are located on the Skitter Beck Ridge, which was also a focus of medieval moated sites (see below). These results confirm speculation on the basis of findspots that 'the boulder earth ridge upon which East Halton, and North and South Killingholme lie may have been settled in the Roman period as it was in medieval times' (RPS 2013a).

North East Lincolnshire

Rural North East Lincolnshire has been subject to less intensive archaeological investigation than other regions in the marsh (RPS 2013a). Iron Age settlement may be represented primarily by cropmarks of uncertain date, although an Iron Age farmstead was excavated at Aylesby, where two roundhouses were accompanied by four-post structures and set within a landscape of sub-rectangular fields (Steedman and Foreman 1995, 26). In Stallingborough parish, the site at Keelby Road did not appear to contain any Iron Age features, although residual Middle and Late Iron Age pottery indicates that there had been some activity here prior to its development in the Romano-British period. At Laceby Beck, the situation may be more complex. Although the only Iron Age pottery recovered was residual (found in Anglo-Saxon features) a substantial undated component of the site was stratigraphically early and might represent Iron Age or Romano-British activity (discussed under Anglo-Saxon below). On both sites, it may be that Iron Age features were largely truncated by later activity, or it may be that any Iron Age occupation was of a form that was largely perishable and did not leave much trace in the archaeological record.

Holton le Clay parish (North East Lincolnshire) and Tetney parish (East Lindsey)
At Station Road, Iron Age activity was focused in the west of the site, away from the primary Romano-British focus. The potential number of buildings (eight, but not all contemporary; five building locations are represented) might suggest that the site was a small settlement rather than a farmstead; however, as discussed above, several of the potential buildings were probably too small to be houses. A sub-circular enclosure is known primarily from geophysical survey (although part of the ditch was excavated) and was adjacent to the potential buildings rather than enclosing them. The site is likely to extend substantially to the north around the continuation of this sub-circular enclosure, and also to the south. A cropmark identified to the west may also represent an extension to the site (Lincolnshire HER 46187 – MLI87945). In the Iron Age, the limit of the settlement was defined to the north-east by a substantial linear boundary; the landscape setting of this boundary is not well understood, and it could either partially enclose the settlement or represent an element in a wider field system.

There was also a single Iron Age ditch (132) in the east of the central focus at Station Road that may represent a truncated irregular enclosure. This ditch pre-dates the intensive Romano-British activity at this location and illustrates that the later system of land division was a development of the earlier layout. This enclosure was probably a satellite of the settlement in the west of the site and, particularly in comparison with the arrangement at Chase Hill Road/East Field Road, could also potentially be a corral on the margin of an area of wetland. A single terminal is consistent with an entrance facing the settlement (to the west). The eastern end of the central focus of the site was defined by the bottom of a minor valley, the enclosure (and the Romano-British enclosures that followed it) perhaps occupying the boundary between drier arable land and areas of wetland grazing. This boundary is still significant, and today divides the parishes of Holton le Clay and Tetney.

The desk-based assessment for this project (RPS 2013a, 7–8) speculated that 'it is difficult to imagine that Tetney, with its natural advantages of high ground situated beside springs… and a tidal stream… would have remained unsettled [in the Iron Age].' At Humberston Road, Tetney, identification of a distinct Iron Age phase is difficult, the absence of rock-gritted wares suggesting that the settlement was established in the 1st century AD (Rowlandson and Fiske, Chapter 4). This site was situated on the former littoral fringe and would therefore probably have had direct access to carr. An Iron Age well (7441) was infilled early in the life of the site. It may have become contaminated with salt because of its proximity to the tide line.

Iron Age to Romano-British Transition

The Romano-British roundhouses at Westfield Farm demonstrate continuity with the Iron Age tradition. Pottery assemblages also suggest a smooth transition. This is consistent with the general trend across the broader Lincolnshire region, where previous authors have emphasised a rural agrarian continuity (eg, Cavanagh in prep.; Chadwick 2010). Beyond the marshes, high-status Iron Age sites such as

Dragonby, Yarborough hillfort and Nettleton thrived in the Romano-British period with no major disruption (Cavanagh in prep.; Whitwell 1970, 15). May (1984, 21) suggested that ‘Roman planning may have been less concerned with the imposition of Roman administration upon the Corieltauvi’ and that the Roman administration did not focus on a region where ‘a stable economic and social system had been achieved… by the end of the Iron Age’. If this was true of the more accessible parts of the county, it may be that the less accessible marshes may have lain even further from the influence of centralised power and fashion.

Within the Hornsea Project One scheme, only the farmstead at Chase Hill Road and the neighbouring site at East Field Road can be said to have declined around the time of the Roman conquest. At Chase Hill Road there was little evidence for habitation beyond the Late Iron Age, and it may be that the site was abandoned prior to the arrival of Roman influence. Elsewhere, the 1st-century Roman transition appears to have gone smoothly, with no evidence of disruption. In each case, the early Romano-British enclosure system developed organically from that of the Late Iron Age, indicating a continuity in agricultural practice and culture. Activity at East Field Road continued until the late 1st century or even the 2nd century AD, after which occupation may have shifted focus rather than being abandoned; work in the 1960s during the construction of the Lindsey oil refinery identified traces of 3rd- to 4th-century settlement immediately to the east (RPS 2013a, 9). The latter site lies on the south side of a drainage channel that runs through the former wetland area defining the southern limit of the East Field Road site. It is possible that the focus of activity shifted slightly seawards, possibly responding to changes in the alluvial wetland environment or as a rearrangement of land holding, perhaps as a delayed consequence of the abandonment of the nearby Chase Hill Road farmstead.

Romano-British Villages and Agriculture

The Romano-British sites at East Field Road, Humberston Road, Keelby Road, Station Road, Westfield Farm and perhaps also Laceby Beck consisted primarily of enclosures that are likely to have been used to contain stock. Frequent redefinition and truncation have in places made these features hard to read, although they are consistent with the provisional interpretation of the Hornsea Project Two results from Humberston Road of ‘animal enclosures and sorting systems such as corrals and small ditch and gate systems’ (Allen Archaeology 2018b, 4). The best examples of such structures from Hornsea Project One include the discrete enclosures at Keelby Road and at Station Road. These complexes of enclosures were intensively maintained, modified and redesigned, perhaps reflecting the marshland environment, where poor water management may have had disastrous economic consequences.

The Humberston Road site broadly conforms to a ‘ladder’ pattern, with rows of enclosures on either side of a trackway, although the western enclosures are more irregular. This is particularly apparent when the geophysical results are viewed alongside the excavation results (**Fig. 8.3**). Other Romano-British sites in the region described as ‘ladder’ settlements include Chase Hill Farm (Fenwick *et al.* 2001b, 81–93), and East End Farm (North Lincolnshire HER MLS20152). The other sites from Hornsea Project One do not conform to any regular pattern of enclosure (such as ‘ladder’, ‘washing-line’ or ‘brickwork’ arrangements). The pattern of enclosure seen across these sites is best described as irregular, both in the general sense and in the specific sense of Riley (1980), who (working in Yorkshire) contrasted ‘irregular’ layouts with ‘brickwork’ and ‘nuclear’ plans – although there has been criticism of this work (eg Chadwick 2010, 180). The irregular layout of the Hornsea Project One sites resembles those described as ‘complex’ by Winton (1998, 50). Through the analysis of aerial photographs, Winton differentiated Romano-British from Iron Age sites according to their rectilinearity or squareness (Winton 1998, fig. 4). The arrangement of some enclosures at Station Road and Westfield Farm may have been attempts to impose rectilinearity on existing schemes of land division. At Westfield Farm these arrangements did not persist. This may be a defining characteristic of Romanised villa-style sites, but the lower-status, native-tradition, marshland Romano-British settlements of Hornsea Project One generally do not appear to have differed morphologically from their Iron Age antecedents. Enclosure systems in both periods appear to have grown organically according to immediate need.

Romano-British settlement is often focused on trackways (Winton 1998, fig. 5), and Riley (1980) linked trackways with irregular settlement plans in particular. This is demonstrated at Humberston Road, where the site is defined around a central trackway. Trackways may also be present at Station Road (see below) and at East Field Road. At East Field Road a double-ditched boundary (5202 and 5033/5035/5072) could represent a trackway, although it was blocked by a ditch at one end. Winton (1998, 53) considered double-ditched elements to be specifically Romano-British rather than Iron Age, consistent with the two possible examples from Hornsea Project One.

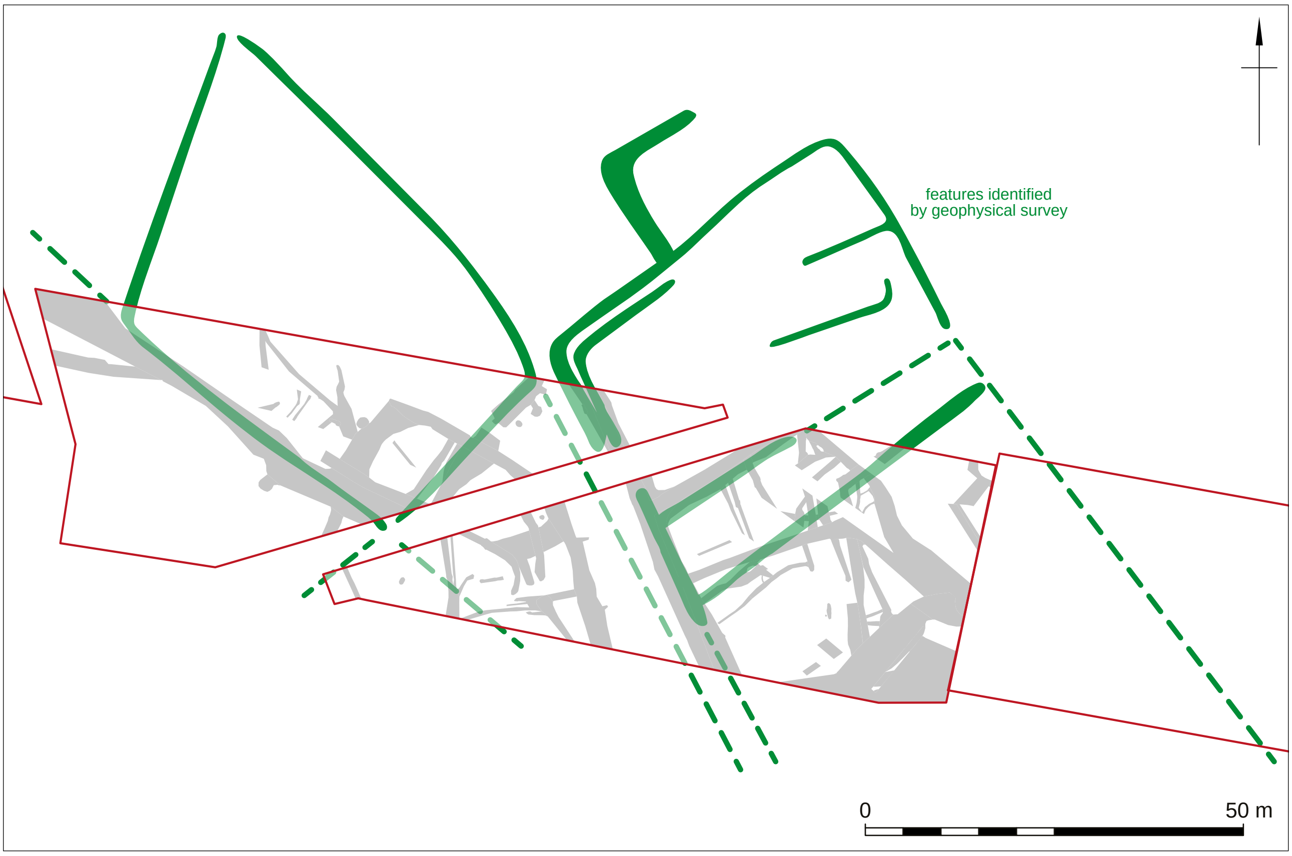


Figure 8.3 Humberston Road excavation results and geophysical survey results

North Lincolnshire

The Romano-British enclosure system at East Field Road was a direct continuation of the Iron Age tradition, in many cases redefining ditches on the same alignments. A few elements were not maintained into the Romano-British period, and it is impossible to know the full extent of the Romano-British addition to the enclosure system because of the truncation of Iron Age ditches. Geophysical survey indicates that the excavated enclosures continue to the west; however, it is unlikely that there are further enclosures beyond those already partially excavated, or that the site extends much further to the east. This is, then, the smallest of the sites and, as discussed above, may have operated as an extension of a nearby settlement.

At Westfield Farm, extensive enclosures probably developed organically from the Iron Age, with their apogee in the late Romano-British period. Here, truncated early Romano-British enclosures were only slightly better attested than the Iron Age enclosures that preceded them, and there were insufficient surviving remains to comment on any changes that may have taken place as a result of Romanisation. The early Romano-British period is characterised by piecemeal development of enclosures and may represent a much more modest site than that which developed in the late Romano-British period. Three phases of enclosure have been identified on different alignments: 1st/2nd-century enclosures imposed over roundhouse 1; 2nd-century enclosures slightly to the north-east; and 2nd/3rd-century enclosures imposed over the existing enclosures. Within the context of an irregular enclosure system, the first two phases could have been contemporary, or at least overlapped in use.

At Westfield Farm, the period of greatest activity appears to have been the 3rd/4th centuries, although there is a lack of anything definitively attributable to the 3rd century, and the increase in activity was accompanied by a reduction in the status of the pottery. This change in size and status happened in parallel to the contemporary abandonment of the nearby Brocklesby Junction site (Cavanagh in prep.).

There were two areas of 3rd/4th-century development at Westfield Farm. These comprise primarily a series of parallel ditches on a west-north-west–east-south-east alignment, although rectilinear and sub-rectilinear enclosures are identifiable within the sequence of ditches. Elsewhere, development in the late 3rd to 4th centuries comprised modification of earlier enclosures on different alignments compared to the main area of 3rd/4th-century development. Dating evidence from these two areas overlaps chronologically and it cannot be said which was earlier or whether they were contemporary.

Activity at Westfield Farm in the late Romano-British period was, therefore, complex and multi-phased. Agricultural strategies may have been refined under the pressures of the environment of the Romano-British marshes, and it may be that success was won through sheer effort of labour such as that used to maintain the enclosure ditches. Westfield Farm was topographically the highest of all Hornsea Project One sites (at 16.3–17.5 m OD) and so probably least prone to flooding. Perhaps the most obvious feature of Westfield Farm was its relatively large size, and the complexity may simply reflect the scale of the settlement.

North East Lincolnshire and Riby parish (West Lindsey)
Compared to North Lincolnshire, the number of recorded Iron Age and Romano-British settlement sites is low in rural North East Lincolnshire (RPS 2013a). The apparent lack of sites in this area may be due to a lower level of developer-funded archaeological investigation rather than a genuine paucity. Nevertheless, within Stallingborough parish, a Romano-British settlement was recorded on the former littoral fringe at Brick Pit Farm (Davies and Millward 2014, 30–33), and another at Hobson Way with roundhouses and rectangular buildings (Field and McDaid 2011).

Also in Stallingborough parish, Hornsea Project One identified a settlement site at Keelby Road. The chronology of this site is distinct from other Hornsea Project One sites in having a very limited Iron Age component comprising only residual pottery. By the early Romano-British period, the site closely resembled the other examples, characterised by a unified but irregular system of enclosures. The site at Keelby Road, therefore, follows the native tradition even though there is little surviving evidence of activity prior to the Roman conquest. However, particularly in the late Romano-British period, the enclosures at Keelby Road can be distinguished from those elsewhere on the scheme as they are to a greater extent made up of superimposed discrete enclosures rather than coherent systems of enclosure. This might indicate a more piecemeal operation responding to immediate demands rather than a planned development.

Though not well understood, the presence of limited Romano-British features at Wells Road (just over the North East Lincolnshire border in Riby parish, West Lindsey) confirms that the Keelby Road site is not an isolated example of Romano-British occupation in the area.

Holton le Clay parish (North East Lincolnshire) and Tetney parish (East Lindsey)
The geophysical survey (RPS 2013c) of the Humberston Road site (**Fig. 8.3**) suggests that the focus of settlement was probably to the north of the excavated area. This was the area targeted by Hornsea Project Two, which has revealed a larger enclosure (Allen Archaeology 2018b). A central trackway provided access to this enclosure from the south-east, and might have extended south along the littoral margin, although there was no evidence for its continuation. The entranceway was partially blocked to control access, and marked with pits, ditches and an inhumation grave. The geophysical survey also revealed that the ditches of the west of the site comprised the southern corner of a large rectilinear enclosure and a second irregular enclosure extending south. The major ditches of the eastern part of the site, adjacent to the littoral fringe, form parts of a 'ladder' system of rectilinear enclosures aligned north-west–south-east. The network of enclosures may have been supplemented by drainage ditches, particularly near the littoral fringe, but also in the north-west, which may have been an ad hoc response to drainage needs.

A pit (7491) within the main enclosure contained burnt fills and may represent a hearth, constituting the best evidence for domestic or industrial activity at the site.

The chronology of Humberston Road is unusual within the Hornsea Project One sites, since although there was a large amount of late 3rd-century pottery, from the main settlement, no material was recovered that is certainly 4th century. It is probable that the site suddenly went out of use at the turn of the 3rd and 4th centuries. This is almost certainly a reaction to inundation from the sea as the site was partially buried below tidal flats deposits laid down at this time.

The single Romano-British inhumation burial from the scheme was recovered from a grave (7393) cut through the fill of a trackside ditch, close to the main enclosure entrance. Osteoarchaeological evidence (McKinley, Chapter 6) shows that the burial was that of a woman of advanced age who had lived a life of strenuous activity and experienced repetitive strain to her hips. There was also a well-healed sharp weapon injury to her skull suggesting that life in the marsh may not have always been peaceful. More limited evidence from disarticulated bone from ditch 7475 includes plastic deformation caused by singular or repeated trauma that may be further evidence of hard agricultural work.

In Holton le Clay parish, the high ground overlooking Waithe Beck to the south and the marshes to the east had previously been suggested as a site for Romano-British settlement (RPS 2013a; Thomas and Fletcher 2001). This was the approximate location of the Station Road site, although Thomas and Fletcher's expectation of saltworking here was not supported by the archaeological results.

During the Romano-British period, the western part of the Station Road site, formerly the location of an Iron Age settlement, was crossed by a single boundary ditch and the main focus of activity shifted to the centre where there had previously been an Iron Age enclosure. A further boundary ditch lay to the east. The two boundaries may have delineated land associated with the Romano-British settlement at Station Road. As discussed above, the centre of the site possibly occupied a liminal position, close to potential wetland. It appears that enclosures closest to this grew organically from their Iron Age antecedent; however, further away (geographically) there was an opportunity for a more rectilinear system to be adopted.

A possible funnel-shaped enclosure adjacent to the wetland may have been a stock crush. Its position at the fringe of the potential wetland may indicate that it was used when rounding up stock from, or releasing stock, into the carr. Winton (1998, 50–51, figs 3.7 and 3.8) identifies elaborate funnel-shaped entrances to settlements, of which this is a further example. South of the Lincolnshire Marsh, in the Fens, Romano-British settlements were linked by droveways (Winton 1998, 56) and it is tempting to propose a route heading east towards Tetney and the Outmarsh. It is a reminder that these sites were set within a broader landscape of field systems (*ibid*., fig. 63), for which some of the ditches (eg, 116, 122) continuing beyond the enclosures may provide evidence.

Romano-British Decline

With rare exceptions, the Romano-British pottery sequence that has provided the primary method for dating divided neatly into early Romano-British (1st/2nd century) and late Romano-British (3rd/4th/early 5th century) phases. Pottery forms also change, with the assemblage from Westfield Farm in particular suggesting a more basic rural site in the later period. There may have been a general hiatus or reduction in activity across multiple sites between the mid-2nd century and the late 3rd centuries, with apparent breaks in the development and maintenance of the enclosures at Westfield Farm, Keelby Road and Station Road. This might represent changes to agricultural strategies and/or domestic arrangements, or might represent re-occupation of temporarily abandoned enclosures. Abandonment of early Romano-British settlements and occupation of adjacent new sites in the late Romano-British period has also been recorded to the north of the cable route (eg, Neal *et al.* 2000). Although the greatest numbers of features were from the late Romano-British period, the largest quantities of pottery were of early Romano-British date.

At Humberston Road, the Hornsea Project One results do not indicate a major break and it has been harder to separate features into early and late Romano-British phases. Humberston Road was distinguished among the Hornsea Project One sites by its low-lying position on the littoral fringe, and this may have had some effect in it not being subject to a 2nd/3rd-century hiatus. However, Allen Archaeology (2022, 58–59) somewhat contradicts this, suggesting that in the area of Hornsea Project Two, ladder enclosures were abandoned after the 2nd century to be replaced by smaller discrete enclosures.

The Hornsea Project One Romano-British sites were abandoned at different times. East Field Road was the first to decline, being abandoned after the late 1st to 2nd centuries AD, while Humberston Road was largely abandoned after the 3rd century AD. At Keelby Road, no feature was certainly abandoned later than the late 3rd century, although the site may have continued to be occupied in the 4th century. There were 4th-century ditches at Westfield Farm, and Station Road had features of late 4th- to early 5th-century date, although these were shallow and irregular. Early 5th-century Romano-British occupation does not appear to be particularly unusual in the area and was also identified at Chase Hill Farm (Fenwick *et al.* 2001b, 81–93), and Brocklesby Junction (Cavanagh in prep.).

It is probable that each site declined for its own specific reason. Flooding is an ever-present possibility: in the Lincolnshire Fens settlements retreated and advanced in response to flooding, and this has been suggested as a reason for the abandonment of sites in the Lincolnshire Marsh (Davies and Millward 2014, 20–21; van de Noort 2004; van de Noort *et al.* 2001, 296). It has also been suggested that rising sea levels may have led to abandonment at the end of the Romano-British period, with some of these areas only re-occupied during the Middle Ages (*ibid*.). This is particularly relevant at the low-lying Humberston Road, where substantial tidal flats deposits were laid down around the end of the 3rd century. An attempt at re-occupation in the 3rd/4th century adjacent to the Romano-British site would seem to indicate that inundation, though disruptive, was only temporary.

Anglo-Saxon

Introduction

Earlier authors (eg, Fenwick *et al.* 2001b, 66; RPS 2013a, 10–11; Winton 1998, 58) wrote of a lack of Anglo-Saxon remains in the broader area. However, a growing number of recently excavated Romano-British sites contain an element of Anglo-Saxon occupation (see Chapter 4), although generally consisting of a few minor features rather than extensive remains. Anglo-Saxon pottery has been found on several Romano-British sites in the area, such as the Able UK project area ALP1 (Rowlandson *et al.* 2017). Excavations at Hobson Way, Stallingborough revealed a Romano-British settlement with later use in the 6th to 8th centuries (Field and McDaid 2011) and an Anglo-Saxon phase was notable at Hatcliffe Top (Rowlandson and Fiske 2020c). More modestly, and more typically, a single Anglo-Saxon feature was recorded at Brocklesby Junction (Cavanagh in prep.). The Hornsea Project One sites are similar, with limited evidence for Anglo-Saxon occupation, chiefly at Laceby Beck. Beyond Hornsea Project One, increasing numbers of Anglo-Saxon cemeteries have been identified, including those at Elsham, Manton, Barton on Humber, and, importantly for the results of Hornsea Project One, in the south-west of Laceby parish and in adjacent Aylesby (Fenwick *et al.* 2001b, 66). Either the Laceby or Aylesby cemeteries could potentially have contained the graves of individuals that lived at Laceby Beck. Also within Laceby parish, cropmarks to the south of the A46 may represent another settlement that might also be of Anglo-Saxon date (RPS 2013a).

Romano-British to Anglo-Saxon Transition

Station Road, Chase Hill Road and Westfield Farm/Blow Field
The evaluation report notes that small amounts of Anglo-Saxon pottery were recovered from a ditch at Station Road (Irving 2013). It was not possible to locate these sherds to confirm their identification, and no further material of this date was found during the extensive mitigation excavation. There was, however, some very late Romano-British activity (probably extending into the early 5th century AD).

Similarly, Irving (2013) recorded a small amount of Saxon pottery at Chase Hill Road; however, as the settlement here was probably abandoned in the 1st century AD this may, if correctly identified, represent a single later deposit.

At Westfield Farm/Blow Field, there was no evidence for Anglo-Saxon activity, though the layout of ditches in the Late Saxon and medieval periods did show some similarity to the Romano-British layout. It may be that occupation was continuous, though perhaps of lower intensity and with less material culture. Alternatively, and probably more likely, the Late Saxon and medieval occupation may have developed following a pattern of Romano-British settlement that was still obvious in the landscape, perhaps in the form of partially infilled ditches.

Laceby Beck
Although occupied in the prehistoric and Romano-British periods, definitive categorisation of the site in these earlier periods as a settlement is uncertain. The Anglo-Saxon remains include an enclosure system possibly representing continued utilisation and maintenance of an existing, undated enclosure system.

No structural remains were identified and it is possible that houses (of whatever form: sunken-featured buildings and/or halls) were located to the east or elsewhere beyond the excavation area. Several circular, broad, shallow pits were present, their purpose uncertain, though they may have served incidentally for rubbish disposal.

The complete absence of pottery of shell-tempered Middle Saxon types strongly suggests that, overall, the assemblage is likely to pre-date the 8th century. The pottery comprises both local material and some from further afield, including vessels probably produced in the Wolds (Young, Chapter 5). A single glass bead is likely to be of 5th–6th century date, further suggesting an early Saxon date for the settlement.

Other finds include two antler combs (including ON 109), a bone pin (ON 92) and three knives (ONs 94, 96 and 98). In addition, three bone pin-beaters or thread-pickers, a ceramic loom weight and a Lias limestone spindlewhorl (ON 91) attest to textile production, while a strip of antler with a denticulate edge may also be related to this activity. Finally, a probable book clasp (ON 177) from the subsoil is more likely to be of medieval date. The material culture of the Laceby Beck site is more diverse than that recovered from earlier and later phases of occupation from the Hornsea Project One scheme. The pottery is local and regional, including material probably produced in the Wolds. However, the spindlewhorl is Lias limestone and therefore represents a traded item. Patterns of Anglo-Saxon occupation in the region are not well understood and any trade routes or the extent of the regional trade network are not known. It would have been easy to reach the sea at Grimsby from Laceby, so sea trade is one option. Otherwise trade routes might have resembled those from the Romano-British period, perhaps leading west through the Kirmington gap or other routes across the Wolds.

Amongst the animal bone assemblage, it appears that the proportion of cattle continued to increase from the Romano-British period (consistent with regional evidence; Berg 1993), as did pigs. There was now management of cattle and some sheep for prime meat, although sheep were still primarily raised for wool (or milk). Pressures in the provision of winter fodder may have influenced this strategy (Hambleton 1999, 70). The pattern of butchery was more ad hoc than before but, interestingly, included the same shoulder-curing process employed in the Romano-British period. Although this specialist processing is common in the Romano-British period (Dobney 2001; Dobney *et al.* 1996; Lauwerier 1988), it has not previously been recorded on bones from Anglo-Saxon Britain (Rizzetto *et al.* 2017, 543–4), and may represent a late survival of Romano-British practices. Marrow was exploited, there was evidence of skinning, and horseflesh continued to be occasionally eaten. Butchered horse bones have been noted at a number of other Saxon sites (Baker 2002; Crabtree 1989, 104; 2012, 20; Higbee 2009, 301; Higbee forthcoming), but hippophagy is thought to have been relatively rare until the Middle Saxon period (Holmes 2017, 51; Poole 2013, 330). A swan's bone may provide evidence of a luxury food item (Albarella and Thomas 2002; Dobney and Jacques 2002, 18; Holmes 2014, 50–9). More generally, whole carcasses confirm the continuation of the Romano-British pattern of a closed subsistence economy.

Of the cereals grown, barley was now dominant over wheat, possibly due to an emphasis on use as animal fodder. Naked wheat was also replacing hulled wheats. There had been some improvements to arable techniques, indicated by the elimination of some formerly troublesome weeds, and a generally lower level of weeds overall.

The Laceby Beck site has previously been identified as potentially attractive to settlement (eg, RPS 2013a, 9) and, unlike the other parishes along the cable route, had a market by the medieval period (Fenwick *et al.* 2001b, 67), which might provide an indicator of its relative importance in the preceding centuries.

Late Saxon

Evidence for Late Saxon activity in the marsh is primarily in the form of placenames rather than archaeological remains (RPS 2013a).

The Late Saxon period was not well represented among the results of Hornsea Project One, with only one site producing relevant evidence. At Westfield Farm/Blow Field the period was represented by a small number of features pre-dating the medieval moated site, supplemented by residual pottery recovered from later contexts. Hornsea Project Two revealed extensive 9th to 11th century Late Saxon remains at Blow Field, including a rectangular domestic building. The understanding of Blow Field during this period will be greatly enhanced by the Hornsea Project Two publication. It is likely that Late Saxon and Saxo-Norman activity at Westfield Farm/Blow Field can be identified with one of the three Killingholme manors (held by Briford, Siward and Turgis) listed in Domesday

(RPS 2013a). Further afield, the site at Goltho remains probably the best-known Late Saxon manorial site, although there are some doubts about the chronology there (Jane Young pers. comm.).

Saxo-Norman to Post-Medieval Moated Sites

Saxo-Norman

The two moated sites excavated during Hornsea Project One are among a group known from the Skitter Beck Ridge (the spine of high ground between the Skitter Beck and the Humber, as described in Chapter 1) and are situated approximately 2.5 km apart. A 2014 nationwide survey of moated sites (Coveney 2014) built on the work of Fenwick *et al.* (2001b, 73), identifying eight moated sites on the Skitter Beck Ridge (see **Fig. 1.3** in Chapter 1). From south to north, the names and grid references given by Coveney are: Habrough (TA 157 142), Home Farm (TA 153 143), Blow Field (TA 148 164), Manor Farm (TA 145 176), North Garth (TA 143 182), Baysgarth Farm (TA 142 188), Manor Farm (TA 140 201) and East Halton Grange (TA 139 220). Hogcote Close (TA 119 248) might be considered a northern outlier although it is not on the ridge proper. Church End Farm (TA 166 099) and Roxton Farm (TA 168 126) may represent southern outliers; the pattern can be extended to include more southerly moats at Stallingborough, Healing, Great Coates, Fulstow, Cockerington, Manby, Little Carlton, Reston, Withern and Strubby. These moats 'display a range of forms and no doubt represent a range of periods, from the heyday of moated site construction between 1250 and 1350 until well into the Tudor period' (Fenwick *et al.* 2001b, 73). These heterogeneous moats range 'from the large irregular ditches and banked site at East Halton Manor, to the relatively simple rectangular moated enclosure at Baysgarth and more complex rectilinear forms at North Garth and Killingholme Manor Farm, where the earlier medieval enclosure appears to have been given substantial later additions, perhaps associated with gardens…' (*ibid.*).

Both medieval moated sites investigated by Hornsea Project One had earlier settlement. Blow Field overlapped with the Iron Age/Romano-British site of Westfield Farm, and a few Iron Age and Romano-British ditches (with residual Bronze Age pottery) were recorded immediately south of the Habrough moat. There is evidence for Late Saxon occupation at Blow Field, and Saxon findspots are known from Habrough parish, including a 10th-century sherd (Jane Young, quoted in Evans 1991) sealed beneath the moat upcast of Evans' moated site. Evans (1991) concluded that 'the medieval manorial site [at Habrough] was established in the former crofts of Late Saxon tenements'. Saxon activity at Blow Field is likely to have been quite intensive, although its precise nature at this time is not clear.

The first main phase of medieval activity at each site were similar arrangements of drains, which also acted as minor boundaries defining unequally-sized areas aligned with the Skitter Beck Ridge. At Habrough the sequence was clear, with a single network of drains infilled and superimposed with a second phase of drains on a slightly different alignment. At Blow Field there were up to seven sub-phases, suggesting more intensive activity. The Blow Field drainage system may have been subject to modification as a response to flooding: evidence for this includes sump 4240 and the dendritic pattern of drains 8257 and 8250. At both sites, the development of the drains spanned the Saxo-Norman period (10th/11th centuries), then expanding in the 12th/13th centuries and going out of use by the 14th century. The drains were in existence before the moats, and the moats were dug to succeed existing sites (*cf.* Beresford 1987; Coveney 2014, 211; Le Patourel 1978a, 42). The north moat at Habrough largely corresponded with the area defined by the earlier drains. In contrast, the Blow Field moat appeared to be partly superimposed on the drains, which continued north of the later moat ditch.

Although moated sites are most often thought of as containing a manor house, a wide variety of monument types were enclosed by moats, including farm buildings, lodges, hospitals, colleges, granges, chapels, religious houses, dovecotes, windmills, gardens and orchards (Coveney 2014, 42; Le Patourel 1978b, 22). The drainage suggests a zoned system of land use that may have encompassed domestic, agricultural and other functions (Taylor 1978, 10). Agricultural activity at Habrough may have taken the form of farm buildings, gardens or orchards (Evans 1991); the artefactual assemblage does not suggest high-status activity.

A line of three postholes at Habrough is the best evidence for Saxo-Norman structures, although they were at the edge of the site and on a differing alignment to the contemporary drains. A ring ditch (3316) was too small (4.5 m diameter) to have enclosed a domestic building but could have been related to an ancillary structure.

There is a possible parallel for these Saxo-Norman phases at Hogcote Close, Goxhill (north of the Skitter Beck Ridge proper). Here, Saxo-Norman pottery was recovered from the moated site following ploughing in 1967 (Russell 1968).

Medieval

The Blow Field and Habrough moats had multiple platforms and were, overall, rectangular in plan. Data held in the North Lincolnshire HER suggests that Blow Field comprised at least three platforms (north-west, north-east and south, together forming a rectilinear site), and this arrangement has been confirmed archaeologically within the limits of the excavated areas. At Habrough the Hornsea Project One moat was one of at least two moats in the immediate vicinity, another having been previously excavated (Evans 1991). Sites comprising multiple moats are not uncommon, with different moat platforms sometimes associated with zoned activities (Taylor 1978, 10).

The profiles of moat ditches have been subject to sometimes contradictory definitions: for example, they have been defined as ‘a broad, flat-bottomed ditch not less than 5 m wide’ (Aberg 1978, 1); as ranging between 3–6 m wide (Taylor 1978, 8); or with ‘a rather shallow U-shaped profile, seldom more than 2 m deep at the centre’ (Le Patourel 1978a, 37). The outer Blow Field moat (4059) was 6.6 m wide and 1.6 m deep with an irregular, broadly ‘U’-shaped profile. The ditch (8248) dividing the two north moat platforms was smaller at 2.4 m wide and 0.83 m deep, suggesting, as might be expected, that the division between the moat platforms held less importance than the division between the moated site and the surrounding landscape. However, the dividing ditch (300200) between the north-west and south moat platforms was over 5 m wide and 2 m deep (a full profile could not be obtained due to the shape of the excavation area). The medieval moat ditch (3187) at Habrough was smaller at 2.94 m wide and 0.94 m deep, although this was greatly enlarged in the post-medieval period (3202; up to 8.4 m wide and 2.2 m deep).

Slumped fills suggested the possibility of a bank on the north side of the south platform at Blow Field, although the evidence is not conclusive (*cf.* Le Patourel 1978a, 42; Rigold 1978, 29; Taylor 1978, 5). The North East Lincolnshire HER records an external bank outside Evans' Habrough moat as being visible in 1972, and the North Lincolnshire HER records an interior bank at Blow Field that was 0.4 m high in 1962 (the width is estimated at around 2.2 m). The construction of a bank may have been undesirable in areas of poor drainage (Coveney 2014, 148). There was no evidence at either site for other moat structures such as walls, fences, hedges, linings or pilings. The upcast from the moat ditch may have been used to raise the level of the moat platforms, as was the case on Evans’ moat platform at Habrough, which had been raised by 1.15 m (Evans 1991; Le Patourel 1978a, 40). However, no evidence for raised platforms was identified during the Hornsea Project One works. Late 20th-century levelling and plough truncation will have impacted preservation.

In common with the results from all periods across the Hornsea Project One scheme, buildings were not clearly apparent on the moated sites. This could be a reflection of the wet conditions, where earth-fast foundations may have been particularly susceptible to rot. The chief pieces of evidence for medieval buildings are the two beam slots (3017 and 3025) at Habrough, 11 m long, aligned with the second phase of drains. These beam slots may, therefore, either pre-date the moat, or perhaps are more likely to be broadly contemporary with the earliest phase of the moat ditch. It is tempting to relate these beam slots to the foundations of a residence, although they may equally represent agricultural buildings or some other form of structure.

Pits, some for rubbish disposal, were generally undatable; where these could be dated they were primarily 12th/13th century, although there were also Saxo-Norman and 13th/14th century examples.

It has generally been assumed that moats contained water (eg, Aberg 1978, 5), with dry moats often viewed as aberrations (eg, Taylor 1978, 9). At Habrough, ditch 3169 probably drained the moat, and though it is not proven that the medieval Habrough north moat was wet, environmental evidence shows that by the post-medieval period it contained eutrophic water with evidence of a wetland environment. Evans (1991) believed that the Harbrough moat he investigated held water, but it was the post-medieval recut he had seen. Environmental evidence shows that the Blow Field moat contained at least seasonal water, and it may have been permanently wet. The literature occasionally suggests drainage as a primary function of moats (Emery 1962, 381–2, 384–7; Le Patourel and Roberts 1978, 47). There was no indication that the medieval moat ditches at Habrough and Blow Field had been lined (*cf.* Le Patourel 1978a, 37), which would probably have been unnecessary to hold water because of the heavy soils. Moated sites are often associated with heavy clay soils for this reason (Historic England 2018b, 2; Le Patourel and Roberts 1978, 49).

The medieval hydrology of each site has been altered by post-medieval inclosure and drainage. The modern 1:25,000 Ordnance Survey map depicts a drain to the north of the Habrough site carrying water from a series of modern ponds, absent from 19th-century maps, at Pelham House in the west towards Immingham in the east. Similar west–east-aligned drains can be seen to the south of the site; some may be associated with the modern A180 dual carriageway. Evans (1991) suggested a stream shown on the 1888 Ordnance Survey map south of Immingham Road drained this moat to the east. The northern Habrough moat drained to the east via ditch 3169, which could have converged with Evans' suggested stream. Evidence for the medieval hydrology of Blow Field is no clearer: in the general vicinity there are west–east-aligned drains, and a mapped minor drain may have fed into the Blow Field moat from the higher ground of the farm complex at Westfield Farm (17 m OD). The modern Ordnance Survey map also depicts an active drain aligned along the south side of Blow Field, along the alignment of the moat. A record from 1962 held in the North Lincolnshire HER recorded this drain as a moat holding around 1.5 m of water. The west moat was recorded as 'generally dry but some casual water' in the same survey. The arrangement of any drains emptying the Blow Field moats are unknown. With both sites situated on relatively high ground, it is likely that the main source of water (if any) for the moats was groundwater (or 'seepage' as it was termed by Taylor 1978, 9) rather than streams.

Dating the construction of the moats at Habrough from both the results of Hornsea Project One and those of Evans (1991) has been complicated because of later scouring and recutting, which often removed evidence of their origins (Le Patourel 1978a, 40). Based on pottery recovered from drain 3169, probably contemporary with moat 3187, the medieval moat at Habrough may have become infilled during the 12th/13th centuries, early in the accepted chronology of moated sites (13th/14th century; see below). The pottery from the site as a whole also suggests a mid-12th- to mid-13th-century apogee of pottery deposition at Habrough consistent with this picture.

At Blow Field there was a paucity of material culture recovered from the fills of the moat, the pottery ranging in date from the early or mid-12th century to the late 13th to 14th century. Two radiocarbon analyses of material obtained from the moat included one (Poz-126497) of (what proved to be) residual prehistoric material, whilst the other (Poz-126653) returned a 15th-century date of 1413–1480 AD (at 95.4% confidence). Pottery from the Blow Field site as a whole suggests that the main period of deposition was in the 12th century with activity continuing through to the 13th century.

The two moated sites appear, therefore, to exhibit a broadly similar chronology, and their dates agree with a general consensus that moated sites flourished in the 13th and 14th centuries (eg, Coveney 2014, 92–93; Historic England 2018b, 2, 3; Taylor 1978, 5). Le Patourel and Roberts (1978, 51) suggest a focus of 1200–1325. Fenwick *et al.* (2001b, 73) extend this range for the Skitter Beck Ridge moats in particular from '1250 and 1350 until well into the Tudor period'. Both Hornsea Project One moats continued to be visible in the landscape (if not occupied) until the late 20th century and had been incorporated into later schemes of agricultural land division and inclosure. At Blow Field later occupation within the local landscape comprises the 19th-century 'Moat House', the village of South Killingholme and the 19th-century Westfield Farm; at Habrough there was post-medieval redefinition of the moat, brick kilns recorded by Evans (1991), and more broadly the low-density settlement along Immingham Road and the survival of St Margaret's church.

Archaeobotanical evidence from moated sites is often representative of the surrounding natural environment (Hall and Huntley 2007) and the same is true of the results from here, reflecting a landscape of wetlands and hedgerows, with fewer arable weeds than in earlier periods. The environmental assemblages from the moats contained little evidence of food consumption. Cereal crops may have already been cleaned before arriving at moated sites.

Although defence has been proposed as a function of moated sites (eg, Rigold 1978, 30–32), their ability to withstand siege is questionable and it is likely that most were designed to impress rather than for defence (Le Patourel 1973, 20; Le Patourel and Roberts 1978, 47). A desire to appear conventional and to emulate one's neighbours may have influenced the building of moats (Emery 1962, 381–2, 384–7; Le Patourel and Roberts 1978, 47). This may be especially true in situations like that of the Skitter Beck Ridge where there is a cluster of moats (Coveney 2014, 75).

However, one author (Platt 2010, 115–133) includes reaction to crime and violence, tensions between poor and elite, criminal gangs, and/or poverty due to bad harvests in 1290 and 1315–22 as motivations for increased security during this period. The situation of the Skitter Beck Ridge adjacent to the busy Humber estuary (Middleton 2001, 13) may also have provided a motivation to improve security. The partially-articulated remains of a large and robust, well-nourished 13th/14th-century man are relevant in this context. He was recovered from ditch 4271 immediately outside the moat at Blow Field and adjacent to the parish boundary. The remains had been disturbed in antiquity and perhaps moved to this liminal position. The man had suffered a peri-mortem blunt-weapon trauma to his skull, and it is probable that he was an 'unsuccessful participant in mutual conflict or that he was murdered' (McKinley, Chapter 6). A violent death could be the cause of his non-normative burial. He may have been denied a churchyard burial, or may have been hidden here.

Changes in the environment of the Lincolnshire Marsh may also have been a contributing factor for the construction of moats. In the 13th century, the erosion of an offshore barrier and islands, and the redeposition of the material as storm beaches (Grady 1998, 86; Robinson 1956, 11–12), may have made the area more prone to flooding. It may also have a socially destabilising effect leading to a need for the display of wealth and status.

Enclosing within a moat could influence how a site was experienced and approached, creating isolated, private and higher-status areas linked to wealth and privilege (Creighton 2009, 77–79; Le Patourel and Roberts 1978, 48). 'The manor house contained the moveable wealth of the lordly household', comprising 'the dwelling house itself, and within, the utensils, pots, pans and plate of the family, as well as hangings, coin, or personal effects' (Le Patourel and Roberts 1978, 48). However, contrary to the size of the Habrough and Blow Field moats, there is little or nothing that can be identified as high-status material culture. The pottery recovered was 'unremarkable', and though a deer pelvis may be evidence for access to a tightly controlled elite sport, this may not have been a choice part of the carcass (Sykes 2005; 2007b). The remaining animal bone assemblage suggests a dominance of sheep and the use of cattle as draught animals. The frequency of higher-status bread wheat over tetraploid varieties may be an indicator of status, as is the general absence of rye. However, no high-status exotic plants were identified. The evidence for high-status occupation identified by Evans (1991) was confined to the 16th and 17th centuries, after the medieval heyday of moats. In summary, the indicators of high status for these two moated sites in the medieval period are negligible.

The construction of a moat indicates access to labour (Coveney 2014, 156). In Lancashire, moats of greater than 0.25 ha have been associated with larger landowners (Aberg 1978, 3). Dimensions of 200 m by 140 m given in the North Lincolnshire HER (but untested by excavation) suggest that the Blow Field site may have covered a very large area of some 2.8 ha. The size of the north Habrough moat is harder to estimate but may have been in the region of 0.5 ha. Added to this is Evans' moat, reported as 0.27 ha (Evans 1991), for a total enclosed area of 0.77 ha. On the basis of size alone, each site might represent a significant complex, with Blow Field almost four times as large as Habrough. The size of a moated enclosure may be related to the size of the community that supported it (Le Patourel and Roberts 1978, 48). A very large moat such as that at Blow Field would have needed a large community to construct and maintain it.

Documentary research by Evans (1991) suggests that the Habrough moats were the site of a manor built by the de Saltfletby family and later passed to their landlords the Skipworths, in accordance with the suggestion that 'the vast majority of moated sites were held by either minor manorial lords or free tenants' (Coveney 2014, 207 following Le Patourel 1978a, 37). The proximity of St Margaret's church a mere 200 m from the Habrough moated site may have been intended to create a visual and spatial link with the church (*cf.* Coveney 2014, 235). Moated sites are sometimes associated with parish churches, such as at Rayne Parva, Essex, which also had Saxo-Norman origins (Coveney 2014, 232–3) and, geographically closer to the present site, at Goltho (Beresford 1987; Coveney 2014, 165). Any association of Blow Field with the contemporary church of St Denys at North Killingholme is harder to sustain, with some 700 m and a topographic high point between them.

In contrast to Habrough, the Blow Field site appears to have a different character. The sprawling layout suggests a complex larger than a single dwelling, and it may be that the areas investigated so far lie beyond any domestic focus of the site. Instead of representing solely the large headquarters of a wealthy and powerful individual, the Blow Field site may be akin to a small village such as at Wareham (RCHM 1959), a possibility discussed by Le Patourel and Roberts (1978, 49) and Beresford (1987) who thought that larger examples of moated sites 'possibly represent communal settlements while those of smaller size… are likely to be the residences of kings or chieftains'. Interpretation of Blow Field as a moated village is consistent with previous attempts to link the then-unexcavated site with the lost medieval village of Holtham (see HER; also Fenwick *et al*. 2001b, 67; RPS 2013a).

Religious communities, such as those dominating land holding in the Middle Marsh (Bennett and Bennett 2001, 48–49; Ellis *et al.* 2001, 67–72), constructed moats similar to those in secular hands (Coveney 2014, 195; Fenwick *et al.* 2001b, 73; Le Patourel and Roberts 1978, 48). Thornton Abbey, 'the greatest of the monasteries of the marsh', (Fenwick *et al.* 2001b, 72) occupied a moated site adjacent to the Skitter Beck a mere 3.5 km north-west of Blow Field. Blow Field may have been associated with a religious community, perhaps occupied by a related grange (monastic farm). Another of the unexcavated Skitter Beck Ridge moats is at East Halton Grange, the name suggesting a similar monastic connection.

Post-Medieval

Both moated sites saw continued use in the post-medieval period, particularly clear at Habrough, where Evans' moat had been recut and was very large at 8.9 m wide and 1.55 m deep (Evans 1991). Infilling dated to the 16th/17th centuries, when a series of brick-built tile kilns were constructed immediately south of the moat enclosure, with the moat platform used as a quarry to supply the kilns. Debris and midden material from the tile kiln operation had been used to backfill the clay quarries on the moat platform (*ibid*.).

Before the 17th/18th centuries, the moat ditch (3202) at the Hornsea Project One Habrough site was scoured or re-dug. This recut was large in the east and south, at 4.2 m wide and 1.2 m deep, but particularly large in the north where it was 7.35 m wide and 2.2 m deep. The recut (3202) also enclosed a smaller area, with the southern limit of the post-medieval moat cutting across the medieval moat platform. Evans (1991) suggests that the manor had changed hands following the Civil War, and it may be that the new owners wished to assert their legitimacy by 'restoring' the medieval manorial site. The operation of the tile kilns might represent a period of construction associated with this process, although, contrary to this, quarrying within the moated site to supply these kilns could be interpreted as indicating its demise, the tiles being used elsewhere in nearby settlement.

The larger size of the north side of the north moat may indicate that in the post-medieval period the site was intended to be approached from this direction rather than from what became Immingham Road to the south. A trackway leading to the north-east depicted on 19th-century maps is a candidate for this approach route, and an early date for the track is supported given that the south ends of medieval ditches (including 3209) appear to respect its alignment. Alternatively, access may have been via a track from Killingholme Road, which is a significant route continuing under a variety of names to the north along the spine of the Skitter Beck Ridge. Although Killingholme Road now approaches St Margaret's church directly, Evans (1991) speculated that it may formerly have been aligned towards the moated sites.

Shallow post-medieval ponds (3207 and 300013) were recorded at both sites, evoking what Le Patourel (1978a, 40) described as the 'pond-like depressions so common on moated enclosures'. Although these could represent fishponds, they may be the remains of garden features or horse ponds (ie, animal watering ponds), located to take advantage of a supply of water linked to the moat ditches. Identification of pond 3207 as a horse pond is supported by a stone surface 3208 that covered the base and one side of the pond.

Late recuts of the moat ditches are recorded from both Habrough and Blow Field, these generally more modest than the early post-medieval recuts and probably representing incorporation of the moats into the post-medieval inclosure landscape.

It is difficult, then, to pinpoint the moment of abandonment of these moats. The Hornsea Project One moat at Habrough may have been abandoned during the mid-13th or 14th century, but the site was also in use in the 17th/18th centuries and was likely occupied in between. The period of greatest activity at Blow Field probably ended during the mid-13th to 14th centuries, or slightly after. Moated sites were generally in decline by the end of the 14th century for reasons that may include improved political stability, rising standards of comfort, and as a reaction to the Black Death (Le Patourel and Roberts 1978, 51). In the specific case of the Lincolnshire Marsh, trading pressure from Hanseatic merchants may have had an impact in the 14th/15th centuries (Fenwick *et al.* 2001b, 68). The HER notes post-medieval development across much of the Blow Field site in areas unexplored by Hornsea Project One but targeted by Hornsea Project Two. The interpretation of the post-medieval development of Blow Field is, therefore, likely to change as a result of the Hornsea Project Two investigations. At Habrough, the moated site may have continued to be symbolic as a local seat of power into the post-medieval period, although the presence of a manor house in any period has not been confirmed. Although there is no evidence for a manor house, the results of Hornsea Project Two may provide the best evidence for a dwelling at the moated sites. A Late Saxon house has been recorded at Blow Field (Allen Archaeology 2022, 56–58), and Saxo-Norman domestic refuse at Habrough (Network Archaeology 2022, 121–127).

Medieval Saltmaking

The saltmaking heritage of the Outmarsh between Humberston and Saltfleet has been well studied (eg, Fenwick 2001; Grady 1998; Palmer-Brown 1994; Pattison and Williamson 1986). The Hornsea Project One cable route passes through this area near Tetney. Here, excavation at the Brooklands site uncovered extensive remains of medieval saltworking. The North Lincolnshire Outmarsh may have supported a similar industry, though saltern sites here are less well known (Research Frameworks 2023) and Hornsea Project One did not pass through this area, being confined to the Middle Marsh within North Lincolnshire and passing through the Outmarsh only in East Lindsey.

Narratives of medieval saltmaking (eg, Fenwick 2001; Grady 1998, 87; Historic England 2018a, 5; Owen 1984, 46) commonly begin with records of saltmaking from Domesday, comprising 1195 *salinas* nationwide including 13 from Tetney parish on the line of the cable route. This record shows that a saltmaking industry was already well established during the Saxon period. The Saxon Outmarsh probably contained much waterlogged or frequently flooded low ground unsuitable for settlement. Any settlement may have been confined to outlying islands of boulder clay (Owen 1984, 46–47).

There was no archaeological evidence for Saxon saltmaking nationwide prior to the discovery of a site at Marshchapel (Fenwick 2001, 231; Fenwick *et al.* 2001a, 120) around 3 km south of the Hornsea Project One cable route (there are now more sites known nationwide, eg, Clarke 2016). However, a general paucity of archaeological evidence for Saxon saltworking reflects a lack of evidence from the period as a whole (*ibid*.; Owen 1984, 47). Possible causes for the lack of Saxon saltworking evidence are a preservation bias caused by rising sea levels (Thomas and Fletcher 2001, 221) or by burial beneath later deposits.

Crucially, the Marshchapel site demonstrated that Saxon saltmaking was 'more similar to that of the preceding Roman period than to that of the following Medieval period' (Fenwick 2001, 236–7). Sea water was channelled into storage pits, recalling the Bronze Age/Iron Age site at Tetney Sewage Works and suggesting an open-pan process. There was no evidence of filtration (Fenwick 2001, 237) and, therefore, no waste material to form saltern mounds. The Marshchapel site was situated some 700 m to the west of the modern A1031 coast road, substantially further from the sea than the distribution of extant saltern mounds. Any Saxon saltmaking activity along the Hornsea Project One cable route may, therefore, have been to the west of the Brooklands site. This is consistent with the conclusions of Grady (1998, 88), whose analysis of aerial photographs suggested that the oldest saltern mounds at Tetney were located at Riverside Farm/New Delights, to the west of Brooklands, but south of the cable route.

From Hornsea Project One, the small site at Tetney Lock Road lies almost due north of Riverside Farm/New Delights and on the basis of Grady's analysis (1998, 88) might therefore be expected to be among the oldest sandwashing sites in the region. The date of the site cannot be reliably stated, but the best available evidence comes from Hornsea Project Two (Network Archaeology 2022, 41) comprising a few sherds of 11th- to 12th-century Saxo-Norman pottery recovered from a hearth. The Hornsea Project One results offered only a single Romano-British tile, likely to have been re-used or otherwise be residual (*cf.* Tuck 2021 for comparable example of a residual tile).

The association of the site with saltmaking is supported through the recovery of 87 pieces of briquetage, including one or two pedestals, from evaluation trench 22 (RPS 2013e; Jones, Chapter 6), and with the more extensive results from Hornsea Project Two (Network Archaeology 2022). Furthermore, Fenwick *et al.* (2001b, 120) previously noted that all of the archaeological remains from the area of Tetney Lock have been associated with saltworking.

A kiln flue was uncovered, and further flues and kiln firing chambers have been revealed by Hornsea Project Two (Network Archaeology 2022). Saltworking is not commonly associated with kilns, but the idea of saltworking kilns is not without precedent. 'Grant (1904) documents the discovery of the remains of substantial circular features akin to Roman pottery kilns that would have the capacity to house large arrangements of evaporation troughs. What was fired at these hearths cannot be ascertained, but they may have been used for firing briquetage objects before use... [or] the most commonly documented interpretation is that they were used for the heating of brine in pre-fired troughs' (Thomas and Fletcher 2001, 220). At Ingoldmells, Swinnerton (1932) recorded five hearth-like structures associated with a low circular mound containing briquetage. Palmer-Brown (1994, 12) considered Swinnerton's structures to be comparable in form to Romano-British pottery kilns and used for saltmaking. Flues channelling hot gases to heat a chamber have been associated with saltern sites in Cornwall (Peacock 1969) and in Essex (Fawn *et al.* 1990; Reader 1910).

The Hornsea Project One kiln had previously been interpreted by the present author as a tile-making kiln (Wessex Archaeology 2020), but there is nothing conclusive to suggest the manufacture of tile in this location.

The depositional sequence of the saltern layers in evaluation trench 22 at Tetney Lock Road is relatively complex. First, waste material was discarded into lower, presumably wetter ground but this was largely washed away. Subsequent deposits were possibly dumped from a minor sea bank, perhaps constructed as a by-product of waste disposal, and finally these deposits were sealed by alluvial layers after abandonment. This sequence may have been typical of the relationship between human agency and the sea in the Outmarsh.

The westernmost features at Brooklands were recorded by evaluation trench 16 (RPS 2013e) located over 1 km seawards (east) of Riverside Farm/New Delights. The features differed in form from the more typical sandwashing apparatus recorded from the core of the site. In trench 16, tidal creek 16024 corresponds with the western limit of saltmaking activity (*cf*. Grady 1998, 84; McAvoy *et al*. 1994, 144) and may represent the most inland source of salt available at the time, although the chronology of the features has not been established. The trench recorded clay-lined gullies that might represent atypical filtration features (RPS 2013e; *cf.* Palmer-Brown 1994, 7), although these may perhaps more reasonably have carried saltwater from the sea to holding tanks, as recorded at Marshchapel (Fenwick 2001). Whatever the interpretation, the trench 16 saltern more closely resembled earlier saltmaking remains (eg, Fenwick 2001; Palmer-Brown 1994) than the medieval remains identified from the core of the Brooklands site. However, the absence of briquetage from trench 16 is more indicative of a medieval date. The location of this potentially early saltern to the east of Riverside Farm/New Delights may suggest a complex coastal margin of islands and saltmarsh, consistent with the position of the Tetney Sewage Works site seawards (east) of the expected contemporary coastline.

Environmental evidence shows that the Brooklands site was set amongst brackish tidal mudflats. The presence of freshwater pools may relate to rainwater-filled abandoned saltmaking apparatus rather than the natural environment. A further complication is that molluscs and other environmental material may have been imported along with the turves used as filters and fuel.

The saltmaking process used in the medieval and post-medieval periods in the Lincolnshire Outmarsh (and as practised at Brooklands and Tetney Lock Road) is called *sandwashing* (eg, Fenwick 2001, 233; Grady 1998, 81–82; Greenwood 2011, 3). However, the results of the present work, and also from Wainfleet St. Mary (McAvoy *et al*. 1994, 141), demonstrate that this technique was not limited to sand and that littoral clays and silts were likewise targeted for salt extraction. The main advantage of sandwashing was that less fuel was required as the brine was more concentrated (Grady 1998, 83). Further advantages were increased purity (Sturman 1984, 51) and the ease of transporting solid salt-bearing deposits compared to liquid seawater (Greenwood 2011, 5).

The first step in this process was the collection of salt-bearing deposits from the high tide line (Fenwick 2001, 233; Historic England 2018a, 2; McAvoy *et al.* 1994, 139; Owen 1984, 46; Sturman 1984, 50). Collection followed spring tides and would therefore be tied to a monthly cycle (Greenwood 2011, 4; McAvoy *et al.* 1994, 139). This is typically understood as taking place in the summer (Fenwick 2001, 233; Historic England 2018a; Owen 1984, 46), although there are documentary records of saltworking in Lincolnshire in January (Sturman 1984, 53). Beaches would be prepared prior to the spring tide. In Cumbria they would 'harrow with a thorn, or such like thing' (Ford and Fuller-Maitland 1931, 139), and in Normandy the beaches would even be ploughed (Sturman 1984, 51). The beach might also be prepared by wetting with saltwater to further concentrate the salt (Greenwood 2011, 6). Following the spring tide, the sun and wind evaporated moisture, leaving salt crystals on the surface of the sand (Grady 1998, 82). This process could be assisted by raking (Greenwood 2011, 6; McAvoy *et al.* 1994, 139). The top 1/8 of an inch (3 mm) of salt-bearing sand was then collected using a horse-drawn sledge-like implement called a *hap* (Duncan 1812, 527; Grady 1998, 82; Rudkin and Owen 1960, 83; Sturman 1984, 50).

The resulting salt-impregnated material was known as *mould* or *mouldefang* (Rudkin and Owen 1960, 84) and was transported inland by sledge to the saltmaking site (Grady 1998, 82; Sturman 1984, 51). The unprocessed mould was itself a valuable commodity as revealed in 16th-century probate inventories (Grady 1998, 84; Sturman 1984, 52–53). Despite this value, small heaps of deposits recorded at Brooklands (9202 and 140159) might possibly represent this unprocessed raw material, if they do not represent saltern waste.

The source of the mould at Brooklands will probably remain unknown as the quarry site would have been quickly erased by natural littoral processes. The coastline supplying mould would probably have been a short distance to the east of each saltern, although the fringes of tidal creeks are also likely to have been exploited.

The second step in the saltmaking process was filtering. As described in the results section (Chapter 3), rectangular pits called *kinches* (Historic England 2018a, 2; Rudkin and Owen 1960, 83) were lined with clay to seal them, and layered with peat and turf to act as a filter (Grady 1998, 83; McAvoy *et al.* 1994, 140; Sturman 1984, 51).

The kinch was then filled with mould, and water used to wash out the salt. Seawater (Historic England 2018a, 3; McAvoy *et al.* 1994, 141) or freshwater (Sturman 1984, 51) could be used, with the latter producing a purer product with a higher concentration of sodium chloride compared to other salts (*ibid.*; Grady 1998, 82). The resulting brine may have been washed through kinches several times to reach the desired salinity. Numerous accounts relate that a fresh egg would be used as a test; if the egg sunk, the solution was too weak (Historic England 2018a, 3; Grady 1998, 83; Sturman 1984, 51; Duncan 1812).

The bottom of the filter bed sloped gently to discharge brine (Grady 1998, 83), and at Brooklands this fed into a clay-lined gully leading to a *brine pit* (Forum on Information Standards in Heritage 2020, 55). The combination of kinch and brine pit are termed a *filtration unit* (Grady 1998, 83; McAvoy *et al.* 1994), which were present at Brooklands.

Duncan (1812) gives the dimensions of a kinch as 18 feet (5.5 m) by 4 feet (1.2 m) and 2 feet (0.6 m) deep. The examples excavated at Wainfleet St Mary (McAvoy *et al.* 1994, 141) were shorter and wider than this: 3.4 m long, 1.4 m wide and 0.3 m deep. The truncated kinches excavated at Brooklands were smaller again (9097 was 2 m long and 1.2 m wide; 8028 was 2.3 m long, width unmeasurable; 9383 was 2.6 m long and 0.9 m wide), though kinch 140184 (found in the east of the site and so probably the latest in date) was considerably smaller (1 m long and 0.5 m wide). The Wainfleet St Mary brine pits (McAvoy *et al.* 1994) were up to 0.9 m in diameter, similar to the mean of 0.85 m recorded at Brooklands (the outliers in the range from Brooklands are only uncertainly identified as brine pits, as described in Chapter 3). Though the kinches were smaller, the morphology of the filtration units at Brooklands otherwise closely resembles those recorded at Wainfleet St Mary (McAvoy *et al.* 1994) and there is little doubt that these features represent the same saltmaking tradition. There had been some suggestion that the Wainfleet St Mary salterns are atypical (Grady 1998, 92), but the results from the Hornsea Project One and Two excavations show that (albeit with only two sites known) these were not atypical in form, nor in manner of waste disposal, nor in the scale of the site. The main differences were that the Hornsea Project One salterns were subject to a higher level of truncation, utilised filtration units of slightly smaller size, and, perhaps most importantly, were laid out in a less regular manner. It is possible that at Wainfleet St Mary the saltmaking operation was more organised (in parallel rows 10 m apart), perhaps under the control of a larger landowner. At Brooklands, saltmaking was perhaps practised more irregularly as a series of smaller operations possibly undertaken by saltmaker-farmers.

Once the salinity of the brine had begun to drop, the mould would be emptied from the kinch and discarded close to the production area (Fenwick 2001, 233; Grady 1998, 84). These mounds were called *holms* (Sturman 1984, 51) but are more commonly known as *saltern mounds*. The mounds are the principal landscape indicator of saltworking (Historic England 2018a, 6) and have been subject to aerial photographic study (Grady 1998). The British Geological Survey estimated that 23 million cubic metres of salt processing residue had been deposited between Humberston and Saltfleet (Pattison and Williamson 1986). The saltern waste recorded at Brooklands follows the established pattern comprising highly variable deposits (Fenwick 2001, 236; Pattison and Williamson 1986), reflecting the heterogeneous origin of the mould. The depth and size of saltern mounds depends on the intensity and duration of the activity which they supported (Thomas and Fletcher 2001, 219), although many mounds such as those at Brooklands have been substantially ploughed out. Cartographic evidence from 16th-century Marshchapel (3 km south of Tetney) demonstrates that multiple saltmaking operations contributed waste to shared mounds (Walshaw 1935, 198). Up to 10 areas of saltern waste were identified at Brooklands, the larger of these probably receiving material from several filtration units representing multiple saltmaking operations.

The next stage in the sandwashing process was boiling brine to evaporate the water and crystallise the salts. This was a skilled job performed by specialists called *salt-wellers* (Owen 1975, 43; Sturman 1984, 53). There are six different common salt ions in sea water (chloride, sodium, sulphate, magnesium, calcium and potassium). The required product is sodium chloride, which is the third salt to crystallise (Bridbury 1955, 7). The remaining salts were collectively known as *bittern* and included Epsom salts (magnesium sulphate; Grady 1998, 83; Greenwood 2011, 1, 19; Historic England 2018a). The weller's job was to remove early unwanted salts as they formed on the sides of the container and to cease boiling before later bitter-tasting salts such as sulphates crystallised (Historic England 2018a, 1). In the post-medieval period the bittern could be used for chemical purposes, but in the medieval period it was presumably discarded. As noted above, the concentration of these impurities could be reduced by using freshwater rather than seawater to wash the mould through the filtration units (Grady 1998, 82; Sturman 1984, 51). One of the advantages of sandwashing over open-pan saltmaking was a reduction in the amount of bittern produced. Larger crystals were also considered desirable (Greenwood 2011, 6) and may have been produced by higher salinities (*ibid.*) and/or by slower evaporation (Historic England 2018a, 4).

The weller's job was not limited to controlling the chemical properties of evaporation. They had to remove other contaminants, such as silt and peat. Additives would be used in the belief that they helped these contaminants form a scum that could be manually removed from the brine. The additives varied according to local custom, and could include sheep blood, flour or beer (Grady 1998, 83).

In the medieval period, evaporation took place in shallow broad pans made of lead (Duncan 1812; Historic England 2018a, 4; McAvoy *et al.* 1994, 142; Rudkin and Owen 1960, 81; Sturman 1984, 51). These pans are generally assumed to have been rectangular but could be circular or triangular (Historic England 2018a, 4). No complete pans have been recovered archaeologically, although offcuts of lead have been found (Healey 1999; McAvoy *et al*. 1994, 142) and a run of melted lead was found at Brooklands in saltern waste 140208. A total of 1199 g of undiagnostic smithing slag was also obtained from the same context, and 1729 g of possible smithing slag recovered from saltern waste 9390, suggesting that iron as well as lead was significant in medieval saltworking and was probably used for tools. The lack of surviving lead pans is unsurprising as lead was a valuable commodity and could be readily recycled (Grady 1998; McAvoy *et al.* 1994, 142).

Duncan (1812) gave the dimensions of lead evaporation pans as 4 feet (1.2 m) by 3 feet (0.9 m) and 5 inches (0.13 m) deep. To compare these quoted dimensions to the Hornsea Project One results we must turn to the saltmaking hearths as proxies. Hearths 9210 and 9269 were of sub-rectangular shape, which may reflect the shape of rectangular evaporation pans; other hearths at Brooklands were less regular. The hearths were up to 3.7 m long and 1.3 m wide (although the mean was 2.05 m by 0.9 m). These figures are substantially larger than those given by Duncan, which could be due to the location of individual hearths shifting over time. At Bicker Haven, Healey (1975) recorded saltmaking hearths 1.37 m by 0.45 m, longer but thinner than Duncan's, and smaller than those at Brooklands. At Wainfleet St Mary, hearths were also sub-rectangular, and were 2.6 m by 1.1 m (McAvoy *et al.* 1994), larger than Duncan's but smaller than those at Brooklands.

The Hornsea Project One excavation at Brooklands recorded a greater number of saltmaking hearths than at other previous sites, although the quality of preservation and the information obtained was at times poorer. The number of hearths identified at Brooklands was comparatively high, but it is probably still an under-representation. A maximum of 39 brine pits were identified compared to a maximum of 22 hearths. The overall picture is of just over half the number of hearths identified as filtration units. It may be that multiple filtration units fed into fewer evaporation hearths. It could be, for instance, that a person engaged in filtration operated multiple units and supplied a weller operating a single hearth. Several people engaged in filtration could have supplied a single weller (or vice versa). However, given the haphazard arrangement of apparatus at Brooklands, it is probably more likely that a single saltmaker or team undertook each step in the process, with multiple operations working in parallel to complete the whole process rather than an industrialised production line with different operatives undertaking different tasks. Greenwood (2011, 6) envisages saltworks as an operation 'no bigger than one man could manage'. This arrangement would suggest a ratio of one filtration unit to one hearth. There may also have been seasonal biases, with either filtration units or hearths more likely to be re-used from one year to another.

Areas of *in situ* burning represented by rectangular areas of red heat-transformed natural with fuel ash slag and charcoal raked out to one end were identified during the Hornsea Project Two works. These closely resemble the hearths recorded by the Hornsea Project One investigations, although perhaps better preserved. However, these have been interpreted as storage platforms rather than hearths (Network Archaeology 2022, 37).

Some 23 kg of medieval saltworking residues were recovered from Brooklands, of which 6.7 kg comprised briquetage, with the rest fuel ash slag or extremely fragmentary, unidentifiable pieces (see Chapter 6).

'Bricks' of unfired clay were discarded within saltern waste at Brooklands; these are thought to represent discarded imported raw materials. The importation of clay to line brine pits is supported by the presence of residual Romano-British pottery in the lining of brine pit 9085; it may be that clay was quarried from some area of Romano-British activity in the Middle Marsh. An abraded fragment of imbrex roof tile recovered during the Hornsea Project Two works (Network Archaeology 2022, 36) may be further evidence of this. Similar unfired clay bricks had been used to line well 9306. There is no evidence to support a conjecture that this material was also used to produce briquetage hearth furniture.

The other imported resource for saltmaking in the Outmarsh would have been fuel. Opportunistic use of nearby resources such as wood and peat (Greenwood 2011, 4) probably could not have provided sufficient fuel for the industry (Fenwick 2001, 233; Grady 1998, 83; Sturman 1984, 54), even with the efficiencies of sandwashing (Grady 1998, 83). At Tetney Sewage Works, charcoal analysis showed that prehistoric practice exploited oak for fuel (Palmer-Brown 1994, 8). However, during the medieval period it is generally accepted that peat was the main fuel (Fenwick 2001, 233; Greenwood 2011, 4; McAvoy *et al.* 1994, 142; Sturman 1984, 54). Documentary records of 16th-century debts show that turves were imported to the Outmarsh from the Humber headlands. Monastic houses controlled both salterns in the Outmarsh and turbary (peat cutting) rights in the Humber headlands, a situation which had persisted since at least Domesday (Fenwick 2001, 233; Grady 1998, 83; Sturman 1984, 54), and it is likely that there was a monastic connection in the supply of peats to at least some saltworking operations.

After crystallisation, salt would be transferred to wicker baskets or hives to dry (Grady 1998, 83; Sturman 1984, 51).

Saltcotes were 'primitive roofed enclosures' (Greenwood 2011, 4) or huts of 'timber, mud, and reed thatch' (Grady 1998, 83; H E Hallam 1960, 98) associated with saltmaking. They give their name to parishes such as North Cotes and Somercotes, suggesting that these settlements were established on the site of earlier saltmaking operations (Owen 1984, 46). Haiwarde's 16th-century map of Marshchapel depicts these saltcotes on the summit of mounds in the east of the saltern landscape (Walshaw 1935). There is some confusion in the literature about their function: Fenwick (2001, 233) envisaged them as containing filtration units, whereas Grady (1998, 83) saw them as enclosing boiling hearths. Sturman (1984, 51) suggests both. An interpretation that these were 'hothouses for drying finished product' (Historic England 2018a, 7) is attractive and is not exclusive of the other possibilities. There is a lack of evidence for these structures in the archaeological record, which is not surprising given their ephemeral nature and the dynamic environment of the Outmarsh (Thomas and Fletcher 2001, 222). If they were situated on the summit of mounds as Haiwarde's map suggests, the foundations of saltcotes may have all been ploughed away. A small ring ditch recorded on the summit of a saltern mound during the Hornsea Project Two works (Network Archaeology 2022, 26) may represent a saltcote, although it was interpreted as evidence for agricultural habitation post-dating saltmaking. The survival of filtration units and hearths without evidence of enclosing structures suggests that these saltmaking features were not always enclosed within saltcotes. Stakeholes surrounding filtration unit 9095/9097 were suggestive of a superstructure, although not convincingly a hut. It is possible that two small, ditched enclosures (9385 and 9386) at the heart of a concentration of saltmaking activity at Brooklands were either construction trenches for saltcotes, or enclosed them.

Medieval saltmaking was probably part of the 'seasonal cycle of agricultural activities' (Bradley 1975, 23) and practised by farmers (Greenwood 2011, 5) 'hand in hand with the use of marsh pastures for summer grazing' (Owen 1984, 46). The capital investment to enter salt production was not large (Greenwood 2011, 5) and many of the materials used were available locally (McAvoy *et al.* 1994, 142). However, 16th-century documents show that saltmakers were among the richest in the village community (Sturman 1984, 53), either as a prerequisite for, or a consequence of saltmaking. A link between saltmaking and wealth can also be traced through the scale of parish churches (Fenwick 2001, 231, following Morris 1989).

There was a separate profession of *salters* who were middlemen or merchants trading in salt, with wide-ranging operations on land and in boats (Sturman 1984, 53). At Marshchapel in the 16th century, there were 19 saltmakers and 6 merchant salters (*ibid.*).

Salterns can be linked to their parent settlements by tracks, boundaries, causeways and bridges, and to long-distance trading routes or *saltways*, or to wharves and harbours (Historic England 2018a, 8). The arrangement of any track between Brooklands and its parent settlement at Tetney is not known, though the footpath south of, and roughly parallel to, Tetney Lock Road (and forming the southern boundary of part of the cable route) may be a candidate. This track lies immediately adjacent to the saltmaking site at Tetney Lock Road, the Louth Navigation having subsequently been cut across the route, disrupting it.

Saltmaking developed where beach conditions were ideal (Sturman 1984, 54; Weller 2015, 186), including large tidal ranges and low beach profiles (Greenwood 2011, 5; McAvoy *et al.* 1994, 140), and required unimpeded access to the shore (Owen 1984, 46). Saltmaking was undertaken in upper tidal reaches on higher ground and promontories within saltmarshes (McAvoy *et al.* 1994, 138), and located to minimise the transportation of mould. The location of salterns has been used as a proxy for ancient coastlines (Grady 1998). Alongside Haiwarde's 1595 map of Marshchapel it is stated that 'The round groundes at the Easte end of Marshchappell are called mavres and are firste framed by layinge together of great quantities of moulde for the making of Salte. When the mavres grow greate the Salt makers remove more easte and come nearer to the Sea and then the former mavres becomes in some fewe years good pasture grounds' (Walshaw 1935, 198). It follows, therefore, that the earliest saltmaking took place in the west and the latest in the east. The amount of pottery recovered is insufficient to support a detailed chronology of the features from Brooklands. The earliest pottery (12th/13th century) did come from the west of the site but there was an insufficient amount to reliably draw out a trend. The bulk of the pottery was of 13th/14th-century date and found scattered across the site. Some of the pottery may have been produced as late as the 15th century, but none was necessarily this late. The site was probably in decline by the early/mid-14th century. This chronology is broadly in agreement with that of Hornsea Project Two, where pottery was mainly of 13th- to 14th-century date, although with a few sherds extending this range back to the mid-11th century (Network Archaeology 2022, 38).

The 13th/14th-century date of the Brooklands site is earlier than that of the late 15th to early 16th centuries recorded at Wainfleet St Mary (McAvoy *et al.* 1994), but it is contemporary with the less well-preserved site at Bicker Haven (Healey 1999) and a site at Wrangle Toft dated by documentary records (Bannister 1983).

Studying aerial photographs, Grady mapped sea defences in Tetney parish (1998, 87), placing the Brooklands site between a defence following the line of the A1031 Sea Dyke Way road and another sea defence of 1638 (Rudkin and Owen 1960, 80). The construction of any sea defence would hamper saltmaking and it is usually assumed that a defence seaward of a saltern provides a last possible date for the saltern and vice versa (Grady 1998, 86; Historic England 2018a, 8). The sea bank now topped by the A1031 Sea Dyke Way road was located seaward of the Saxon Marshchapel saltern and so is probably post-Domesday (Fenwick 2001, 239; Palmer-Brown 1994, 1). The route of this road is generally thought to represent an early 12th-century sea defence, although this is the date of the earliest documentary evidence for the bank and it is probable that it was already in existence (Owen 1984, 47). The A1031 Sea Dyke Way bank continues to the north of the cable route along the line of Newton Marsh Lane. This alignment therefore intersected the cable route immediately west of the Tetney Lock Road saltern, perhaps suggesting that the sea defence had earlier origins. However, in this location the alignment is marked by a drain and there is no evidence either topographically or archaeologically for a bank.

The area enclosed by the 1638 sea defences extended to the coast at Horse Shoe Point (Grady 1998, 87) where the cable route made landfall; the cable route, therefore, was aligned by chance with one of the few points where it would not intersect with the 1638 sea defence.

The saltmaking industry in Lincolnshire had ceased prior to the construction of the 1638 sea defence (Grady 1998, 86–7) and had been subject to a long decline (Historic England 2018a, 5). The available dating evidence suggests that saltmaking at the Brooklands site may have been abandoned as early as the 14th century. During the Hundred Years War, ships returning from France brought back cargoes of salt, virtually eliminating domestic production on the south coast of England, and this, combined with the effects of the Black Death, may have caused a reduction in salt production in Lincolnshire (Greenwood 2011, 7). The Lincolnshire salt industry struggled to recover from a flood in 1570/1 (Greenwood 2011, 7; McAvoy *et al.* 1994, 161), when 'all the salt cotes, where the chief and finest salt was made, were utterlie destroied' (Holinshed 1577, iv 256). The flooding may have had more of an effect on inland turbaries that supplied fuel to the salterns than on the ability to rebuild destroyed saltworks (*cf*. Sturman 1984, 54). The focus of salt production in Britain thereafter shifted to the north-east, where unsaleable small coal from coastal mines was used for low-quality salt production and the refining of poor-quality imports (Greenwood 2011, 7; Historic England 2018a, 5), leading to a reappraisal of the value of salt (McAvoy *et al.* 1994, 161). The local industry was moribund by around 1600, when salt was being imported from the Firth of Forth and from the north-east of England (Greenwood 2011, 7; Historic England 2018a, 5; McAvoy *et al.* 1994, 161; Owen 1984, 46; Rudkin and Owen 1960). Sturman (1984, 55) quotes Sir George Heneage of Hainton, writing in 1654: 'when King James came into England there was so much Scotch salt brought into England that the salt-makers at Wragholme [Lincolnshire] desisted from making salt'. Disruption of markets by civil disorder in France and the Netherlands has also been suggested as a factor (Sturman 1984, 54). Ultimately, given unfavourable market conditions, the changing availability of fuels and the efficiencies of coal over turf, it may have been easier for the farmer-saltmakers to forget their heritage of saltmaking and focus on agricultural concerns (Sturman 1984, 55) in the newly 'reclaimed' landscape of the post-medieval Outmarsh. Although the landscape has been modified by inclosure and the formalisation of drains, it is still this post-salt agricultural practice that dominates economic activity in the rural Outmarsh today.

Medieval Agriculture

The deposition of 23 million cubic metres of saltern waste between Humberston and Saltfleet (Pattison and Williamson 1986) provided the raw material for the conversion of some of the Outmarsh into useable agricultural land (Fenwick 2001, 231; Grady 1998, 84; Historic England 2018a, 8). This agricultural re-use of the Outmarsh landscape is apparent at both Brooklands and Tetney Lock Road, represented by systems of field boundaries imposed on the earlier saltern features. Dating evidence for these agricultural features at Brooklands was limited to pottery either contemporary with the Brooklands salterns (13th/14th century) and/or with the local saltmaking industry as a whole (14th to 16th century; eg, McAvoy *et al.* 1994); it is possible, however, that all of this material is residual and derived from the more intensive occupation of the site for saltmaking than the less intensive occupation for agriculture. At Tetney Lock Road the superimposed ditches contained post-medieval 16th- to 18th-century pottery. Ostracods and molluscs recovered from a medieval agricultural boundary at Tetney Lock Road demonstrate that the ditch was permanently filled with freshwater and was a 'quiet muddy [drain]… fed by a small stream' (López-Dóriga, Chapter 7).

Across the scheme as a whole, there was less evidence for agriculture in the medieval and post-medieval periods than for the Romano-British period. During these later periods, the area of Westfield Farm probably comprised an agricultural hinterland of the Blow Field moated site. A dispersed series of agricultural boundaries appeared to respect earlier boundaries, suggesting that at least some trace of the Romano-British field system was visible in the landscape during the medieval period.

The medieval animal bone assemblage suggests that in this period, sheep had overtaken cattle as the primary species of livestock. This would be contrary to the assertion of Fenwick *et al.* (2001b, 67) that the medieval marshes were not attractive to sheep farmers. Pigs were still exploited, as well as birds and fish. Livestock was primarily managed for secondary products such as wool and milk. Although the sample size was small, whole carcasses were represented, indicating a continuation of the closed subsistence economies of earlier periods.

Isotopic analysis on the non-normative burial of a large man (4236) at Blow Field indicated a diet high in animal protein. In contrast to the Iron Age/Romano-British results, this individual had had a marine component to their diet. This is only a single piece of information, but it is possible that marine resources played a more important role during this period than previously.

Environmental evidence from the moated sites indicates that the agricultural crops exploited had changed in various respects since the Iron Age. Peas were introduced in the late Romano-British period, and there had been a steady change from hulled to naked wheats and bread wheats. Broad beans and flax continued to be grown and there were fewer weeds than in earlier periods. The presence of oats in the assemblage across all periods may be indicative of wild plants rather than cultivation.

Furrows from ridge and furrow agriculture provide widespread evidence of arable practice across the Middle Marsh, consistent with previous surveys (eg, Bewley 1998; Ellis *et al.* 2001). Ridge and furrow was not recorded in the Outmarsh. If this form of agriculture was practised here at all it may be that there was little time for substantial furrows to form. Furthermore, any ridge and furrow that did form may have been lost as part of the process of ploughing out the salterns to reclaim the land.

Evidence for the agriculture of the post-medieval period is limited, comprising primarily scattered boundary ditches. Such boundaries were most notable on the two moated sites, where the moats themselves had both been incorporated into later schemes of land division. Portions of the moats had been recut in recent times as part of their new function as field boundaries. Perhaps the most significant of all the post-medieval ditches were the boundaries at Westfield Farm/Blow Field, including the parish boundary. These boundaries demonstrated continuity of land division from the Iron Age through to the 19th century and on to the present day.

Conclusion

Significance of Results

Hornsea Project One has produced a transect through the archaeology of northern Lincolnshire. It has provided results in both better-studied areas (such as the parishes of North and South Killingholme and Habrough in the environs of Immingham, and in the Tetney Outmarsh), and in less-studied parishes inland of Grimsby (eg, Laceby, Keelby, Stallingborough). The results range in date from the Neolithic to the present day, with the most significant results comprising Iron Age, Romano-British and Anglo-Saxon agricultural settlements, two medieval moated sites, and the remains of medieval saltmaking in the Outmarsh. These results are all of regional significance, making important contributions to archaeological narratives of northern Lincolnshire.

The Iron Age and Romano-British settlement sites ranged in size and form, and sometimes compare closely with others in the region (eg, Cavanagh in prep.; Davies and Millward 2014, 19–20; Fenwick *et al*. 2001b) They are characterised by their low status. The Hornsea Project One Iron Age and Romano-British sites have, to an extent, challenged a bias towards investigating the increasingly industrialised environs of Immingham. By also investigating other less well-studied areas in the Lincolnshire Marsh, the project makes an important contribution, filling in gaps of understanding of the lower echelons of northern Lincolnshire Iron Age and Romano-British landscape and society, and expanding their geographic range.

Excavated Anglo-Saxon settlements are rare in the region, and the significance of the results of the excavation at Laceby Beck are therefore enhanced. Set against this are the limits imposed on the investigation of the site by the cable route: the identified features represent agricultural boundaries associated with a settlement in the immediate vicinity, though the location of any contemporary buildings and the extent of the site are not known. The identification that Romano-British shoulder-curing techniques were also used to preserve meat during the Anglo-Saxon period at Laceby Beck is significant, as is evidence of hippophagy. The pottery recovered from Laceby Beck has made an important contribution to the North East Lincolnshire type series, with three new ware types identified.

The moats form elements in a chain aligned along a low ridge. Hornsea Project One has provided a rare opportunity to investigate two of these. Excavations at Blow Field did not expose the heart of the site, and for this reason interpretation of the results may be particularly susceptible to change in the light of future work, including Hornsea Project Two. Investigations at Habrough revealed that the surviving moat at the Hornsea Project One Habrough site dates mainly from the 17th/18th centuries. Scouring of the medieval moat was also a taphonomic issue at Blow Field and is one that has been recognised nationally (Le Patourel 1978b, 40).

The remains of medieval saltworking in the Tetney Outmarsh were reduced by ploughing and conform closely to expected forms, but nonetheless make a significant contribution because of the size of the investigated area and the extent of the salterns. Saltmaking in this parish was more opportunistically arranged and does not appear to have been centrally organised, in contrast with the landscape at Marshchapel (eg, Fenwick *et al.* 2001a; Sturman 1984) and the excavated site at Wainfleet St Mary (McAvoy *et al.* 1994). Dating of the site at Tetney Lock Road is tenuous and the results comprise only a kiln flue in the vicinity of some briquetage and possible saltern layers identified in an evaluation trench. Nonetheless, these remains are unusual, with comparanda found only in old sources (Grant 1904; Swinnerton 1932), and their potential significance is high, if their interpretation can be sustained.

The updated project design (Wessex Archaeology 2020) identified research questions with reference to the East Midlands Research Framework that is now online (Research Frameworks 2023). The project has recorded variations in the development of Iron Age settlement hierarchies and boundary systems (objectives 4E and 4F). The landscape context of Romano-British agriculture (objective 5H) and rural settlement patterns (objective 5.4) have also been investigated and the publication of the results will support future landscape syntheses (objective 5I). A small contribution has been made towards understanding Romano-British saltmaking (referenced within objective 5J). Information about the Romano-British to Anglo-Saxon transition (objective 6A) has been revealed, particularly at Laceby Beck, where the results could contribute to a regional synthesis of Anglo-Saxon settlement hierarchies (objective 6C). Understanding the morphology of medieval rural settlements (objective 7E) and also of manorial estate centres (objective 7F) has been enhanced through the study of the moated sites. The research framework did not highlight medieval saltmaking, but a significant contribution has been made towards this area of research. The investigation of this important industry should be added to the research framework as an objective of future study. Data retrieved from the analysis of ridge and furrow as well as the expansion of agriculture into the Outmarsh helps meet objective 7I (the development of the open-field system). Similarly, the post-medieval boundaries recorded across the project, and in the Outmarsh in particular, make a minor contribution to identifying agricultural improvements in the 16th to 18th centuries (objective 8E).

In addition to these themes identified by the regional research framework, the project has made a significant contribution towards a more comprehensive understanding of the societies who inhabited the area, particularly in the Iron Age, Romano-British, Anglo-Saxon and high medieval periods, and the continuity of the settlement and activities, as well as landscape occupation in general and the transformations that resulted from this.

Continuity

Daniel Defoe described the county as the 'richest, most fruitful and best cultivated of any county in England… one part is all fen or marsh grounds… employed in husbandry, in breeding and feeding innumerable droves and flocks of [red] cattle and sheep' (Defoe 1727). On first sight it is appealing to assume that this description of the 18th-century pastoral marshes depicts a regional economy much unchanged since antiquity. However, for a truer picture we must expand this pastoral description to include at least a reliance on arable agriculture and the important salt industry, which had all but ceased by Defoe's time.. The degree of continuity from one period to another has been a central theme of this publication.

The landscape of the Middle Marsh has shaped human activity. The inaccessibility of the wetlands may have shielded the region from change and there is only minor evidence from any period of traded objects communicating status and wealth. In the Iron Age and Romano-British periods this pattern can be contrasted with the drier uplands of the Wolds where there were hillforts and villas, and with coastal sites such as Grimsby where, for example, a farmstead at Weelsby Avenue became an important metalworking centre (Fenwick *et al.* 2001b, 73–81). Closer to the Hornsea Project One route the site at Brocklesby Junction (Cavanagh in prep.) may have been better connected to the trading hub of Kirmington. Though of low status, the Hornsea Project One Romano-British sites are not small and some exhibit high levels of complexity. They are neither small in scale, nor insignificant, but nonetheless were overlooked by 20th-century archaeologists. Attention was instead focused on more monumental types of site that are both easier to identify and more familiar. The Hornsea Project One sites are to some degree remote from the culture and status of more 'Romanised' regions, representing subsistence farming communities located within the marshland of the North Sea fringe.

By the medieval period, even two moated sites were notable for their apparent lack of high-status material culture. It is possible that the primary motivations for their construction were mundane, perhaps primarily functioning as drainage features in the marsh. The Habrough moat may represent the seat of a lower-ranking seigneur, themselves a tenant (Evans 1991), although it has not been demonstrated that either the moated sites investigated here nor Evans' Habrough moat contained a manor house. The moat at Blow Field is very large, and only a small part has been investigated to date. Interpretation is likely to change following analysis of the parallel Hornsea Project Two excavations.

In contrast, though Anglo-Saxon agricultural practices followed the native Romano-British tradition, but the inhabitants may have enjoyed a higher level of material comfort and with a potentially more diverse range of economic activities including textile manufacture. Anglo-Saxon sites are rare in the area and the contribution of the results of this partly investigated settlement is significant.

The pattern of low-status holdings reported here may be in part due to the design of the Hornsea Project One cable route, which avoids major centres such as Grimsby as well as the nuclei of smaller villages, taking a 'back route' through the Middle Marsh. Higher-status settlements might have evolved into modern villages, which in the Middle Marsh continue to follow a pattern that has been in place since at least prior to Domesday.

These sites represent lives devoted to subsistence agriculture that were to some degree removed from the broader strokes of history. The economy relied on mixed agriculture and the production of secondary animal products (wool and milk) rather than optimisation for meat. There was little change over time to agricultural strategies that would have included extensive use of wetland pasture (carr). The sites at East Field Road and Station Road may represent the junction between the carr and higher, drier land that may have been used for arable crops. In the late medieval or post-medieval periods, the Outmarsh became available for arable agriculture.

To this picture of the agricultural Middle Marsh, the Hornsea Project One results can add significant evidence for saltworking in the Outmarsh, primarily from the medieval period. Other marine resources may have been under-exploited.

Interpretation of several of the sites has been complicated by residuality of finds. At some sites (Keelby Road, Humberston Road, Westfield Farm), few Iron Age features were identified, but a greater scale of activity was revealed by the quantities of residual Iron Age pottery present in Romano-British features that had truncated earlier remains.

There are examples of boundaries that have persisted over long periods of time, particularly at Westfield Farm/Blow Field, where the parish boundary between North and South Killingholme passes through the site. A possibly better-attested example is that of the western boundary of the Westfield Farm settlement. This boundary is evidenced by an Iron Age ditch (8321), Romano-British features, medieval ditches and a post-medieval ditch (8320). It continued to be depicted on the 1887 Ordnance Survey map and was recorded as a shallow depression by the earthwork survey (Wessex Archaeology 2016b) prior to excavation. Such multi-period boundaries have been interpreted as large scale territorial divisions or economic or 'estate' boundaries (Boutwood 1998b, 29; Spratt 1987, 15).

The Future

It is hoped that the results of Hornsea Project One may inform future studies in the region, including the parallel Hornsea Project Two (and any subsequent works associated with the cable route and offshore windfarm project in general), which should be interpreted in light of the results of this project.

Publication of this volume will complete the objectives of the Hornsea Project One archaeological project and the work will be concluded.

The following questions are suggested for future research:

Neolithic and Bronze Age findspots identified by Hornsea Project One were clustered in Laceby parish. How was the landscape around Laceby utilised during these periods and are there undetected sites within the parish or nearby? How does activity in these periods in the Laceby parish area relate to access to the sea and/or settlement at Grimsby?

What are the origins of occupation in the Middle Marsh? What was the form and distribution of occupation prior to the Late Iron Age?

Settlement of the Middle Marsh flourished in the Late Iron Age. What is the relationship between settlement patterns during the Middle and Late Iron Age periods? Was the Middle to Late Iron Age transition a period of change in the Middle Marsh?

Is the apparent bias of Iron Age and Romano-British settlement towards the environs of Immingham due to a geographical focus of developer-funded archaeology or does it represent a genuine settlement pattern?

In reference to the results recorded at Tetney Lock Road, did Romano-British saltmaking in the Outmarsh include the use of kilns? Were there other forms of Romano-British industrial activity in the Outmarsh (ie, not just saltworking)?

What was the extent of the various sites along the Hornsea Project One cable route?

Can parallels for the Laceby Beck Anglo-Saxon settlement be identified and investigated? How typical was the Laceby Beck site within the Anglo-Saxon settlement pattern in the Middle Marsh?

Do either the Habrough and/or Blow Field moated sites represent manorial complexes? If not, what was their function?

What is the nature of the buildings mapped within the Blow Field moat (but outside the Hornsea Project One cable route)? Do these represent a survival or development of medieval buildings?

Is it reasonable to associate Blow Field with the 'lost' medieval village of Holtham (or indeed with the 'great castle called Kelingholme' mentioned by Stukeley in 1724)? What was the relationship between Blow Field and any haven or harbour at Killingholme?

What was the seigneurial structure of the parishes of Killingholme?

Could an experimental approach reveal anything about the sandwashing technique of saltmaking? Was peat a suitable fuel? What quantities could be produced and how might this affect the economics of the salt trade? Could a single individual handle all the saltmaking apparatus in a serial process?

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Nicola King

Numbers in *italic* denote pages with figures, ***bold italic*** is used for colour plates, and numbers in underline denote pages with tables.

Context numbers appear in brackets to distinguish individual features - ditch (300203).

During the installation of cables connecting the Hornsea Offshore Wind Farm to the national grid, an archaeological transect was recorded across northern Lincolnshire. This publication is the culmination of a decade of work employing a diverse variety of archaeological techniques.

Parts of six settlements of Iron Age to Romano-British date were excavated, along with part of a regionally rare Anglo-Saxon settlement, two medieval moated sites and extensive evidence for medieval saltworking.

The Iron Age/Romano-British settlements ranged in size, form, complexity and date, each occupying a different position within the landscape of the Lincolnshire Middle Marsh. The work has helped to address geographical biases in the identification of this type of site. In the marsh they had been overlooked prior to the 21st century, and developer-funded excavation continues to be mainly focused in the increasingly industrialised environs of Immingham. Extensive information was obtained about the closed subsistence economies of the marsh, including from animal bone and organic residue analysis. In this age of climate change, a valuable cautionary tale is found in that of a coastal settlement at Humberston that was inundated and buried beneath tidal silts at the end of the 3rd century AD.

The two medieval moats are elements in a series of such sites located along a low ridge in the marsh. One moat may have been part of a minor seigneurial seat, but the other is much larger and almost certainly represents something more complex. A non-normative burial was made here at the parish boundary, the remains of a large man possibly representing an unsuccessful participant in mutual combat, or the victim of a murder.

It may be surprising to discover that it is saltmaking that has transformed the Outmarsh from poor wetland pasture into the 'improved' arable land we see today. Frequent remains of the apparatus used in the medieval sandwashing technique of salt production were revealed. A by-product of this process was the creation of the large mounds of saltern waste that helped to 'reclaim' this marginal land.

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