

Marsh, Wold and Fen

THE ARCHAEOLOGY OF THE VIKING LINK INTERCONNECTOR
IN SOUTH-EAST LINCOLNSHIRE

Patrick Daniel, Kate Fitzpatrick and Daniel Young



VOLUME 1: OVERVIEW

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In wold and wetland by Caroline May

Back cover
John Hirst excavating at Six Hundreds Drove

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ABSTRACT

Archaeological investigations were carried out between 2020 and 2021 along the Viking Link Interconnector cable scheme in south-east Lincolnshire. The Interconnector route traversed three distinct landscapes – the Lincolnshire Marsh, the Lincolnshire Wolds and the northern Fens – on its 67 km course between landfall on the North Sea coast near Mablethorpe and its terminal at an electricity substation at Bicker Fen. The project offered the opportunity to explore the archaeology of a part of the country that has seen few excavations of a similar scale.

This volume contains an overview of the sea level changes that had a key influence on the archaeological character of the early landscape, followed by summaries of the sites excavated along the Interconnector route. Its subsequent focus is on how the project has improved the understanding of the archaeology and historical landscape of south-east Lincolnshire. A second volume contains more detailed accounts of the most significant of the excavated sites, and presents the results of the specialist analyses of the human remains and the artefactual and environmental data. Also available is an online data supplement containing further specialist tables and reports that could not be accommodated in Volume 2.

Evidence for human activity was found from the Mesolithic through to modern times, with signs of agriculture detected from the Early Neolithic period onwards. Remains of Bronze Age date were scant and chiefly comprised funerary monuments, with a barrow uncovered at Callow Carr on the southern edge of the Wolds and a probable second example at Back Lane, on the northern Fen-edge. During the Middle Iron Age, the first evidence of settlement and enclosure on a significant scale appears: around 10 of the excavated sites date to the Middle or Late Iron Age. The tempo of activity remained high during the Romano-British period, with over a dozen sites dating to that time. Most comprised small farmsteads, although a cemetery was discovered at White Crofts on the Lincolnshire Marsh, and there is evidence for saltmaking at the Mown Rakes site on the edge of the Fens around the time of the Roman Conquest. Only around half of the Iron Age sites appear to have thrived in the Romano-British period, with most of the sites of the latter period appearing as pioneering operations as the landscape of the Roman province was developed and utilised.

That the countryside continued to be exploited to the same degree during the Anglo-Saxon period cannot be supported by the excavation results. Settlement remains were much sparser, and the dataset from the period is dominated instead by the newly discovered cemetery at Callow Carr, which re-used the Bronze Age barrow described above. This site is one of a small number of rural Early–Middle Anglo-Saxon cemeteries known around the southern Lincolnshire Wolds, and the first to be analysed and published. Its use lasted approximately 80–100 years and probably did not extend beyond the later 7th century, at a time when Christianity was becoming dominant. The Callow Carr cemetery was relatively small and probably used by an extended family or local community over a few generations. Isotope studies reveal these people had largely grown up in the area, but their home range lay a little way from the cemetery site. Osteological data from the burials reveals a generally healthy population engaged in a physically strenuous agrarian lifestyle, with one male having died shortly after, and possibly because of, a blow to the back of the neck with a sword or seax. Analysis of the grave goods from the cemetery as a whole has revealed something of the nuances of the local selection and use of such material, including the potential marking of kinship relationships by the comparable arrangement of grave goods within adjacent burials.

No medieval or post-medieval remains of particular significance were recorded from the Interconnector; the absence of such material probably reflects the longevity of the current pattern of villages and field boundaries in the area, with the cable scheme routed to avoid modern settlements – and therefore their medieval predecessors also.

One noticeable focus of activity lay in the Lymn Valley at the southern tail of the Lincolnshire Wolds, where five of the sites reported on in this volume were located. These contained an archaeological record shedding light on how the local landscape was used between the Neolithic and Anglo-Saxon periods. Another concentration lay a short distance to the south, on the northern Fen-edge, where three sites supplied evidence of settlement and farming between the Iron Age and Anglo-Saxon periods, as well as the probable barrow at Back Lane mentioned above. In the Lincolnshire Marsh, and in the Fenland proper, activity was restricted to localised patches of higher, drier ground and was chiefly Romano-British in date.

An early expectation that the project would highlight differing farming strategies within the various landscape zones crossed by the Interconnector was not borne out, the findings being rather more homogeneous than anticipated and instead indicating mixed agriculture dominated by cattle, wheat and barley across all landscape zones (and especially in the Romano-British period). This impression may, however, have been brought about by differential preservation and other factors that have affected the environmental remains.

The contribution of the Viking Link Interconnector excavations towards the resolution of current questions set out in the East Midlands Historic Environment Research Framework is assessed below. Insights have been gained into the introduction of cereal crops in the Neolithic, the development and distribution of field systems in the Iron Age and Romano-British periods, the production, movement and use of pottery from prehistory into the medieval period, the character of settlements and funerary practices in the Anglo-Saxon period, and changes to crops and diet over time. This volume concludes with a comparison of the results from the English onshore leg of the Viking Link project to its counterpart on the other side of the North Sea in Denmark, and suggests questions to guide future research.

RÉSUMÉ

Traduction: Jörn Schuster (ARCHÆOLOGICALsmallFINDS)

Des fouilles archéologiques étaient menées entre 2020 et 2021 le long du tracé du câble d'interconnexion Viking Link, dans le sud-est du Lincolnshire. Le tracé de l'interconnexion traverse trois paysages distincts – les marais du Lincolnshire, la chaîne de collines des Wolds du Lincolnshire et les tourbières des Fens du nord – sur ses 67 km entre son point d'arrivée sur la côte de la mer du Nord près de Mablethorpe et son extrémité à la sous-station électrique de Bicker Fen. Le projet a permis d'explorer l'archéologie d'une région du pays qui a fait rarement l'objet de fouilles d'une telle ampleur.

Ce volume contient un aperçu des changements du niveau de la mer qui ont eu une influence déterminante sur le caractère archéologique du paysage ancien, suivi des résumés des sites fouillés le long du tracé de l'interconnexion. Il se concentre ensuite sur la manière dont le projet a permis d'améliorer la compréhension de l'archéologie et du paysage historique du sud-est Lincolnshire. Un deuxième volume contient des comptes rendus plus détaillés des sites fouillés les plus importants et présente les résultats des analyses spécialisées des restes humains et des données du mobilier archéologique et environnemental. Un supplément de ressources en ligne est également disponible, contenant des tableaux et des rapports spécialisés supplémentaires qui n'ont pas pu être intégrés dans le volume 2.

Des traces d'activité humaine ont été trouvées datant du Mésolithique jusqu'à l'époque moderne, avec des traces d'agriculture détectées à partir du début du Néolithique. Les vestiges datant de l'âge du bronze étaient rares et consistaient principalement des monuments funéraires, avec un tumulus découvert à Callow Carr, à la limite sud des Wolds, et un deuxième exemple probablement situé à Back Lane, à la limite nord des Fens. Au cours de l'âge du fer moyen, les premières traces d'occupation et d'enclos à grande échelle apparaissent : une dizaine des sites fouillés datent de l'âge du fer moyen ou tardif. Le niveau d'activité est resté élevé pendant la période romano-britannique, avec plus d'une douzaine de sites datant de cette époque. La plupart comprenaient de petites fermes, bien qu'un cimetière ait été découvert à White Crofts, dans les marais du Lincolnshire, et qu'il existe des preuves de la production de sel sur le site de Mown Rakes, à la lisière des Fens, à l'époque de la conquête romaine. Environ la moitié des sites de l'âge du fer semblent avoir continué à prospérer pendant la période romano-britannique, avec la plupart des sites de cette dernière période apparaissant comme des opérations pionnières à mesure que le paysage de la province romaine était développé et exploité.

Les résultats des fouilles ne confirment pas la poursuite de l'exploitation de la campagne au même niveau pendant la période anglo-saxonne. Les vestiges de sites d'habitation étaient beaucoup plus rares, et les données relatives à cette période sont dominées par la nécropole récemment découverte à Callow Carr, réutilisant le tumulus de l'âge du bronze décrit ci-avant. Ce site fait partie des rares nécropoles ruraux anglo-saxonnes du début et du milieu de l'époque anglo-saxonne connues dans le sud des Lincolnshire Wolds, et c'est la première à avoir été analysée et publiée. Elle a été utilisée pendant environ 80 à 100 ans et ne s'est probablement pas prolongée au-delà de la fin du VII^e siècle, à une époque où le christianisme devenait dominant. La nécropole de Callow Carr était relativement petite et peut-être utilisée par une famille élargie ou une communauté locale pendant plusieurs générations. Des études isotopiques révèlent que ces personnes avaient pour la plupart grandi dans la région, mais leurs demeures se trouvaient à quelque distance du site de la nécropole. D'après les données ostéologiques des sépultures, il est évident qu'une population en bonne santé menait une vie agricole

physiquement exigeante. Une des sépultures était celle d'un homme qui est mort peu après – et probablement à cause – d'un coup porté à l'arrière du cou avec une épée ou un scramasaxe. L'analyse des objets funéraires provenant de l'ensemble de la nécropole a révélé certaines nuances dans la sélection et l'utilisation locales de ces objets, notamment le marquage potentiel des liens parenté par la disposition comparable des objets funéraires dans les sépultures adjacentes.

Aucun vestige médiéval ou moderne d'importance particulière n'a été enregistré dans le tracé de l'interconnexion ; l'absence de tels matériaux reflète probablement la longévité du schéma actuel des villages et des limites des champs dans la région, le tracé du câble ayant été conçu pour éviter les établissements modernes – et donc leurs précurseurs médiévaux.

Une activité notable s'est concentrée dans la vallée du fleuve Lymn, à l'extrémité sud des Lincolnshire Wolds, où se trouvaient cinq des sites mentionnés dans cet ouvrage. Ceux-ci contenaient des vestiges archéologiques qui ont permis de mieux comprendre comment le paysage local était utilisé entre le néolithique et la période anglo-saxonne. Une autre concentration se trouvait à une courte distance au sud, à la lisière nord des Fens, où trois sites ont fourni des indices d'habitation et d'agriculture entre l'âge du fer et la période anglo-saxonne, ainsi que le tumulus probable de Back Lane mentionné ci-dessus. Dans les marais du Lincolnshire et dans les Fens proprement dits, l'activité était limitée à des zones localisées de terrain plus élevé et plus sec et datait principalement de l'époque romano-britannique.

L'hypothèse initiale selon laquelle le projet mettrait en évidence des stratégies agricoles différentes dans les différentes zones paysagères traversées par l'interconnexion ne s'est pas confirmée, les résultats étant plutôt plus homogènes que prévu et indiquant plutôt une agriculture mixte dominée par l'élevage bovin, le blé et l'orge dans toutes les zones paysagères (et en particulier pendant la période romano-britannique). Cette impression peut toutefois s'expliquer par des différences de préservation et d'autres facteurs qui ont affecté les vestiges environnementaux.

La contribution des fouilles de l'interconnexion Viking Link à la résolution des questions actuelles soulevées dans le cadre de recherche sur l'environnement historique des East Midlands est évaluée ci-dessous. Des informations ont été recueillies sur l'introduction des cultures céréalières au Néolithique ; le développement et la distribution des systèmes agricoles à l'âge du fer et à l'époque romano-britannique ; la production, la transportation et l'utilisation de la poterie de la préhistoire au Moyen Âge ; la nature des habitations et les pratiques funéraires à l'époque anglo-saxonne, ainsi que l'évolution des cultures et du régime alimentaire au fil du temps. Le tome se termine par une comparaison des résultats de la partie terrestre anglaise du projet Viking Link à ceux de son homologue de l'autre côté de la mer du Nord, au Danemark, et propose des questions pour orienter les recherches futures.

ZUSAMMENFASSUNG

Übersetzung: Jörn Schuster (ARCHÆOLOGICALsmallFINDS)

Zwischen 2020 und 2021 wurden entlang der Trasse des Viking Link Interconnector-Kabels im Südosten der Grafschaft Lincolnshire archäologische Untersuchungen durchgeführt. Die Interconnector-Trasse durchquerte auf ihrer 67 km langen Route zwischen dem Anlandungsort an der Nordseeküste bei Mablethorpe und ihrem Endpunkt an einem Umspannwerk in Bicker Fen drei unterschiedliche Landschaftsformen: die Lincolnshire Marsch, den Höhenrücken der Lincolnshire Wolds und die Moorlandschaft der northern Fens. Durch das Projekt bot sich die Gelegenheit, archäologische Bodendenkmäler in einer Region Englands zu erforschen, in der bisher nur wenige Ausgrabungen ähnlichen Umfangs durchgeführt wurden.

Der vorliegende Band enthält einen Überblick über die Meeresspiegelveränderungen und ihren entscheidenden Einfluss auf den archäologischen Charakter der prähistorischen Landschaft. Im Anschluss folgen Zusammenfassungen der entlang der Interconnector-Trasse ausgegrabenen Fundstätten. Des Weiteren wird erläutert, wie das Projekt zu einem besseren Verständnis der Archäologie und der historischen Landschaft im Südosten von Lincolnshire beigetragen hat. Ein zweiter Band enthält ausführlichere Berichte der bedeutendsten ausgegrabenen Fundplätze und präsentiert die Ergebnisse der fachlichen Auswertungen der menschlichen Überreste sowie der Fundbearbeitung und der Umweltdaten. Außerdem ist ein Online-Datensatz verfügbar, der weitere Auswertungstabellen und Berichte enthält, die nicht in Band 2 berücksichtigt werden konnten.

Es wurden Hinweise menschlicher Aktivitäten vom Mesolithikum bis zur Neuzeit gefunden, wobei sich Anzeichen für Landwirtschaft ab dem frühen Neolithikum nachweisen lassen. Nur wenige Befunde, zumeist Grabdenkmäler, datieren in die Bronzezeit, darunter ein Hügelgrab in Callow Carr am südlichen Rand der Wolds und ein zweites, wahrscheinlich ebenfalls aus dieser Zeit stammendes Grab in Back Lane am nördlichen Rand der Fens. Während der mittleren vorrömischen Eisenzeit tauchen die ersten Hinweise auf Siedlungen und Einfriedungen in bedeutendem Umfang auf: Etwa zehn der ausgegrabenen Fundstellen datieren in die mittlere oder späte vorrömische Eisenzeit. Mit über einem Dutzend Fundstellen der romano-britischen Periode blieb die Besiedlungsfrequenz während dieser Zeit weiterhin hoch. Bei den meisten Fundstellen handelt es sich um kleine Gehöfte, obwohl in White Crofts in der Lincolnshire Marsh ein Gräberfeld entdeckt wurde und es Hinweise auf Salzgewinnung an der Fundstätte Mown Rakes am Rande der Fens gibt, die beide in den Zeitraum der römischen Eroberung datieren. Nur etwa die Hälfte der eisenzeitlichen Fundplätze prosperierten während der romano-britischen Periode, wobei die meisten Fundstätten aus der letztgenannten Periode, als die Landschaft der römischen Provinz erschlossen und genutzt wurde, Pionierfunktionen zu haben scheinen.

Anhand der Ausgrabungsergebnisse lässt sich nicht belegen, dass die Landschaft während der angelsächsischen Zeit in gleichem Maße weiter genutzt wurde. Siedlungsanzeiger waren viel spärlicher, und die Befunde dieser Zeit werden stattdessen von dem neu entdeckten Gräberfeld in Callow Carr dominiert, mit dem das oben beschriebene bronzezeitliche Hügelgrab wiederverwendet wurde. Dieser Fundplatz gehört zu einer kleinen Anzahl von ländlichen früh- bis mittelangelsächsischen Gräberfeldern, die im Süden der Lincolnshire Wolds bekannt sind, und es ist nun das erste, das analysiert und veröffentlicht wurde. Seine Nutzung dauerte etwa 80 bis 100 Jahre und reichte wahrscheinlich nicht über das späte 7. Jahrhundert hinaus, als das Christentum zunehmend an Bedeutung gewann. Das Gräberfeld von Callow Carr war

relativ klein und wurde wahrscheinlich über mehrere Generationen hinweg von einer Großfamilie oder einer lokalen Gemeinschaft genutzt. Isotopenuntersuchungen zeigen, dass diese Bevölkerung größtenteils in der unmittelbaren Umgebung aufgewachsen waren, ihr Lebensraum jedoch etwas weiter vom Friedhof entfernt lag. Osteologische Daten der Bestattungen zeigen eine allgemein gesunde Bevölkerung, die einen körperlich anstrengenden agrarischen Lebensstil pflegte, wobei ein Mann kurz nach und möglicherweise aufgrund eines Schwert- oder Seax-Hiebs in den Nacken starb. Die Analyse der Grabbeigaben aus dem gesamten Gräberfeld vermittelt einen Einblick in die Nuancen der vor Ort üblichen Auswahl und Verwendung solcher Materialien, unter anderem bei der möglichen Signalisierung von Verwandtschaftsbeziehungen durch gleichartige Anordnungen von Grabbeigaben in benachbarten Gräbern.

Entlang der Interconnector-Trasse konnten keine mittelalterlichen oder frühneuzeitlichen Befunde besonderer Bedeutung dokumentiert werden; das Fehlen entsprechender Materialien spiegelt wahrscheinlich die Langlebigkeit der aktuellen Struktur der Dörfer und Feldgrenzen in der Region wider, da die Kabeltrasse so verlegt wurde, dass moderne Siedlungen – und damit auch ihre mittelalterlichen Vorgänger – umgangen wurden.

Ein bemerkenswerter Aktivitätsschwerpunkt lag im Lymn Valley am südlichen Ende der Lincolnshire Wolds, wo sich fünf der in diesem Band beschriebenen Fundplätze befanden. Die dort dokumentierten archäologischen Befunde geben Aufschluss darüber, wie die lokale Landschaft zwischen der Jungsteinzeit und der angelsächsischen Zeit genutzt wurde. Ein weiterer Schwerpunkt lag etwas weiter südlich, am nördlichen Rand der Fens, wo drei Fundstätten Hinweise auf Besiedlung und Landwirtschaft zwischen der Eisenzeit und der angelsächsischen Zeit lieferten, ebenso wie der oben erwähnte mögliche Grabhügel in Back Lane. In den Lincolnshire Marshes und im eigentlichen Fenland beschränkten sich die größtenteils romano-britischen Befunde auf vereinzelte, höher gelegene Bereiche mit trockeneren Böden.

Die anfängliche Erwartung, dass das Projekt unterschiedliche Landwirtschaftsmethoden innerhalb der verschiedenen, von der Interconnector-Trasse durchquerten Landschaftszonen hervorheben würde, hat sich nicht bestätigt. Die Ergebnisse waren wesentlicher gleichartiger als erwartet und deuteten stattdessen auf eine gemischte Landwirtschaft hin, die in allen Landschaftszonen (vor allem in der romano-britischen Zeit) von Rinderhaltung sowie Weizen- und Gerstenanbau dominiert wurde. Dieser Eindruck könnte jedoch durch unterschiedliche Erhaltungszustände und andere, die Tier- und Pflanzenreste beeinflussende Faktoren bedingt sein.

Der Beitrag der Viking Link Interconnector-Ausgrabungen zur Klärung aktueller, im East Midlands Historic Environment Research Framework aufgeworfener Fragen, wird im Folgenden bewertet. Es wurden Erkenntnisse über die Einführung von Getreideanbau im Neolithikum, die Entwicklung und Verbreitung von Feldsystemen in der vorrömischen Eisenzeit und der romano-britischen Zeit, die Herstellung, den Transport und die Verwendung von Keramik von der Vorgeschichte bis zum Mittelalter, die Beschaffenheit von Siedlungen und Bestattungsbräuchen in der angelsächsischen Zeit sowie Veränderungen bei Anbau und Ernährung im Laufe der Zeit gewonnen. Der Band schließt mit einem Vergleich der Ergebnisse des englischen Onshore-Teils des Viking Link-Projekts mit denen seines Pendants auf der anderen Seite der Nordsee in Dänemark und macht Vorschläge für Fragen, die als Leitfäden für zukünftige Untersuchungen dienen können.

OPSUMMERING

Oversættelse: Majbritt Bengtson Trim (Wessex Archaeology)

Arkæologiske udgravninger blev foretaget tilbage i 2020 og 2021 i forbindelse med *the Viking Link Interconnector Cable Route* i det sydøstlige Lincolnshire, Storbritannien. Den 67 km lange kabelrute krydsede tre særprægede landskabstyper på strækningen mellem landgangen fra østkysten til Nordsøen i nærheden af Mablethorpe og endestationen ved en elektrisk transformerstation ved Bicker Fen –Lincolnshire Marsh, Lincolnshire Wolds og Northern Fens. Projektet åbnede op for muligheden for at undersøge det arkæologiske potentiale i en del af landet der ikke før har være underlagt mange arkæologiske undersøgelser på lignende skala.

Dette bind indeholder en oversigt over ændringerne i havniveauet, der havde afgørende betydning for den arkæologiske karakter af det tidlige landskab, efterfulgt af opsummeringer af de pladser, der blev undersøgt i forbindelse med Interconnector-ruten. Bindets efterfølgende fokus er på, hvordan projektet har bidraget til en bedre forståelse af det arkæologiske og historiske landskab i det sydøstlige Lincolnshire. Bind 2 indeholder mere detaljerede beretninger om de vigtigste pladser og præsentere resultaterne af de dybdegående analyserne af menneske knogler, artefakter og de miljømæssige data. Yderligere er et online datasupplement tilgængeligt. Dette indeholder de tabeller og rapporter produceret af specialisterne som ikke kunne rummes i bind 2.

Der blev fundet beviser for menneskelige aktiviteter fra mesolitikum (ca. 8500–4000 f.Kr.) og op til nyere tid. Man fandt spor af landbrug fra ældre neolitikum (ca. 4000–3350 f.Kr.) og frem til nutiden, men kun få beviser for aktiviteter dateret til bronzealderen (ca. 2200–700 f.Kr.). Disse bestod hovedsageligt af gravmonumenter blandt andet blev en gravhøj opdaget ved Callow Carr på den sydlige side af Lincolnshire Wolds, samt en mulig gravhøj nær Back Lane, på Northern Fen. De første tegn på større bebyggelser og indhegninger stammer fra den mellemste til yngre jernalder i England (ca. 450 f.Kr.–43 e.Kr.) omkring ti af de pladser der blev udgravet stammer fra denne periode. De fleste aktiviteter stammer fra den romersk-britiske periode (ca. 43–410 e.Kr.), med over et dusin pladser dateret til denne periode. De fleste bosættelser bestod af små gårde, men der blev også fundet en lille gravplads i nærheden af White Crofts, Lincolnshire Marsh. Ydermere var der tegn på saltfremstilling ved udgravningen nær Mown Rakes i udkanten af Lincolnshire Fens fra tidsperioden omkring den romerske invasion. Kun halvdelen af bosættelserne fra jernalderen lod til at fortsætte ind i den romersk-britiske periode, de fleste pladser fra denne periode lod til at være pionerende og opstået i takt med at landskabet i den romerske provins blev udviklet og benyttet.

Udgravningsresultaterne er mere begrænsede efter den romersk-britiske periode. Det fremgår derfor ikke af resultaterne om landskabet blev brugt i samme grad i denne periode. Der blev kun fundet få beviser for menneskelige aktiviteter i den angelsaksiske periode (ca. 410–1066 e.Kr.), resultaterne bestod blandt andet i beviser for den nyligt fundne gravplads ved Callow Carr, hvor man i perioden havde genbrugt bronzealdergravhøjen til nye begravelser. Pladsen støder op til én ud af få kendte mindre landlige gravpladser fra den tidlige til mellemste angelsaksiske periode i området omkring den sydlige del af Lincolnshire Wolds, pladsen er den første sådanplads man har haft mulighed for at analysere og publicere. Gravpladsen har været brugt i ca. 80–100 år og brugen lod til at stoppe omkring det syvende århundrede, omkring tiden hvor kristendommen for alvor blev dominerende. Callow Carr var en relativt lille gravplads sandsynligvis benyttet i et par generationer af én familie eller af lokalsamfundet. Isotopanalyserne viste at de begravede var opvokset i nærområdet, men at deres

hjem lå et stykke fra selve gravpladsen. Det osteoarkæologiske datasæt fra gravene beretter om en sund befolkning der deltog i de hårde fysiske aktiviteter forbundet med landbrugslivet i perioden. En af de yngre mandlige individer døde tilsyneladende kort efter et slag i nakken, øjensynligt ramt af et sværd eller en sax. Undersøgelserne af genstandene fra gravene afslørede nuancerne i lokalsamfundets valg af materialer og potentielle markeringer af slægtskab i forbindelse med valget og placeringen af genstandene i gravene.

Der blev ikke fundet nogen nævneværdige fund fra middelalderen eller senere tider, fraværet af sådanne fund kunne skyldes levetiden af det mønster, som danner rammen for de nuværende landsbyer og markskel, kaberuten undgår disse og derved også deres middelalderlige forgængere.

Bemærkelsesværdigt er det at resultaterne, baseret på fem udgravninger omtalt i dette værk, lokaliseret i Lymn Valley i sydenden af Lincolnshire Wolds, kastede lys over landskabsforandringerne gennem tiden fra neolitikum og helt op i den angelsaksiske periode. En anden koncentration af aktiviteter befandt sig en kort distance syd for, på den nordlige grænse til Lincolnshire Fen. Hvor fundene fra tre udgravninger, viser tegn på bosættelser fra jernalderen og ind i den angelsaksiske periode, så vel som den førnævnte mulige gravhøj ved Back Lane. I Lincolnshire Marsh, var fortidens aktiviteter begrænset til mindre områder bestående af højere liggende tuer af tørt land, disse aktiviteter var hovedsageligt fra den romerske jernalder.

Den tidligere antagelse af at projektet kunne belyse forskellige landbrugsmetoder i de forskellige landskabszoner krydset af kabelruten blev forkastet, eftersom fundene var mere ensformige end først antaget. Resultaterne tydede på en blandet landbrugsform bestående af kvæg og dyrkningen af hvede og byg på tværs af zonerne, dette er særligt tydeligt i den romerske jernalder. Dette resultat kunne skyldes forskellen i bevaringen samt andre faktorer der har haft indflydelse på bevarede botaniske levn.

Resultaterne fra de arkæologiske undersøgelser gjort i forbindelse med Interconnector-ruten har bidraget til en bedre forståelse for og besvarelse på spørgsmål der indgår i områdets historiske forskningsramme *the East Midlands Historic Environment Research Framework*.

Projektet har givet indsigt i: landbrugets indførelse og introduktionen af kornsorter i neolitikum, udviklingen plus fordelingen af marksystemer i jernalderen, samt produktionen, udbredelsen og brugen af keramik fra forhistorien og op i middelalderen. Derudover har projektet givet et bedre indblik i karakteren af bosættelser samt begravelsesritualerne i den angelsaksiske periode. Yderligere har projektet også hjulpet på forståelsen af afgrøder samt forandringer i kosten over tid. Dette bind afsluttes med en sammenligning af resultaterne fra kabelstrækningen på engelsk jord og projektets modstykket på den anden side af Nordsøen i Danmark, samt kommer med forslag til spørgsmål der kan guide fremtidig forskning.

CHAPTER 1

INTRODUCTION

Background to the Project

CONSTRUCTED BETWEEN 2020 AND 2023, the Viking Link Interconnector is an infrastructure scheme that joins together the electricity grids of Denmark and the UK. Its overall course is some 765 km in length and it connects, by means of cabling below the North Sea, electrical substations in southern Jutland and Lincolnshire. This volume describes the results of the archaeological investigations undertaken along the 67 km-long UK onshore portion of the cable route, which runs between its landfall south of Mablethorpe and Bicker Fen, near Boston (Fig. 1.1).

Wessex Archaeology and Network Archaeology Ltd undertook a programme of archaeological fieldwork, comprising evaluation trenching, set-piece excavation and targeted watching briefs, along the UK onshore route. This was carried out between April 2020 and November 2021 and was commissioned by Balfour Beatty on behalf of National Grid Viking Link. A total of 50 sites were investigated along the cable route, providing evidence of human activity from the Mesolithic to the modern period, including settlement, farming, saltmaking and funerary practices.

Topography and Geology

During the construction period, the UK onshore route was divided into three zones based on landscape character:

Zone 1: Coastal marsh (12 km). The coastal strip of this part of Lincolnshire is perhaps most well known for seaside resorts such as Skegness and Mablethorpe. Inland from these, however, the landscape has an open, rural character. Much of the land is flat and lies beneath the 10 m contour and, close to the coast, areas have been reclaimed from the sea through various episodes of drainage (Ellis *et al.* 2001; Green 2023; Lord and MacIntosh 2011). LiDAR data and aerial photographs reveal the area to have contained numerous creeks and estuarine rivers prior to such works (Green 2023). Remnants of rural Romano-British settlements and field systems were the main findings from this landscape zone.

Zone 2: The Lincolnshire Wolds (22 km). The Lincolnshire Wolds are designated as an Area of Outstanding Natural Beauty (one of only two nationally protected landscapes in the East Midlands – the other being the Peak District National Park). From Alford, the land crossed by the Viking Link route rises to around 100 m OD near Ulceby Cross, where it comprises a contrasting upland landscape of rolling plateaux and steep valleys. The cable route descends into more wooded countryside as it moves to the south-east, and to the east of Sausthorpe it crosses the River Lymn. The river has left alluvial deposits, now often with associated boggy woodland, in the base of its valley. As with Zone 1 (away from its seaside resorts), Zone 2 is sparsely populated, with a settlement pattern characterised by long-established nucleated villages, dispersed farms and occasional modest country houses (Lord and MacIntosh 2011). The Lincolnshire Wolds are celebrated for possessing a rich array of archaeological sites and historic landscape features (Last and Willis 2023; Robinson 2009), which is reflected in the diversity of the excavation results from Zone 2: investigated were Iron Age and Romano-British sites like those seen in Zone 1, a prehistoric flint scatter, a Bronze Age barrow re-used for an Anglo-Saxon inhumation cemetery, and traces of Anglo-Saxon settlement.

Zone 3: Witham Valley and Fens (33 km). Between East and West Keal the cable route descends to the Fens of south-east Lincolnshire. In this portion of the route the land surface is flat and rises only infrequently above 3 m OD. Prior to land reclamation the Fens were a wetland, characterised by rivers, meres and marshes. These were extensively drained from the early 17th century onwards and the area is now characterised by large arable fields with dark, friable peat soils. The Fenland forms 'one of the richest agricultural areas of Lincolnshire' (Boutwood 1998a, 26). Woodland cover is sparse and hedgerows are almost entirely absent, with fields instead divided by straight drainage channels ultimately discharging into the canalised River Witham. Roads and other communications typically follow the drains. The Lincolnshire Fens are the least densely settled part of the county (Lord and MacIntosh 2011, 47); nucleated villages are rare, with a settlement pattern characterised by isolated farms instead. The area has a complex and locally nuanced history of inundation and drying-out, as sea levels and drainage regimes have changed over time (see Chapter 2). Much of the pre-Bronze Age land surface is buried beneath marine clay. As a result of their position in relation to groundwater levels and depositional episodes, archaeological remains were uncommon along this, the longest section of the Viking Link route. Where drainage conditions in the past permitted, however, archaeological activity was evidenced, with a 1.6 km stretch of the cable route near Swineshead Bridge containing a dense concentration of Romano-British remains. The evidence relates to farming, settlement, pottery production, burial and salting, the latter a reminder of the former influence of the sea on a site now 20 km inland.

The underlying geology of the Viking Link Interconnector consists of sedimentary rocks. Chalks underlie the coastal marsh of Zone 1 and form the crest of the Lincolnshire Wolds. The southern tail of the Wolds comprises older sandstones. Within the Fenland of Zone 3, the underlying solid geology is mapped as mudstones and clays. Close to the coast, superficial Tidal Flat deposits of clay and silt are found, with Devensian till and glaciofluvial sand and gravel deposits sealing the bedrock further inland. Few superficial deposits are recorded on geological mapping of the upland portion of the route, but bands of alluvium are present along the valleys. Within the Fenland, Tidal Flat deposits predominate, covering much of the area and extending up the Witham Valley towards Lincoln (British Geological Survey 2024).

The geoarchaeological context of Zones 1 and 3 of the route and its influence on the archaeological character of the associated landscape is considered in more detail in Chapter 2 below.

Fieldwork summary

The existence of all but a handful of the sites excavated along the Viking Link onshore cable route was unknown prior to initiation of the Interconnector project. Instead, their identification was the outcome of the type of phased programme of survey and trench evaluation commonly commissioned by a development of this sort. These works were undertaken by a variety of contractors, and the table (1.1) below aims to provide a simplified timeline and summary of the various archaeological interventions that preceded the construction of the Viking Link Interconnector.

Outreach and Community Engagement

Planning policy developments in the 1990s accelerated the growth of commercial archaeology in Britain and led to increased professionalisation within the fieldwork sector (Everill 2009). One unintended consequence was increased barriers, both administrative and physical, between archaeological practitioners and the communities whose heritage was under investigation. A necessary focus within the discipline on the contribution to specialist knowledge meant that other potential benefits of

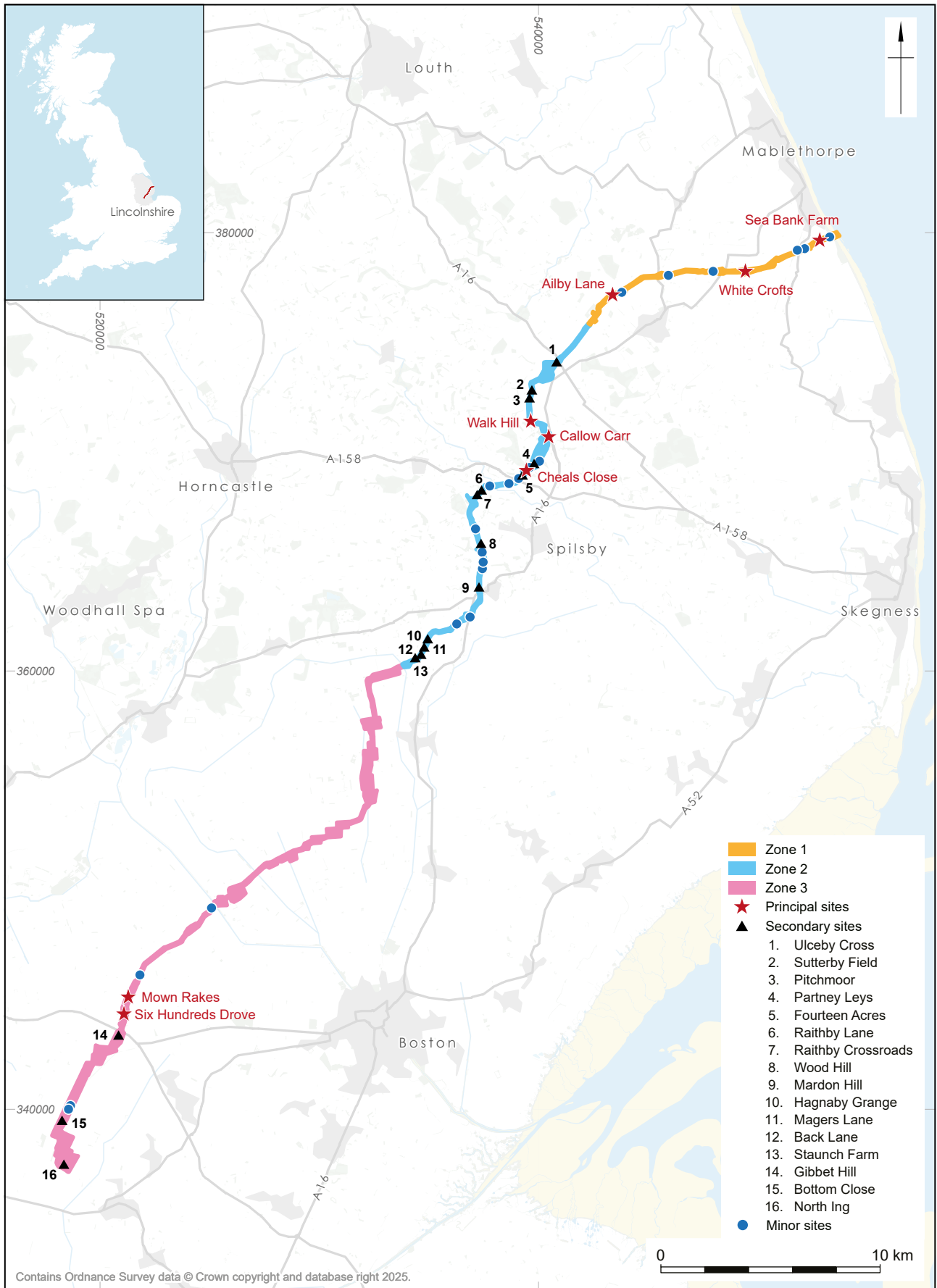


Figure 1.1 The route of the Viking Link Interconnector, showing locations of the sites

Table 1.1 Viking Link early works

Year	Activity	Outcome	Contractor/reference
2017	Desk-based assessment	Considered impact of the then-proposed Interconnector route on nearby cultural heritage, incl. buried archaeological sites and historic buildings & landscapes. Nearly 200 such 'heritage receptors' identified, more than three-quarters of which classed as 'low value'.	Arcadis Consulting 2017
2017	Aerial photograph and LiDAR assessment	A number of cropmarks and potential earthworks consistent with extensive archaeological sites identified along cable route near Donington, Bicker Fen, Harrington and Raithby.	Trent & Peak Archaeology 2017
2017–2020	Geophysical surveys	Geophysical surveys carried out by various contractors over 4-year period as areas became accessible for survey and route alignment options explored. Numerous areas of archaeological potential identified, chiefly comprising enclosure systems.	Headland Archaeology 2017a, 2017b and 2019; Magnitude Surveys 2020; Sumo Survey 2017
2019	Updated desk-based assessment	Collated all previous archaeological work on cable route and incorporated new and updated data sources (e.g., Wolds Long Barrow Survey & Portable Antiquities Scheme).	Network Archaeology Ltd 2019
2019	Bicker Fen Substation archaeological excavation	Excavation of a Romano-British farmstead that had been succeeded by an Anglo-Saxon field system	Gaunt <i>et al.</i> 2024
2019	Palaeoenvironmental evaluation	Hand-dug auger holes revealed best palaeoenvironmental potential lay in Zone 3, where a sequence comprising buried soil (found between -0.24 m and -4.8 m OD), overlain by peat or organic silt (less than 0.3 m thick), in turn overlain by series of brackish and marine sediments, was identified.	Environmental Archaeology Consultancy 2020
2020	Archaeological evaluation (Zone 1–2)	288 (100+188) trenches opened and recorded. Numerous areas of archaeological interest identified both in areas that had returned positive results when subjected to geophysical survey and within those that had not. Agricultural linear features (ditches, gullies and furrows). Artefacts spanned prehistoric to modern periods, assemblage dominated by Romano-British & medieval pottery.	Wessex Archaeology 2023a and 2023b (reporting on work largely of Network Archaeology Ltd)
2020	Archaeological excavations (Zone 1)	6 sites excavated. Dated remains spanned the possible Neolithic to modern periods, although most evidence Romano-British. Remains incl. Romano-British cemetery, saltmaking site & field systems.	Wessex Archaeology 2023a (reporting on work of Network Archaeology Ltd)
2020–2021	Archaeological evaluation (Zone 3)	197 trenches opened & recorded. Results generally sparse, but 3 foci of Romano-British activity identified and subsequently subjected to open area excavation (see 'Mown Rakes' & 'Six Hundreds Drove' below).	Wessex Archaeology 2021
2020–2021	Geoarchaeological borehole survey (Zone 3)	29 boreholes excavated, revealing glacial till (generally recorded at 0 m to -3 m OD), overlain in places by discontinuous peat, which was interpreted as being generally of Bronze Age date. Overlying till or peat (where present) was sequence of silts/clays of alluvial, intertidal & saltmarsh origin.	Wessex Archaeology 2022
2021	Archaeological excavations (Zone 2–3)	38 sites excavated spanning a similar range to Zone 1, but incl. Anglo-Saxon cemetery that re-used the site of a Bronze Age barrow (see 'Callow Carr' below). As with Zone 1, most sites overwhelmingly rural and agrarian, characterised by ditched field boundaries. Relatively few sites in Zone 3, but one area (see 'Mown Rakes' & 'Six Hundreds Drove') of intense Romano-British activity.	Wessex Archaeology 2023b
2021	Archaeological watching briefs (Zone 1)	5 areas were monitored. 4 archaeologically blank, but 5th ('White Crofts') encountered prehistoric, Romano-British, late Roman & early medieval ditches, gullies & pits.	Wessex Archaeology 2023a (reporting on work carried out by Network Archaeology Ltd)

archaeological fieldwork, such as strengthening community and personal well-being through fostering a sense of place and overcoming social isolation, received somewhat less attention (ClfA 2023). For a variety of reasons (Kajda *et al.* 2018), the early decades of the 21st century saw something of a course-correction, with an increased recognition that developer-funded archaeological fieldwork could be a potent mechanism to deliver public benefit and social value (e.g., Mann 2023; Reilly *et al.* 2018). Such was the context behind the community engagement and public outreach programme relating to the Viking Link archaeological investigations. As an educational charity with aims to advance education, the arts, culture, heritage and science through cultural heritage, Wessex Archaeology was pleased to help design and deliver the programme summarised below.

Wessex Archaeology supported the National Grid Viking Link stakeholder engagement team by contributing archaeological content and expertise to both in-person community-focused events in venues across Lincolnshire and online content featuring the results of the excavations, which reached international audiences. Three open days were conducted during the Council for British Archaeology's 2023 Festival of Archaeology. The events were held at Boston Guildhall, Spilsby Franklin Hall and Lincoln Museum. The results of the archaeological investigations from along the Interconnector route directly shaped these open days, where activities included an Anglo-Saxon virtual reality experience, artefact viewing and handling, and environmental processing. An animation detailing excavation results was created, and maps, plans and photographs from the investigations were on display. It is estimated that these events engaged a combined total of 1050 people.

A programme of school sessions was delivered in eight Lincolnshire primary schools, to a total of 341 pupils. The sessions each comprised a two-hour visit from members of the fieldwork team and Wessex Archaeology's Community Engagement Coordinator. The pupils were taught about the results of the nearby excavations and took part in artefact handling and environmental processing and were given the opportunity to engage with the Anglo-Saxon virtual reality experience. Community talks detailing the results of the investigations and their local and regional significance were delivered to the Louth Naturalists' Antiquarian and Literary Society and the Spirit of Sutterby, with an estimated 60 attendees.

Figure 1.2 *A Thread Through Time*



A YouTube video focusing on the early medieval remains was created: *A Thread Through Time* (Fig. 1.2; Wessex Archaeology 2023e). It featured a compilation of footage filmed during the excavation and an animated, fictionalised reconstruction of an early medieval story. At the time of writing, it had 1.5k views and 112 likes. Wessex Archaeology also worked closely with the National Grid Viking Link team to produce an educational booklet, *Alfie and the Archaeologist* (Fig. 1.3; National Grid 2023), designed to help young people aged seven to eleven learn about renewable energy and the Viking Link



Figure 1.3 Alfie and the Archaeologist

Investigation that applied to the archaeological investigations. Recommendations for analysis to further pursue those aims were made, culminating in the dissemination of the archaeological results via the production of this volume and the deposition of the archive at Lincoln Museum.

Interconnector. Together with National Grid and the children's science education group Mad Science, the team toured partner schools in Lincolnshire to deliver educational activities to more than 425 children.

Notably, the Callow Carr Anglo-Saxon cemetery featured on the BBC's flagship archaeology series *Digging for Britain*, which showcases significant excavations around the UK (Fig 1.4; BBC 2024b). The episode was watched live by over one million viewers, in addition to on-demand viewers. The press campaign that accompanied *Digging for Britain* was picked up by 87 media outlets across the world across print, broadcast and digital, with a combined reach of over 240 million views.

Post-excavation Assessment

The results of the evaluation trenching, excavations and watching briefs were summarised in two post-excavation assessment reports prepared in 2022–3 (Wessex Archaeology 2023a for Zone 1 and Wessex Archaeology 2023b for Zones 2 and 3). A separate Updated Project Design, covering Zones 1–3 (Wessex Archaeology 2023c), considered the quality and significance of the evidence and assessed the potential evidence to address the research aims outlined in the Written Schemes of



Figure 1.4 Jacqueline McKinley (left) and Ceridwen Boston (cen) with Prof. Alice Roberts filming the *Digging for Britain* episode

Research Aims

The aims and objectives that guided the fieldwork were set out in the Written Schemes of Investigation prepared prior to the commencement of each stage of fieldwork. These ‘WSIs’ were approved by relevant project stakeholders, principally the archaeological curators representing the local planning authorities, and archaeological consultants employed by the cable route construction consortium. The aims and objectives were drawn up with reference to generic professional guidance (e.g., ClfA 2014) and the East Midlands Historic Environment Research Framework (‘EMHERF’: Research Frameworks 2024), but also included site-specific objectives. The research themes became more refined as the stages of fieldwork were completed, culminating in this publication, which was produced with the aim of better understanding:

1. The chronology of the field systems, settlements and other sites found along the cable route.
2. The character of the environment along the route and how it changed over time.
3. How the different landscape zones were used in the past, particularly with regard to animal husbandry, range of crops exploited and woodland management regimes.
4. The supply, production and use of pottery in this part of the country in the past.
5. The production techniques and exchange networks involved in the manufacture of salt.
6. The development of funerary monuments and changing burial and memorial practices.
7. Anglo-Saxon sites, burial rites and possible cultural boundaries and trading networks.

These are the themes that have guided the following chapters, within which contributions to knowledge and the ways in which the themes are interrelated form a particular focus. A cross-period approach has been taken wherever the available evidence allows. The EMHERF has been supplied with a summary of the results, which are set out in detail below.

Archaeological and Historical Background

Nearby Investigations

The countryside traversed by the Interconnector route, while not quite a blank on the archaeological map, had until recently largely missed out on the marked increase in excavated data brought about by the 1990s’ embedding of archaeological practice within the planning system. South-east Lincolnshire is a somewhat peripheral area nationally; it does not lie between urban or industrial centres and so is crossed by few strategic road or rail links that might require improvement or expansion. Its character is overwhelmingly rural, and it contains no commercially viable mineral resources. As such, there have been few of the landscape-scale developments that have driven archaeological investigations in other parts of the country. This situation has begun to change in very recent years, however. During the preparation of this volume, the closure of the last coal-fired power station in the United Kingdom was announced (BBC 2024a), and the country now pivots to energy production from renewable sources. This has finally brought the area under the archaeological spotlight, with a number of proposed solar farms (e.g., Wessex Archaeology 2023d) and onshore cabling for offshore windfarms (e.g., Allen Archaeology 2018; Christie and Hogue 2025) occasioning a sudden quickening of the pace of archaeological investigation. The Viking Link project was designed to enable the more effective use of renewable energy between Great Britain and Denmark (National Grid 2015–2025) and so is a product of the same process. Nevertheless, as such work is so recent, it is generally too soon for it to have translated into published accounts, so the contribution to archaeological knowledge has yet to be realised (but see Christie and Hogue 2025 and Gaunt *et al.* 2024).

In short, understanding of the archaeological character of the area still lags behind that of other parts of the country. Excavation and aerial survey have occurred, however,

and presented below is an account of the most informative archaeological fieldwork projects undertaken in proximity to the Interconnector route, moving from north-east to south-west along its course.

National Mapping Programme

The National Mapping Programme (NMP) seeks to identify and record all archaeological sites and landscapes visible on aerial photographs, and the initial study of Lincolnshire was undertaken by the Royal Commission on the Historic Monuments of England between 1992 and 1997 (Historic England 2013). Aerial photographs from an area of almost 5000 square kilometres were consulted, and this resulted in the creation of 14,000 records of which nearly 70% were ‘new’ (Bewley 1998a, 9), i.e., related to previously unrecorded sites. Not all of Lincolnshire was covered, however, and in essence, Zone 3 of the Interconnector route lay beyond the Lincolnshire NMP project area (*ibid.*, fig. 1).

Within Zone 1 (the Lincolnshire Marsh), cropmark evidence of past settlement was ‘sparse and well scattered’ (Carter 1998, 102, fig. 1), with medieval records more frequently recorded than those of a Roman date (Bewley 1998a, figs 2–4). Cropmarks and earthworks were much more visible across Zone 2 (*ibid.*), and although on the chalk Wolds Romano-British settlements were thinly dispersed, they were found to be very widespread within the Lymn Valley (Jones 1998a). Within the 1998 volume that showcased the results of the Lincolnshire NMP survey (Bewley 1998b), consideration was given to what extent the distribution of cropmarks and earthworks reflected the original use of land and how much the visibility and survival of cropmarks had been affected by differing soil conditions and subsequent land-use. By providing excavated evidence to complement the overview provided by the NMP, the results from Viking Link can help answer such questions, enabling the integration of different evidence types that would permit the ‘fuller and greater understanding of the archaeological landscapes’ that the Lincolnshire NMP called for (Bewley 1998a, 12).

Partney Bypass

Investigations in 2003 and 2004 along the route of the Partney bypass revealed ‘a nationally important prehistoric and Iron Age/Roman ritual landscape’ to the west of the town (Archaeological Field Unit 2005) and located the remains of a documented but otherwise lost medieval rural monastic hospital (Atkins and Popescu 2010). A Late Iron Age–Romano-British settlement was also investigated. The bypass sites lay around 1.5 km east of the Interconnector route; to date, only results from the medieval hospital, that of St Mary Magdalene, have proceeded to full publication.

Covenham to Boston pipeline

A total of 27 sites were excavated along this 60 km pipeline, which was crossed by the Interconnector route at three locations in the Lymn Valley and northern Fen margin. The sites spanned a range of periods, with those of Iron Age and Romano-British date period most common; the project results overall serve as an informative, if so far unpublished, transect of the archaeology of the Lincolnshire Wolds and the northern Fen-edge (Oxford Archaeology East 2014). Details of those sites within 2 km of the Interconnector route are tabulated below.

Table 1.2 Covenham to Boston sites close to Viking Link

Site code	Summary of remains	Distance from Viking Link route	Distance to closest Viking Link site
N2	Neolithic pottery and flints, Iron Age ditches, potential ceramic figurine of a bull of Late Bronze Age date	1.3 km E	1.5 km SE of Raithby Crossroads
N3	Neolithic pottery and flints, Bronze Age pottery from pits and ditches, Iron Age features including enclosure ditch and four-post structures	0.9 km E	1.1 km NE of Wood Hill
Y1	Ditches and a midden with Middle Bronze Age pottery, flint and burnt stone	0.2 km SE	0.4 km SW of Staunch Farm
Q1	Natural hollow containing four undated and poorly preserved inhumation burials	1.5 km SE	1.6 km S of Staunch Farm

Scremby Anglo-Saxon cemetery

Following its discovery by a metal detectorist, an early (6th–7th century) Anglo-Saxon inhumation cemetery was excavated by Lincolnshire Portable Antiquities Scheme Finds Liaison Officers and staff and students from the University of Sheffield (Brundle 2019). The remains of 8 adult males and 29 adult females were recovered, alongside 12 unsexed burials of which three were neonates. Only one grave was unfurnished (i.e., contained no grave goods). The furnished graves suggested affinities with those living on the south coast of England, as well as trading routes encompassing East Africa, as evidenced by the presence of elephant ivory bag rings. The site lay 4.1 km to the south-east of Callow Carr Anglo-Saxon cemetery dug as part of Viking Link investigations (see below). The cemetery at Scremby also awaits comprehensive publication.

Fenland Management Project

Fieldwalking in 1983–4 in parts of the northern Lincolnshire Fens coincided with areas later crossed by the Interconnector route, principally in the parishes of East and West Keal and Stickford (Lane and Hayes 1993). Mesolithic flints were found densely scattered in this area, along with six Neolithic axes, either complete or fragmentary (*ibid.*, 37). Continuity of settlement into the Bronze Age was evidenced by finds of pottery from Hagnaby and Stickford, although very little evidence of Iron Age activity was recovered. Similarly, the sparseness of Roman material led to the observation that ‘the Roman sites on the northern fen-margins display no great signs of wealth and their interest to archaeologists must lie in the reasons behind their unremarkable nature’ (*ibid.*, 57). A concentration of finds near Staunch Lane (see below) at Hagnaby Lock was later targeted for excavation as part of the Fenland Management Project, resulting in the identification of a Late Bronze Age settlement (Crowson *et al.* 2000, 149–155). Ard marks uncovered at this site were interpreted as ‘conclusive evidence for arable production’ (*ibid.*, 155).

Triton Knoll Electrical System

Excavation of over 15 sites located between Anderby Creek on the Lincolnshire coast and Bicker Fen revealed slight prehistoric activity and much evidence of Iron Age and Romano-British settlement and saltmaking, and also provided insights into post-medieval rural industry, including clay extraction and brick manufacture (Christie and Hogue 2025). Unfortunately, it was not possible to obtain information on the results of the Triton Knoll work during the preparation of the current volume.

Bicker Fen Substation

In 2019, archaeological investigations at the Bicker Fen Substation, which lies at the southern end of both the Viking Link route and the Triton Knoll Electrical System, uncovered a farmstead of mid–late Romano-British date that was succeeded by an Anglo-Saxon field system (Gaunt *et al.* 2024). Mixed farming was practised on the site during its Roman phase, albeit with an emphasis on beef production. One of the Viking Link excavations (North lng) lay on the periphery of the Substation site and revealed ditches spanning the same time periods.

Period Summaries

The results of the excavations are not the only form of useful data, and most accounts of the archaeology of Lincolnshire have drawn on – indeed in the absence of intrusive work have had to draw on – information from surface finds, place-names and other strands of evidence. Some of these accounts have been used in the section below to assemble a summary of the regional archaeological background as it relates to the route and archaeology of the Viking Link Interconnector.

Pre-Iron Age

At the beginning of the Mesolithic period (10,000–4000 BC) this part of the country was far inland and the view eastward from the Wolds would not have been towards

the North Sea but to the marshes and rolling woodland of what is now termed Doggerland. Surface finds of flint tools are the most obvious evidence of the period from the parts of Lincolnshire crossed by the cable route. These are far from common, however, and very scarce along the Fenland portion of the route, where later deposits obscure the earlier prehistoric horizon. On higher ground, flint scatters are known in the Lymn valley and on the southern edge of the Wolds overlooking low-lying land to the south (Bennet 2009, 19). Mesolithic flints have also been recovered from the Fen-edge near East and West Keal, and at Hagnaby Lock (Lane and Hayes 1993). Doggerland had been inundated by rising sea levels by around 6000 BC, with further marine incursions from the Middle/Late Neolithic leading to peat development and the deposition of marine silts, sands and clays in the area of the northern Fen-edge (*ibid.*, 41). Chapter 2 provides more detail on land–sea interaction across time in relation to the Interconnector route, and how this has affected the opportunities for human utilisation of the landscape.

In terms of the Interconnector route, signs of activity in the Neolithic period (4000–2200 BC) are most common from the Wolds and Lymn Valley. Indeed, the Lincolnshire Wolds contain a nationally significant concentration of Neolithic long barrows and elongated enclosures, and their presence presumably reveals the relative importance of the area at that time (Bennet 2009; Jones 1998b). One of the type-sites for such monuments, Giants' Hills near Skendleby ('a classic in the literature of the Neolithic period in Britain': May 1976, 46), lies within 2.5 km of the route where it passes near Dalby. Occupation sites are rare, however, and settlement patterns are poorly understood (*ibid.*, 64; Last and Willis 2023, 13). Worked stone finds remain an important data source, and a cluster of findspots of Neolithic axes from the sand or gravel soils of the Lymn Valley (Bennet 2009, 20) further highlights the potential of this part of Lincolnshire for the understanding of the period. The presence of imported stone tools – such as axes from Cumbria (May 1976, fig. 30) – and pottery types of common currency at the national level attests to the communion that this part of the country enjoyed with the wider world even during these early times.

As with the Neolithic record, the evidence from south-east Lincolnshire relating to the Bronze Age (2600–700 BC) is thin, dominated by funerary monuments and surface finds, the underlying settlement pattern only dimly perceived, and excavated evidence is limited. Bronze Age barrows are more numerous than the long barrows that some might see as characteristic of the Lincolnshire Wolds, although fewer have been excavated, and most of the known examples have been levelled (Last and Willis 2023, 17). The Bronze Age round barrows also have a broader distribution, extending downslope and eastwards into the Lincolnshire Marsh, with examples excavated at Butterbump (5.8 km south of the Viking Link White Crofts site – see below) and more distantly at Tetney (28 km north-west of White Crofts), as well as in the Lymn Valley at Salmonby (8 km west of the Interconnector route within the Lymn Valley). Later Bronze Age activity in Lincolnshire may have been commonest in the river valleys, with less evidence from the hillier and drier parts of the county (May 1976, 114, fig. 63), but the commencement of the ceremonial deposition of metalwork at the time may have distorted the picture. Numerous records of preserved wooden boats from the Witham and elsewhere in Lincolnshire illustrate how its rivers were used as transport routes in the early 1st millennium BC (May 1976 116–121).

Iron Age

As outlined above, ceremonial monuments form a large component of the archaeology of the 2nd and 3rd millennia BC, but in the Iron Age direct traces of more everyday activities, such as enclosure and settlement, become much more conspicuous in the record. Evidence deriving from the Early Iron Age remains rare, but the tempo of archaeologically impactful activity suddenly picked up in the Middle Iron Age and increased into the Romano-British period. Farmsteads comprising roundhouses with smaller structures set within more-or-less rectangular enclosures attached to trackways and associated outlying field systems began to appear during the Middle Iron Age

and form much of the regional evidence (Willis 2022). Despite all such smallholdings evidently drawing on a common and fairly restricted suite of architectural elements, no two are ever exactly alike, with the diversity of forms 'doubtless reflecting different environments, functional needs and ideas' (*ibid.*).

Most of the north-western Fens would have been inundated by around the Middle–Late Iron Age (Brew *et al.* 2000; 2015), leading to the widespread accumulation of intertidal and near-shore sediments, and making the settlement of the lowest-lying parts of the Interconnector route unviable. The spread of marine conditions opened up opportunities for salting, however, and the activity forms a distinctive element of the archaeology of Lincolnshire during this period. Salterns – salting sites – are principally identified by the presence of distinctive forms of ceramic known as briquetage, alongside evidence of burning, hearths/ovens and water management features. Together, such remains would have enabled the evaporation of sea water and allowed the collection of the salt precipitate. However, the main concentrations of Lincolnshire's salterns lie away from the parishes traversed by the Interconnector, principally around Ingoldmells to its north and Spalding to its south (Lane 2005, fig. 1; Thomas and Fletcher 2001, fig. 9.2).

Between the 2nd and 1st millennia BC there was a shift in ceremonial behaviour from a focus on funerary mound construction to the deposition of prestige objects in watery places, and this trend finds strong local expression in the Witham Valley, which the Interconnector crosses some 38 km downstream from Lincoln. During the Iron Age, a timber causeway at Fiskerton, 30 km upstream of the point at which the river is crossed by the Interconnector, was used for the votive deposition of metalwork and other finds (Field and Parker Pearson 2003). The river also gave its name to the Witham Shield, which was recovered from it in 1826. This decorative bronze shield, described as 'one of the finest and largest objects of La Tène art in Europe' (May 1976, 130), illuminates the material wealth and artistic capability of some within the wider population, characteristics that are almost entirely absent from the results of local excavations.

The Interconnector route would have lain within the zone of influence of the important Iron Age centre known at Sleaford, located 14 km west of its course. The relationship between this atypically high-status site – evidenced by unusual finds such as coin pellet moulds and continental pottery imports – and local salt production has yet to be established (Willis 2022), but the settlement would clearly have held some sway over its less-developed hinterland. Closer to the Interconnector route, the presence of a major later Iron Age settlement has been suggested at Spilsby on the basis of surface finds including coinage (May 1984).

The imminence and impact of the Roman Conquest means it has traditionally cast a long backward shadow over the Iron Age, but as more sites of the 1st millennium BC are uncovered there is now an opportunity to better understand the pattern of development within the period on its own terms: individual Iron Age sites were on their own trajectories of development.

Romano-British

Following the Roman Conquest, what is now south-east Lincolnshire would have lain within the *civitas* that had Leicester (*Ratae Corieltavorum*) as its capital, but the status and closer proximity of the urban centre at Lincoln (*Lindum Colonia*) probably meant that it formed the stronger centre of gravity within the local landscape. Lincoln lay on a crossroads of travel routes that included Ermine Street and other roads, the Witham and, eventually, the Foss Dyke canal linking to the Trent. The Interconnector crossed the course of one of these roads, the Bluestone Heath Roman road (part of road 27 of the scheme of Margary: 1967), which connected Lincoln with a probable military post and ferry crossing over the Wash at Burgh le Marsh. Unfortunately, no trace of the road was evident in the present investigations (see below). A roadside settlement

associated with this route is known at Ulceby Cross (Jones 1998a, 69; Whitwell 1970, 74–75), and would have lain within 1 km of the Interconnector route. Sleaford continued to be an important centre within the local landscape, and a small town also developed 11 km west of the route, at Horncastle. A large settlement has also been posited at Spilsby, in the Lymn Valley (Jones 1998a, 69; Last and Willis 2023, 21).

Diffusion of Romanising influences from these centres appears limited, however, and the local countryside appears to have been something of backwater instead – albeit a fairly well-settled one: aerial photographic survey of the Lymn Valley has revealed much evidence of enclosure ascribed to the Romano-British period, and this comprises small, broadly rectilinear blocks of fields set out around trackways (Taylor 2007, 64–65). Similarly strong signals of occupation from around Viking Link's course across the Lincolnshire Marsh are not known (Ellis *et al.* 2001, 66; Whitwell 1970, 75), but recent work further north within the Marsh, closer to the Humber Estuary, reveals it to have been fairly densely settled in the Late Iron Age and Romano-British periods (Tuck 2023; Willis 2022, section 16). By contrast, surveys of the northern Fen-edge found only limited evidence of activity following the Conquest (Lane and Hayes 1993), although at the point at which the Interconnector passed near Sleaford it was close to an area recognised to contain major concentrations of rural settlements from the period (Smith 2016, 144–145). Notwithstanding its evident potential, south-east Lincolnshire stood out as a notably empty area when the distribution of all excavated Romano-British farmsteads was mapped as part of the *Rural Settlement of Roman Britain* project (Allen and Smith 2016, fig. 2.4). As the current volume will prove, the lack of records from this area reflects a lack of archaeological work up to that point, rather than a genuine absence of evidence.

Rural settlements at this time resembled their Iron Age predecessors, and charting how and to what extent the Conquest affected the interrelationship between their form and function is an established research goal. The settlement pattern in rural areas was dominated by small (under 1 ha), dispersed farmsteads. Regionally, the number of these increased from the Late Iron Age and into the Romano-British period, when they began to decline, gradually from the late 2nd century AD and then sharply during the later 4th century (Smith 2016, 147–149). Within the lowest-lying areas, deterioration in drainage may have played a role in the downturn (Hayes 1988, 324; Penn and Lane 2005, 10), a factor of relevance to the route of Viking Link. The use of circular timber buildings persisted in the region (Allen 2016, 262–264; Smith 2016, 167–168) although rectangular buildings in stone increased in number, but less so here than in other parts of the country. Broadly speaking, mixed arable and pastoral agriculture was the main farming regime, with spelt wheat and barley being the staple crops and cattle the most common stock. Within and around the Fens, saltmaking continued after the Conquest, although signs of the activity dwindle after the 2nd century AD (Lane 2005, 47; Smith 2017, 236).

Typical farmsteads tend to contain few Romanised finds, especially away from the Fens, and the persistence of 'native' styles of pottery following the Conquest means that the start of the Romano-British period is poorly defined on many sites. Coins are rare, despite the presumption that at least some farm goods were being produced for off-site consumers (Allen 2016, 274; Smith 2016, 183–184). The landscape was densely imprinted with marks of enclosure and settlement, but the direct physical remains of the people responsible are so rare as to suggest the continuation in the countryside of the Iron Age funerary traditions that rendered the dead largely invisible in the archaeological record (Brownlee and Klevnäs 2024; Smith 2018). Only around a quarter of excavated basic farmsteads show evidence of the burial of human remains, and where present, interments are few in number (around five). These may be found in small cemeteries or as single graves, often inserted into field system ditches. Broadly speaking, there was a shift in burial rite from cremation to inhumation between the early and late Romano-British periods, although the recoverable individuals would have been anomalies as, to reiterate, 'the evidence suggests that funerary practices

that did not result in the interment of the individual were a consistent feature of the countryside in most parts of Roman Britain' (Smith 2018, 277).

Anglo-Saxon

Archaeologically detectable activity decreases markedly following the withdrawal of the Roman imperial administration, an event traditionally dated to AD 410, but many rural sites appear to have been abandoned before that date. It can be argued, however, that many of the farmsteads and other rural foci actually remained operational after this date, but their use became 'invisible' because of the lack of material culture brought about by the disruption/cessation of pottery and coinage supplies. Radiocarbon dating has potential to cast light on the matter, but would require further research at the broad level. In the meantime, it is generally assumed that the rupture in the settlement pattern in the 5th century AD reflects a genuine downturn.

With the rarity of artefacts from the immediate post-Roman period, the everyday circumstances of the population are obscure, and material culture from the period is most commonly encountered in funerary contexts. Cemeteries provide the richest data source on activity within Lincolnshire during this period. The evidence is characterised by a small number of fairly large cremation cemeteries giving way from around the 6th century to a large number of smaller burial grounds where inhumation was the preferred rite. The distribution of the large 'centralised' early cemeteries may reveal the territories of particular groups (Green 2020; Leahy 1993), with the presence of more numerous but smaller cemeteries dispersed across the landscape signalling a change in political organisation during the period. The closest of the early large cemeteries to the route of the Interconnector lay just 1.5 km to its west on Hall Hill at West Keal, where around 1000 burials may once have been present (Green 2020, 202; Thompson 1956). The site has, however, not been systematically excavated, and is severely affected by ploughing.

The scale and nature of the movement of people from parts of the Continent and Scandinavia across the North Sea in the 5th and 6th centuries AD has long been debated (see Lucy 2000 for summary). Recent DNA work has proven informative, with the results seeming to confirm substantial migration from north-western Europe into Britain during the Early Middle Ages (Gretzinger *et al.* 2022). The results also indicate that, contrary to some earlier assumptions, the presence of certain distinctive grave goods is not a reliable guide to the ethnicity of the deceased. The picture from the study by Gretzinger *et al.* is, however, not a simple one, with evidence of different degrees of integration of people with differing ancestries, and much regional variation and heterogeneity between and within different cemeteries (*ibid.*). Therefore, within this volume, the term 'Anglo-Saxon' carries primarily chronological connotations.

Conversion to Christianity 'officially' began c. AD 627–8 in Lincolnshire (Green 2020, 46), and was soon followed by the end of the furnished cemeteries that represent one of the best sources of archaeological data for the period. At this time, monasteries began to be established in Lincolnshire, with that at Partney founded in the mid- to later 7th century (Coppack 2010, 208). Its location is unknown, but it is presumed to have lain within or close to the modern settlement, so probably around 1.5 km to the east of the Interconnector route, where it presumably had some influence over its surrounding landscape. Conversion was driven by the social elite – 'in its earliest stages the conversion was a political movement determined by kings' (Stafford 1985, 98) – and it was slow to show effects in the countryside. For example, the cemetery at Callow Carr (excavated as part of the Interconnector investigations) probably remained in use for several decades after the establishment of the monastic house at Partney, 2.5 km to its south.

Most of the Interconnector route would have lain within the short-lived Anglo-Saxon kingdom of Lindsey, which emerged from a coalition of smaller tribal groups around the start of the 7th century, and was eventually absorbed by Mercia after the Battle of the Trent in AD 679 (Albone 2000, 2). The *Billingas* population group may have been

centred around Sleaford, and had within their territory the 'productive site' at Garwick, seemingly (to judge by surface finds in its vicinity) an important entrepôt and trading site from the 6th century through to the mid-8th century (Green 2020). This originally would have lain on a watercourse that led downstream to the Bicker Haven estuary and sea inlet (*ibid.*, xlvii), and around 3.5 km west of a concentration of Romano-British activity discovered during the Interconnector investigations.

Few Anglo-Saxon settlements have been investigated in south-east Lincolnshire, but examples are known close to the Interconnector route in the Lymn Valley – at Halton Holegate (Ramsey 2004) and Salmonby (Everson 1973) – and in the Fens from Boston (Palmer-Brown 1996). These sites are located 3.8 km, 6.4 km and 14 km from the Interconnector route respectively. Rectangular building traditions were the norm in the period, either involving post-built structures or sunken-featured buildings. So far as can be discerned from the scant evidence of inhabitation, mixed farming held sway, and cattle remained the main source of meat in this period, with agriculture revolving around the sort of enclosures and droveways that would have been familiar to Iron Age or Romano-British inhabitants of the countryside (Albone 2000; Research Frameworks 2024).

Towards the end of the Anglo-Saxon period, construction of a sea bank (or concerted works to link various earlier and separate sea banks) brought a degree of protection to the most coastal parts of the Lincolnshire Marsh, thus allowing land to be reclaimed, and setting in train subsequent changes in settlement pattern (Penn 2005). The history of the sea bank is poorly understood, but its existence prior to the Norman Conquest is attested by its presence within *Domesday* records (Stafford 1985, 6).

Medieval and later

No remains of any significance dating to these periods were found along the course of the Viking Link Interconnector, so its archaeological background requires only the briefest of outlines. The area crossed by the route of the Interconnector was overwhelmingly rural during the 2nd millennium AD – and remains so to the present day. During the Anglo-Saxon period, settlement of the countryside became more nucleated as parish churches were established, with accompanying population centres. Around the Fen-edge, this process may have occurred in the 7th century (Hayes 1988, 324–5; 1994, 27), and been a c. 9th-century development on the Wolds (Bennet 2009, 30). These villages were surrounded by the fields upon which the inhabitants relied for sustenance, and as the Interconnector was routed to avoid existing settlements, so it follows that their medieval predecessors were also excluded from the area investigated by Viking Link. Excavated medieval and later remains were overwhelmingly agricultural in nature, comprising occasional dispersed field boundaries, minor tracks and the bases of cultivation furrows. The ploughing that the cultivation of this area has entailed has impacted earlier archaeological horizons. Virtually all the sites investigated as part of the Interconnector scheme were found directly beneath the ploughsoil, with no intervening deposits, so the record has obviously been diminished by ploughing and other agricultural operations.

The other large-scale process to have affected the landscape and its archaeological component since the medieval period has been the provision of artificial drainage. Admittedly, human activity on the Fens and Fen-edge parts of the scheme would always have involved some degree of water management, as evidenced by the ditches that are characteristic of occupation sites across many periods – large-scale drainage attempts in the Fens may have begun with the construction of the Car Dyke during the Romano-British period, which has a possible interpretation as a catchwater (Hall and Coles 1994, 109; Smith 2016, 149). But it was not until the 17th century that thorough-going drainage of the Fens began (*ibid.*, 13), a process not completed in the northern parts of the Lincolnshire Fens until the 19th century (Lane and Hayes 1993, 66; Simmons 2025, 1). The mechanisation of drainage (an advance on schemes based on channel-cutting and gravity alone) led to reclamation on an enormous scale, with the former wetlands of the Fenland basin transformed into fertile agricultural land. The net effect

on the archaeological record has been negative, however, with sites containing evidence of the area's former use now vulnerable to the plough, and desiccation of formerly waterlogged deposits leading to the loss of organic remains.

Chronological Note

Period divisions within this volume largely follow the chronological framework of the Forum on International Standards in Heritage (FISH), but with subdivisions within the Iron Age following those of the East Midlands Historic Environment Research Agenda and Strategy (Research Frameworks 2024). Thus:

Bronze Age: 2200 to 700 BC

- Early Bronze Age 2200–1600 BC;
- Middle Bronze Age 1600–1200 BC;
- Late Bronze Age 1200–700 BC.

Iron Age: 700 BC to AD 50

- Early Iron Age 700–450 BC;
- Middle Iron Age 450–100 BC;
- Late Iron Age 100 BC–AD 50.

Romano-British: AD 50–410

- Early Romano-British AD 50–120/130;
- Middle Romano-British AD 120/130–250;
- Late Romano-British AD 250–410.

N.B. The term 'Saxon' as used in the post-Roman pottery report relates to the established technical vocabulary within local ceramics studies and does not imply assumptions about geographic origins or ancestry.

Organisation of this Publication

Chapter 2 provides an overview of a summary of how changes within sea level and attendant drainage and deposition regimes have affected the landscape that the Interconnector crosses, and the archaeology of that landscape.

Chapter 3 presents a summary of the most significant sites encountered on the Interconnector. It is arranged geographically, moving generally from north-east to south-west, from the scheme's landfall on the North Sea coast to its destination at Bicker Fen. Further information on the excavation results from these sites is presented in Volume 2.

Chapter 4 provides a round-up of the sites of secondary importance. These sites have been grouped by period and, within that structure, are then also presented moving from north-east to south-west along the scheme.

Chapter 5 comprises a synthesis of the results with a consideration of how the project has contributed to the research aims that guided it.

The results of the specialist analysis of the environmental and artefactual material recovered from the Interconnector are presented in Volume 2, following the fuller account of the remains at the principal sites. Also available is an online data supplement that contains further specialist tables and reports, which unfortunately could not be accommodated in Volume 2. The online data supplement can be accessed at: <https://doi.org/10.5284/1136099>

CHAPTER 2

LAND AND SEA

Daniel Young

Summary

SEA LEVEL RISE DURING THE PRESENT INTERGLACIAL (the Holocene, beginning 11,700 years ago) has had a profound impact on the evolution of the landscape across the lower-lying areas of the Viking Link scheme, specifically Zones 1 and 3. The nature of the impact of sea level rise, and how quickly the changes would have been felt in different areas, was determined largely even before this time, with the underlying sediments related to previous glaciation of the area forming the topographic template on which former land surfaces, and overlying sediments, have accumulated.

On the east Lincolnshire coastline and within the Fenland embayment, the glacial sediments comprise stiff, gravelly clay tills with an undulating surface; in places, these tills rise above the level of the Holocene sediments to form isolated islands that would have survived as visible remnants of the Ice Age throughout prehistory. The Holocene sediments overlying the tills are highly variable in their character, and include organic sediments comprising remnants of former peatlands (representing a range of semi-terrestrial wetland habitats), and sands, silts and clays formed within estuarine channels/floodplains, intertidal creeks and mudflats, and submerged subtidal environments. The accumulation of these sediments varied over space and time as a result of phases of relative sea level rise (transgression) and relative retreat (regression) that occurred within an overall trend of sea level rise that started at the end of the Ice Age, and continues to this day, albeit managed by sea defence and land reclamation that began in the Romano-British period.

These combined effects have had a significant impact on the evolution of the prehistoric landscape across the scheme, and in turn, the nature of human activity and the archaeological record. The combined geoarchaeological and archaeological investigation presented in these chapters provides an opportunity to examine the complex interactions between broad-scale landscape evolution and human activity in a region subject to significant natural changes throughout the prehistoric period, examining reasons for both the presence and, at times, apparent absence of archaeology. The intention of this chapter is therefore to place the scheme and its associated archaeology within its broader landscape and environmental context, and to provide further information on the buried heritage resource represented by coastal wetland landscapes.

Introduction

The topography of the east Lincolnshire coastline has been shaped by erosive and depositional events associated with a series of Pleistocene glaciations, the rising sea levels of the Holocene, a complex interaction between freshwater and marine sedimentary processes, and finally land reclamation beginning in the Romano-British period (Darby 1940; Robson 1985). Each of these factors has had a significant impact on how people interacted with the landscape across the route of the Interconnector at various times from the Upper Palaeolithic onwards.

The evolution of the landscape began as ice retreated during the latter stages of the last ice age (the Devensian) around 17,000 years ago (Kya). The scheme is located at the very southern extent of the North Sea lobe of the British–Irish Ice Sheet (BIIS),

and not all of the area of the scheme would have been covered by ice, leading to some complexity in the age of the underlying glacial sediments. The basal superficial deposits underlying the scheme, and the wider Fenland basin, are glacial tills deposited by ice sheets during at least three different Pleistocene glaciations, in the Anglian, the late Middle Pleistocene and the Devensian. The advance of ice during the Anglian glaciation (around 424–478 Kya) is thought to have carved the low-lying area of eastern England comprising the Wash and the Fenland basin, resulting in the deposition of a chalky till that reworked the underlying mudstone and chalk bedrock (Clayton 2000).

The most recent tills are those of Late Devensian date, with ice considered to have reached its maximum extent within the Wash at c. 19–17 Kya (Evans *et al.* 2019; Gibbard and Clark 2011). The maximum advance of Devensian ice is marked by the Stickney Moraine and the Hunstanton Till, which are mapped by the British Geological Survey (BGS) within Zones 1 and 2, but not extending into Zone 3. Sedimentation from glaciofluvial outwash, and for several decades a proglacial lake, would have dominated south-west of the ice in the Fenland basin during this cold stage.

The retreat of ice at the end of the last ice age was followed by Holocene sea level rise that led to widespread inundation of formerly terrestrial landscapes across the southern North Sea. The coastline of east Lincolnshire would have broadly resembled that of the modern day by around 6 Kya, at the beginning of the Neolithic, although the sea level continued to rise relatively rapidly for another 2000 years, with significant inland expansion of the North Sea across the basin continuing into the Bronze Age (Sturt *et al.* 2013). The effects of marine transgression were probably beginning to be felt in the Fenland basin during the Mesolithic, by around 7.7 Kya, with its maximum inland extent recorded during the Late Neolithic, by around 4.1 Kya (Brew *et al.* 2015). At various locations off the east Lincolnshire coast, peat and ‘submerged forests’ of Neolithic date have been exposed on till near the low tide mark, including close to Zone 1 of the scheme at Mablethorpe, Sutton-on-Sea and Anderby Creek (Clapham 1999), demonstrating the inundation of former dry land.

On the east Lincolnshire coast, sea level rise and the establishment of the coastline in its modern position led to the formation of intertidal and wetland landscapes in low-lying areas. The nature of these landscapes is influenced mainly by altitude and salinity, and either direct or indirect relationships to marine conditions and tidal regimes (Innes 2002). As a result, various environments have formed in these coastal and intertidal zones, including resource-rich wetlands, which would have been attractive locations for past human exploitation.

Peat deposits formed within coastal wetlands can provide a datum for the timing of different events associated with both marine transgression (an increase in the influence of marine conditions) and regression (a reduction in the rate of sea level rise when freshwater/terrestrial sediment accumulation outstrips sea level rise), particularly where palaeoenvironmental data is also obtained (for example diatoms, which can provide information on the relative salinity of a sequence of sediments). Basal peat deposits, for example, can provide evidence of increasing wetness associated with the onset of marine transgression, in the form of a transition from a former land surface (the ‘dry’ surface of the till) to boggy or marshy conditions in which peat accumulates. Similarly, a transition from peat accumulation to clastic sedimentation (e.g., silts and sands) can indicate a transition from boggy/marshy conditions to fully estuarine or marine environments as a result of sea level rise. Conversely, a transition from clastic sedimentation to peat can represent a reduction in marine influence and a transition from estuarine to freshwater, boggy conditions.

As a response to a reduced rate of sea level rise after the initial rapid rise during the early and middle Holocene, various phases of local marine regression and transgression are evident in sedimentary records throughout the Bronze Age and Iron Age, and on the basis of radiocarbon dating, the main phase of peat accumulation across the Fenland

basin coincides with this period (Brew *et al.* 2000). This was followed by a renewed, regional marine transgression that inundated much of the north-western Fenland after around 2.6 Kya, broadly at the beginning of the Iron Age (Brew *et al.* 2015), continuing until land reclamation began in the Romano-British period (Darby 1940).

How perceptible these changes were would have depended on the rate of sea level change and the total area of land lost during a human lifetime; there is no doubt, however, that at times these changes would have been perceived on a multi-generational, if not generational, level of cultural memory (Assmann 2011). The evolution of the landscape of the Lincolnshire coastline has been the subject of detailed study (Boreham *et al.* 2010; Green 2023; Humber Field Archaeology 2007; Langford and Briant 2004), with the Fenland forming the basis of several investigations of Holocene sedimentary evolution and environmental change associated with rising sea levels (Brew *et al.* 2000; Brew *et al.* 2015; Shennan 1986; Waller 1994; Waller and Alderton 1994; Wheeler and Waller 1995). This body of work provides a useful landscape and environmental background to the results of both the archaeological and geoarchaeological investigations undertaken for Viking Link, enabling the results to be placed in the context of significant changes to the south-east Lincolnshire coastline that would undoubtedly have had an impact on the communities that lived there in the past.

Information on the depth and form (topography) of former land surfaces can provide an indication of the likely impact of sea level rise during the prehistoric period, particularly in combination with radiocarbon dates on peat deposits and other organic remains such as tree stumps. In combination with sedimentological and palaeoenvironmental investigation, these dates can provide a chronology for increasing wetness or inundation associated with sea level rise, as well as a reduction in the influence of marine or estuarine conditions. It is important to note, however, that in some cases, particularly where directly datable horizons such as peat or obvious stratigraphic markers are not present, distinct phases of marine regression or transgression may not be evident in the sedimentary record, and archaeological evidence may provide more obvious evidence for the exploitation of formerly unsuitable habitats.

The Early Holocene Landscape and Sea Level Change

The topography of the early Holocene landscape, formed mainly by the surface of the underlying glacial till, would have had a significant effect on the influence of sea level rise across the east Lincolnshire coast and the Fenland embayment. In these areas, the surface of the Pleistocene till, and within major fluvial systems the surface of the Late Devensian fluvial gravels that infill incised valleys, form the template on which Holocene sediments have accumulated. Differences in the underlying pre-Holocene land surface, including the presence of depressions or basins open to the sea, would have significantly influenced the evolution of the coastline in different areas (Brew *et al.* 2015).

On the east Lincolnshire coast, Zone 1 of the scheme is underlain by Late Devensian glacial deposits that are incised by rivers draining from the foothills of the Wolds to the sea, forming valleys that are now exploited by the heavily modified Boy Grift Drain and the Wold Grift Drain. These river valleys cross the scheme close to Saleby and Asserby, and the BGS records alluvium and Tidal Flat deposits in the upper and lower reaches of these rivers respectively, the latter forming the estuarine stretch of the river. East of Asserby more broadly, the BGS has mapped Tidal Flat deposits extending to the modern coastline, where these sediments are overlain by the recent beach and dune system. Work by James Rackham (Environmental Archaeology Consultancy 2020), which included auger holes and a review of BGS boreholes within Zone 1 of Viking Link, showed that the coastal plain from the landfall to Asserby was underlain by relatively deep (occasionally reaching over 6 m in thickness) intertidal and estuarine sediments, overlying a chalky glacial till that in places lay below an elevation of -3 m OD. On the basis of BGS boreholes and seismic data, Brew (1997) describes the surface of the till

at the coast between Mablethorpe and Sandilands at elevations between -9.5 and -4.3 m OD, falling from -4.9 to -10.4 m OD at Sandilands and marking the northern side of a buried valley with a base at -14.2 m OD. Channel sediments comprising sands have been identified in a similar valley feature, now exploited by the Boy Grift Drain, by York Archaeology (2022) 350 m to the south, demonstrating the potential longevity of these drainage features throughout the Holocene.

West of Asserby, Zone 1 is predominantly underlain by glacial sediments comprising Late Devensian till and glaciofluvial sands and gravels that outcrop at levels above 4 m OD in the east, steadily rising to around 25 m OD in the west. This area is outside of the coastal zone, but the glaciogenic deposits are incised by a river valley near Asserby Turn (now draining into the Wold Grift Drain) that is likely to have been influenced by tidal regimes during the Late Holocene, with the modern surface of the floodplain in this valley lying at around 3 m OD.

Zone 2 of the scheme occupies the higher ground of the Lincolnshire Wolds, where the bedrock is formed of chalk, sandstones and mudstones at elevations above 50 m OD. Superficial deposits of Holocene alluvium and Pleistocene fluvial gravels are recorded only in the upper valley of the River Lymn, and in the south-western part of Zone 2, where elevations fall below 10 m OD and Pleistocene glacial sediments are present. As such, the ground surface here remained outside of direct coastal influence throughout the Holocene.

In contrast, Zone 3 comprises the low-lying ground of the Fenland basin, with elevations rising only infrequently above 3 m OD and in parts falling below modern sea level. The landscape within this zone was extensively drained from the early 17th century onwards and comprises arable land with dark friable peat soils which have been farmed over hundreds of years. The landscape is divided by straightened drainage channels, many of which ultimately discharge into the canalised River Witham and River Welland, which converge at the coast south of Boston. As the effect of Holocene sea level rise started to be felt across the Fenland basin, the undulating land surface formed by the Pleistocene till would have been progressively inundated by sediments forming in intertidal, subtidal and in places fully marine environments. Zone 3 of Viking Link was the subject of extensive geoarchaeological investigation both by Rackham (Environmental Archaeology Consultancy 2020) and as part of the archaeological investigations (Wessex Archaeology 2022). The lower-lying areas of Zone 3 would have been the first to experience the effects of rising sea levels during the early Holocene, and the nature of the subsequent deposits overlying the till reflects the complex interaction between phases of marine regression and transgression in this Zone.

Holocene Evolution of the Lincolnshire Outmarsh

The area of low-lying land from the coastline to the low hills east of the Lincolnshire Wolds is described as the Lincolnshire Marsh (Swinerton 1931), an area historically divided into the Inner, Middle and Outmarsh. Zone 1 of the scheme crosses the Outmarsh, lying at elevations below 5 m OD, and the Middle Marsh, rising to 25 m OD towards the Wolds. Cretaceous chalk of the Burnham Chalk Formation is overlain here by Late Devensian till associated with the North Sea lobe of the BISS. Following the retreat of ice, the undulating surface of the till across this area would have formed a terrestrial land surface during the Late Upper Palaeolithic, through to at least the Neolithic, although small lakes or meres may have formed within localised depressions in the till, and in places the scheme is traversed by river valleys draining from the Wolds that are now exploited by the modified Wold Grift and Boy Grift Drains. Upstanding elements of the Pleistocene till, including those associated with more prominent moraines, would also have been evident in the landscape within the Outmarsh throughout much of the prehistoric and into the historic period, eventually forming drier 'islands' surrounded by mudflats and saltmarsh. These prominences have formed

the foci of early settlement in this area, attested to by evidence of Romano-British occupation uncovered during excavations at the White Crofts site.

On the basis of the auger survey undertaken by Rackham (Environmental Archaeology Consultancy 2020) within Zone 1, and the interpreted low geoarchaeological potential of the deposits, no additional geoarchaeological boreholes were undertaken within this area as part of the archaeological mitigation. However, interpretation of BGS archive boreholes and a seismic profile along the east Lincolnshire coastline carried out by Brew (1997) provides information on the evolution of the Outmarsh as a response to rising sea levels during the Holocene, building on the previous work of Van de Noort and Davies (1993) and Davies and Van de Noort (1995). Brew (1997) recorded four main groups of sediments overlying the till, including a basal unit dominated by organic silty clay with peat inclusions and occasional fine sand layers; a discontinuous clayey peat, referred to as the 'intermediate' peat, 0.3 to 1.3 m thick; an occasionally sandy, silty clay with clayey peat lenses at its base, containing foraminifera (single-celled organisms) indicative of formation in a saltmarsh; and up to 1.7 m of fine to medium sand associated with the modern beach. Combined, these units were up to 10.8 m thick, with thicker sequences recorded within the buried valley identified at Sandilands, although the basal peat is absent there. At Sandilands Golf Club, the northern part of which falls within Zone 1, the till rises south of the buried valley and is overlain by a basal peat around 0.5 m thick with a surface at between -1.9 and -1.1 m OD; Brew (1997) interprets this peat as equivalent to the lower peats at Chapel Point (see below).

The Holocene sequence infilling the valley is described by Brew (1997) as a fining-upwards sequence up to 11.5 m thick, with basal gravelly sands containing oysters, grading into a silty, fine sand with shells, silty clays containing estuarine and shallow marine foraminifera, and finally a discontinuous clayey, sandy silt. The valley fill is overlain more broadly by up to 2.2 m of organic, laminated silts and clays containing estuarine and saltmarsh foraminifera, in turn overlain by the sands of the modern beach (Brew 1997). It is likely that when it was in use in the Romano-British and early medieval periods, the site at Sea Bank Farm (see below) would have lain on the edge of this channel, which at this time would have formed a relatively major tidal inlet.

Although Rackham (Environmental Archaeology Consultancy 2020) noted a possible buried soil in auger hole A32, no peat units were identified in a series of auger holes within the footprint of Zone 1 of Viking Link. However, the work of Gaunt and Tooley (1974), Van de Noort and Davies (1993), Davies and Van de Noort (1995), Brew (1997), Clapham (1999), Shennan *et al.* (2000), and more recently Allen Archaeology (2020) and York Archaeology (2022), have provided sea level index points (a datum that defines the position of relative sea level at a given point in time and space) for the broader area of the scheme. These demonstrate the timing of both marine transgressive and regressive phases within the Lincolnshire Marsh, as well as the stratigraphic complexity of the intertidal sediments associated with the overall trend of rising sea levels during the Holocene.

Sediments in buried valleys within the Lincolnshire Outmarsh, including those close to Zone 1 of the scheme, provide evidence for marine or estuarine influence as early as the Late Mesolithic. The earliest date indicative of marine transgression in a context broadly comparable to that within Zone 1 of Viking Link is associated with the onset of saltmarsh conditions at Theddlethorpe, where Shennan *et al.* (2000) radiocarbon dated peat deposits located at -10.95 m OD to 7230 ± 55 BP (6225–5995 cal. BC). This early date demonstrates the potential for estuarine influence within channels incised into the underlying till as early as the Late Mesolithic. As noted above, York Archaeology (2022) recorded sands within a similar palaeochannel incised into the till within Zone 1 towards the north of Sandilands Golf Club (BGS borehole TF57NW58), now exploited by the Boy Grift Drain. Similarly, around 350 m to the north, Brew (1997) described a separate buried valley with a base at -14.2 m OD, and an estuarine influence within these valleys may have been evident at least as early as that identified at Theddlethorpe.

Although no peat deposits were identified within the immediate fill of the channel recorded by York Archaeology (2022), lower basal peats overlying till, and an upper 'intermediate' peat embedded within intertidal sediments, were identified within depressions in the surface of the till at elevations between -6.28 and -2.40 m OD at Sandilands Golf Club. Radiocarbon dating of the top of the basal peat at Sandilands at -4.69 m OD indicated that marine transgression here occurred during the Early Neolithic (5060 ± 60 BP; 3975–3660 cal. BC), although the base of this peat at its contact with the till, potentially indicative of increasing wetness associated with an earlier transgression, was undated (York Archaeology 2022). The dating of the 'intermediate' peat at Sandilands Golf Club at -3.49 m OD, indicative of a subsequent marine regressive phase during the Middle Neolithic, was dated to 4610 ± 30 BP (3515–3200 cal. BC), very similar to the dated peat from BGS archive borehole TF59SW71, close to Sandilands (see Fig. 2.1). Here, a peat at -3.50 m OD was radiocarbon dated by Brew (1997) to 4540 ± 70 BP (3510–3015 cal. BC). Allen Archaeology (2020) obtained radiocarbon dates on peats within an alluvial sequence south of Viking Link for Triton Knoll, ranging in age from 2575–1770 cal. BC (Late Neolithic to Early Bronze Age) at elevations between -1.48 and -0.99 m OD, coinciding with Shennan's (1986) regressive phase (see below).

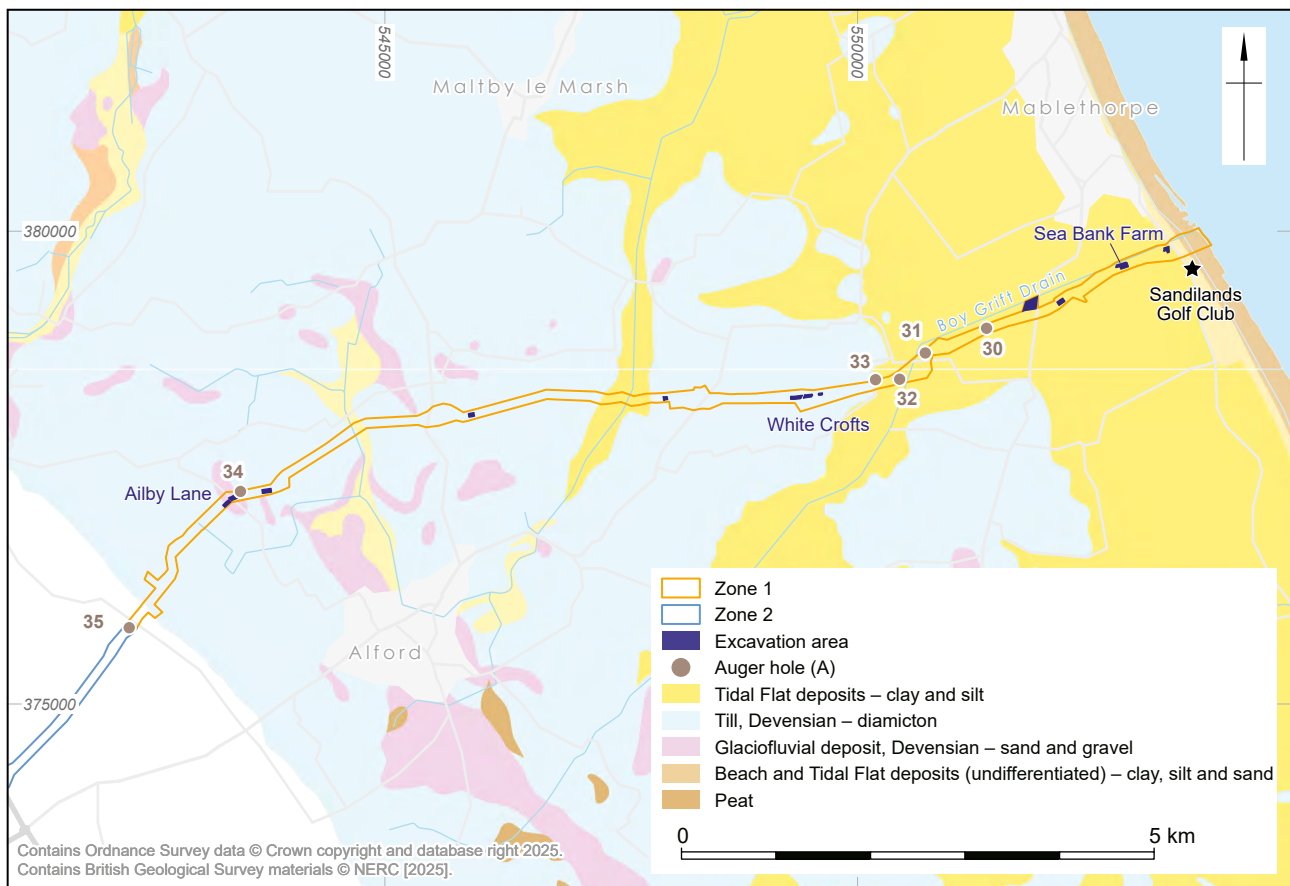


Figure 2.1 Location of Viking Link Zone 1, showing auger hole locations (Environmental Archaeology Consultancy 2020), excavation areas and BGS superficial geology

The evidence from the Lincolnshire Outmarsh thus provides an indication of a number of regressive and transgressive phases during the Early Neolithic through to the Early Bronze Age, albeit occurring within an overall trend in relative sea level rise. Oak and alder stumps within peats at Wolla Bank and Anderby Creek were radiocarbon dated by Clapham (1999). The elevation of these deposits was not recorded, but they were exposed below the low tide mark and four radiocarbon dates returned ages within the Early to Late Neolithic, between 3800 and 2935 cal. BC. At Chapel Point, Gaunt and Tooley (1974) provided evidence of marine transgression at the end of the Neolithic or early in the Bronze Age, dating the top of a lower peat deposit at -1.83 m OD to 3943 ± 110 (2865–2135 cal. BC). Peat deposits at higher elevations at Chapel Point, at between 0.12 and 0.40 m OD, have provided evidence for both regressive and

transgressive phases dated to the Early Bronze Age through to the Iron Age (Gaunt and Tooley 1974).

Brew (1997) provided further evidence of a complex period of marine transgressive and regressive phases in his comparison of BGS archive boreholes and a seismic profile with the summaries presented by Van de Noort and Davies (1993) and Davies and Van de Noort (1995), as well as work in the Fenland basin (Shennan 1986). Brew (1997) demonstrated that the widespread basal peat between Mablethorpe and Sandilands is likely to be associated with marine regression during the Early Bronze Age, equivalent to Shennan's Fenland IV (c. 2550–2250 (1950) BC; see below), while the silty clays beneath the peat and resting on till may have been deposited during the Middle to Late Neolithic Wash III/IV marine transgression (c. 3450–2550 BC). A marine regression then led to the formation of the 'Upper Peat' at c. 3340 ± 110 BP (1920–1410 cal. BC) (Godwin and Willis 1964), which in turn is overlain by shelly clays dated to 2630 ± 110 BP (1015–415 cal. BC), deposited during marine transgression in the Late Bronze Age/ Early Iron Age. Brew (1997) suggests that the buried valley beneath Sandilands may have been incised during the same marine transgression that deposited the shelly clays, although direct dating of the channel fills has not yet been undertaken.

Luminescence dating of the base of the blown sands at Moggs Eye 2.5 km to the south of Zone 1 (Clarke and Rendell 2000) indicates that the dune systems overlying the alluvial sequence at the coastline were accumulating from at least the early medieval period onwards, though there is likely to be a greater complexity to the timing of these systems along the Lincolnshire coast. The surface resembling that of the present-day Outmarsh, with beach and dune systems bordering the sea, has largely formed since the Romano-British period, with saltmarsh used for grazing and in some areas arable farming through much of the medieval and post-medieval periods, and late 18th and 19th-century drainage and enclosure allowing the area to be used more widely for agriculture (Humber Field Archaeology 2007). This modification of the landscape and progressive reclamation would have been occurring during a period of well-documented marine transgression, with intervening regressive phases, from the Romano-British period onwards (see Brew *et al.* 2000; Shennan 1986).

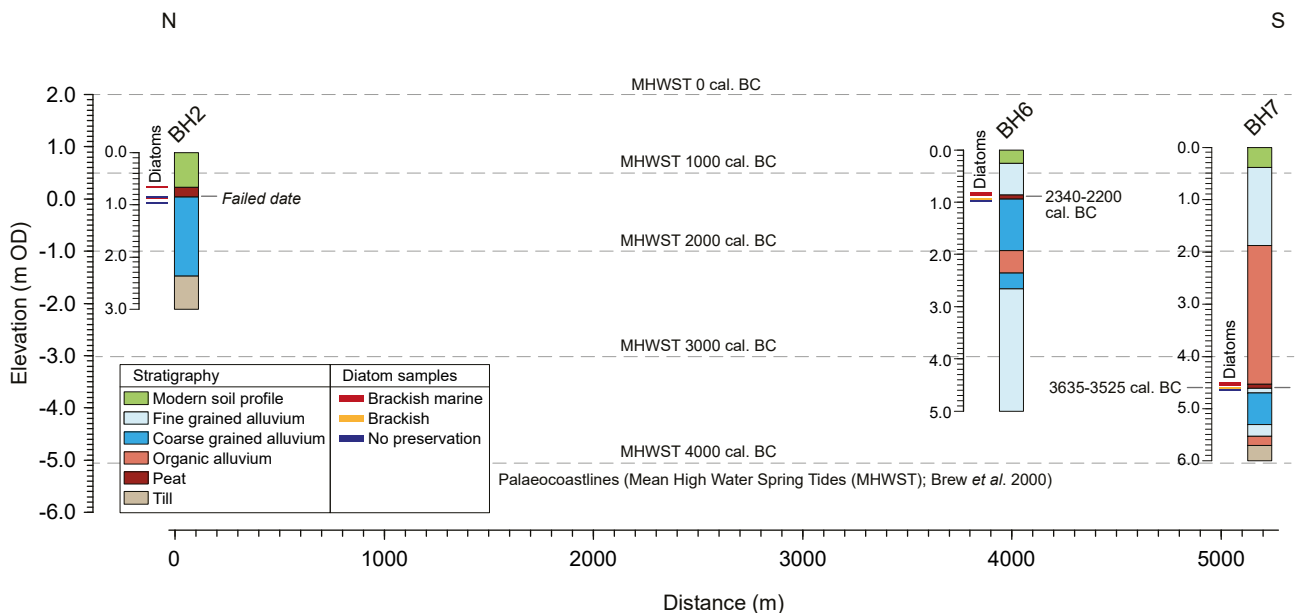


Figure 2.2 Lithostratigraphy and results of the radiocarbon dating of boreholes BH2, BH6 and BH7, showing approximate elevation of the palaeocoastline from 4000 cal. BC to 0 cal. BC (MHWST; Brew *et al.* 2000)

Holocene Evolution of the Fenland Embayment

The present coastline of the Fenland embayment is demarcated by a long line of embankments built for sea defence, forming the culmination of a series of seaward-progressing land claims that began in Romano-British times (Darby 1940; Robson 1985). Zone 3 of Viking Link is located 15–20 km inland of the contemporary coastline, in an area known as West Fen and Wildmore Fen. The scheme crosses an area described by the Fenland Project (Lane and Hayes 1993) as the Northern Fen-edge and by Brew *et al.* (2015) as the north-western Fenland. Zone 3 crosses fenland to the west of the Stickney Moraine, an area of upstanding till rising above about 5 m OD that demarcates the maximum extent of ice during the Late Devensian (Evans *et al.* 2019). The Stickney Moraine separates West Fen from East Fen.

Holocene palaeocoastlines and the evolution of the Fenland embayment have been the subject of several previous studies. Shennan (1986) proposed seven periods of positive sea level tendency (marine transgression: Wash I, II, III/IV and V–VIII) and six periods of negative sea level tendency (marine regression: Fenland I, II, IV–VII) in the Fenland basin since the Late Mesolithic (see Table 2.1). For the Fenland embayment as a whole, Brew *et al.* (2000) developed this work, using an expanded database of lithological data and radiocarbon dates to reconstruct the ancient coastline at various times during the Holocene, work which was subsequently built upon by Brew *et al.* (2015) specifically for the north-western Fenland. This body of work provides a useful framework within which both the archaeology and the results of the geoarchaeological borehole survey within Zone 3 of the scheme can be placed.

Table 2.1 Sea level tendencies in the Fenland described by Shennan (1986)

Transgression	Regression	Date BC/AD	Period
Wash I		Prior to 4350 BC	Late Mesolithic
	Fenland I	c. 4350–4250 BC	
Wash II		c. 4250–3650 BC	Late Mesolithic to Early Neolithic
	Fenland II	c. 3650–3450 BC	Early Neolithic
Wash III/IV		c. 3450–2550 BC	Middle to Late Neolithic
	Fenland IV	c. 2550–2250 (1950) BC	Late Neolithic to Early Bronze Age
Wash V		c. 2250 (1950)–1350 BC	Early to Middle Bronze Age
	Fenland V	c. 1350–1050 BC	Middle to Late Bronze Age
Wash VI		c. 1050 BC–AD 50	Late Bronze Age to Late Iron Age
	Fenland VI	c. AD 50–400	Late Iron Age to Romano-British
Wash VII		c. AD 400–800	Anglo-Saxon
	Fenland VII	c. AD 800–1000	Anglo-Saxon to medieval
Wash VIII		c. AD 1000 onwards	Medieval onwards

The borehole survey (Wessex Archaeology 2022) comprised a total of 29 boreholes (BH₁ to BH₂₉) targeting areas where previous archaeological works had identified the likelihood for sediments of geoarchaeological (including prehistoric archaeological and palaeoenvironmental) potential to exist beneath more recent superficial deposits. The data from the borehole survey was combined with the results of the auger survey undertaken by Rackham (Environmental Archaeology Consultancy 2020) in Zone 3 (auger holes Ao₁ to Ao₂₅) in order to produce a geoarchaeological deposit model for this area of the scheme (Fig. 2.4).

During the present borehole survey, the surface of the till was generally recorded at elevations between about 0 and -3 m OD, only rising above this level towards the north-eastern end of Zone 3 close to Hagnaby Lock (Figs 2.2 and 2.4). In places,

however, the till has been incised by valleys associated with glaciofluvial or fluvial channel systems of Late Devensian or early Holocene date, including a broad valley towards the north-east of the scheme between BH₄ and A₁₀, where the surface of the till falls below about -5 m OD, and within the valley of the River Witham itself, where Late Devensian sands and gravels are recorded at levels between -7.3 and -8.3 m OD (Fig. 2.4). The former extent and course of channels draining both valleys are evident in LiDAR data (Fig. 2.3). The broad valley in the area of BH₄ to A₁₀ would have formed a tributary of the Witham during the early Holocene, but likely became an estuary draining into the sea by the Early Neolithic (c. 4000 BC). LiDAR data indicates that at high tide the main channels draining these valleys may have been over 1 km in width, forming significant features of the prehistoric landscape (Fig. 2.3).

These lower-lying valleys would have been the first to experience the effects of rising sea levels. Brew *et al.* (2015) describe marine transgression in the lower-lying area of the Fenland basin beginning in the Late Mesolithic, by c. 5500 cal. BC, with sea level at this time rising at around 8 mm/year. A 'basal' peat has been recorded within lower-lying areas of the north-western Fenland, associated with impaired drainage and rising groundwater tables during the initial phase of relative sea level rise prior to c. 5000 cal. BC (see Brew *et al.* 2000; Brew *et al.* 2015; Waller 1994). Within the north-western Fens a basal peat at -9.85 to -9.50 m OD at Wrangle Lowgate was dated to 5740–5610 cal. BC, overlain by laminated clays forming in intertidal mudflat and saltmarsh conditions. There are few radiocarbon dates on these basal peats, and Shennan (1994b) highlighted that deeper peats such as those recorded at Swineshead as low as -5.89 m OD have not yet been dated. Zone 3 of the scheme, located on relatively high ground towards the north-western margin of the Fenland basin, would have begun to see the effects of sea level rise more broadly during a period of progressive waterlogging of West Fen and Wildmore Fen that began in the Late Mesolithic at c. 5000 cal. BC.

Around 1.5 km to the south of Viking Link, on the Triton Knoll scheme (Allen Archaeology 2020) charcoal and a basal peat at -4.22 m OD in borehole 31/04 were of Late Mesolithic date, radiocarbon dated to 4545–4370 and 4445–4270 cal. BC respectively. This basal peat, albeit lower, was likely located within the same incised valley as borehole BH₇, undertaken during the present investigation, in which an 'intercalated' (embedded within other sedimentary layers) peat was recorded within an alluvial sequence that was not bottomed at -5.01 m OD. The lower part of this alluvial sequence comprised slightly sandy, in places gravelly, silts overlain by a silty peat at -3.54 to -3.62 m OD. This peat was radiocarbon dated (UBA-53368; 4784 ± 37 BP) to the Early Neolithic (3650–3380 cal. BC). No diatoms, ostracods or forams were present within the underlying sediments, but Brew *et al.* (2000) show the coastline rising from a level of about -5 m OD at 4000 cal. BC to about -3.0 m OD at 3000 cal. BC at this time within the north-western Fenland. It seems likely that the peat here formed as a response to marine transgression (broadly equivalent to Shennan's (1986) Wash II), with alluvium accumulating on the estuarine floodplain of the river, prior to peat formation in a sedge fen as a response to rising water tables. The palaeoenvironmental investigation undertaken as part of the present work demonstrated that the pollen assemblage in this peat is indicative of a mixed environment of trees, shrubs and herbs during the period of peat formation, with the presence of alder, oak and lime and occasional pine, ash and hazel (see online data supplement). Both the pollen and plant macroremains were indicative of sedges and alder growing on the peat surface, with macrofossil evidence for the presence of water crowfoots and bog-mosses. Brackish-marine diatom assemblages in the alluvium immediately overlying the peat indicate a subsequent transition to intertidal mudflats or saltmarsh environments as a response to continuing sea level rise.

The sedimentary evolution of the lower-lying areas of Zone 3 indicates that beyond the incised valleys, the surface of the till would likely have been exposed as a land surface suitable for occupation during the Mesolithic and the Early Neolithic, with parts of the scheme (where the surface of the till is recorded above around -1 m OD) probably not experiencing the effects of rising sea level until the Early or Middle Bronze Age (see Fig. 2.5).

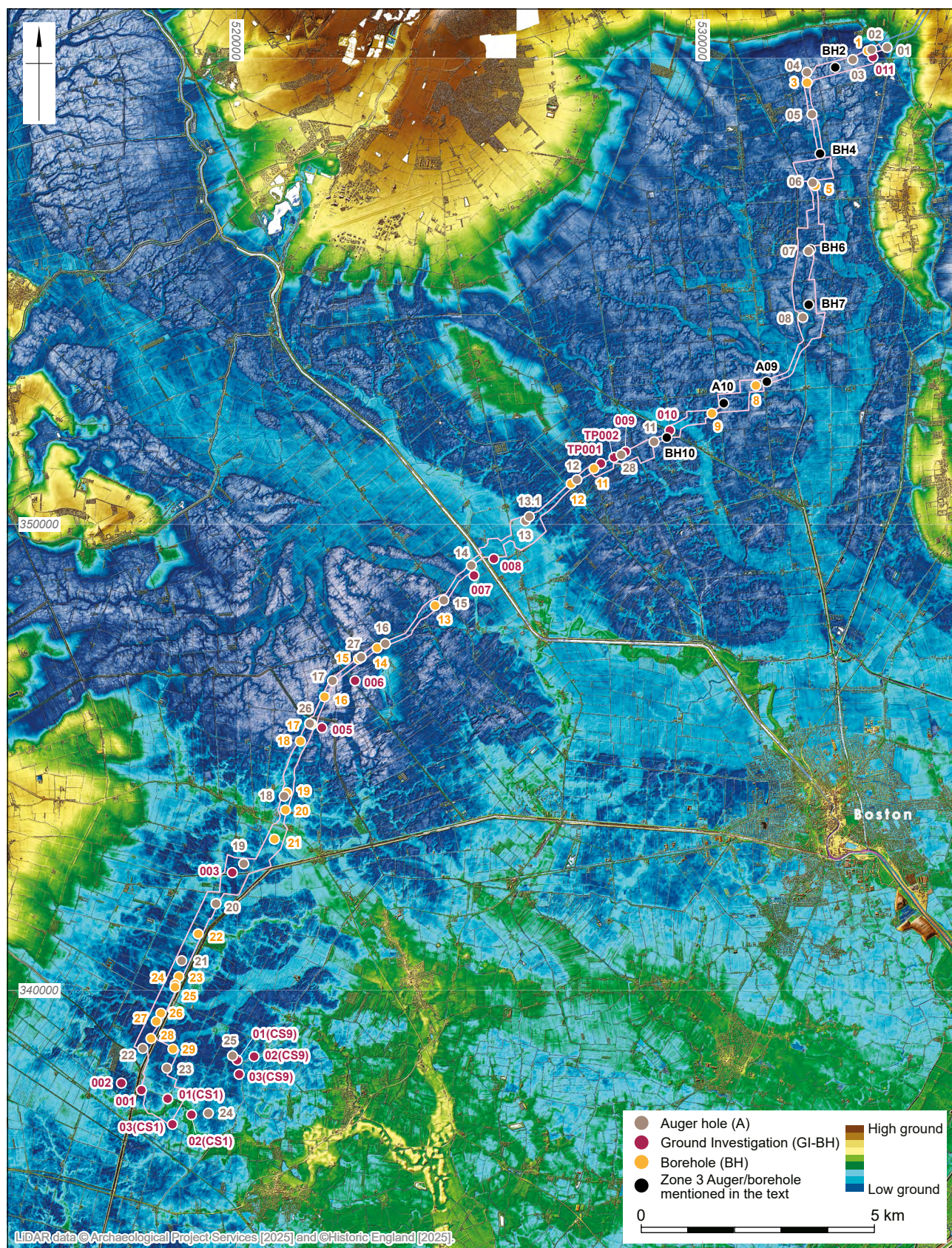


Figure 2.3 Digital terrain model of Viking Link Zone 3, showing auger hole (Environmental Archaeology Consultancy 2020), ground investigation and geoaarchaeological borehole locations

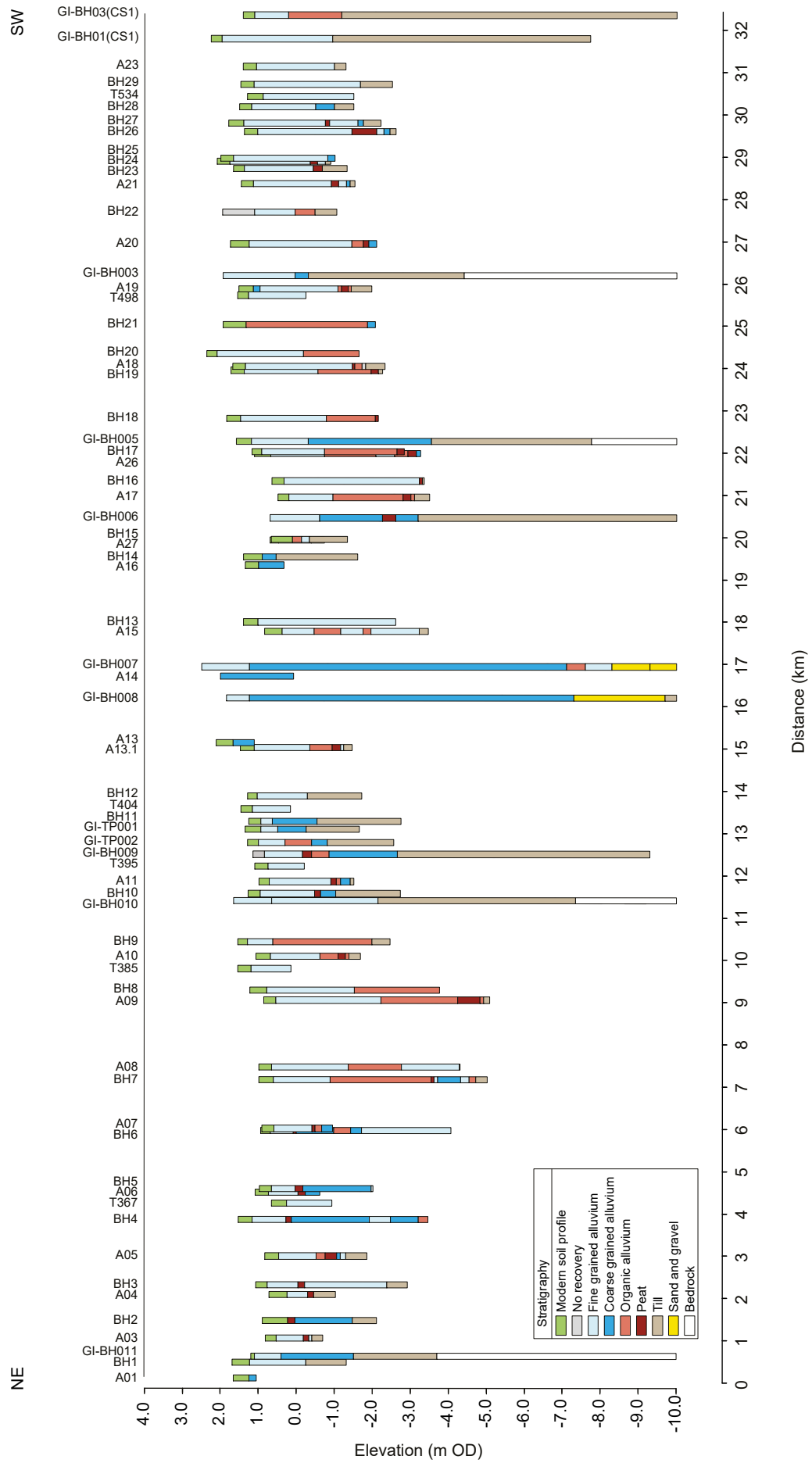


Figure 2.4 Auger and borehole results from Zone 3

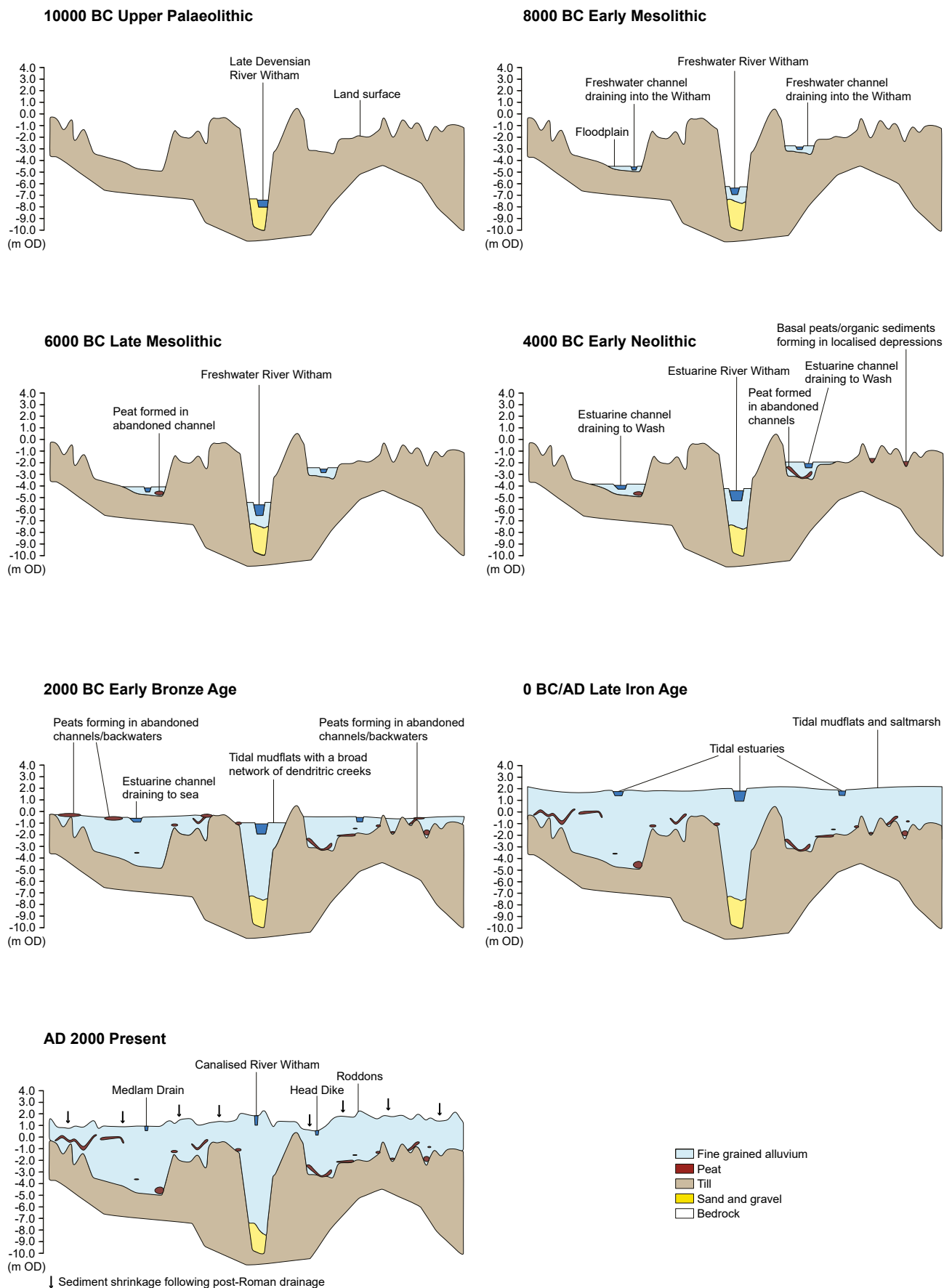


Figure 2.5 Schematic diagram showing the sedimentary evolution of Zone 3 from 10,000 BC to the present day

Outside the main valleys, a discontinuous 'basal' peat was recorded across Zone 3, either directly overlying the till or located towards the base of the alluvial sequence. The elevation of the basal peat varies with the topography of the underlying till; in the north-eastern part of Zone 3 it generally lies at elevations between about -1.5 and 0.5 m OD (although deeper deposits were identified in A09 and BH7), falling to between -3 and -2 m OD south-west of the Witham, and rising to between about -0.2 and -2 m OD towards Bicker Fen (Fig. 2.4). The peat deposits within Zone 3 lie at similar elevations to those described by Waller (1994) and Shennan (1994a; 1994b) in the north-eastern and north-western Fens, where peats have generally been found to be of Middle Neolithic to Late Bronze Age date, coinciding with a period of increased influence of sea level rise across Zone 3. The earliest dated peat deposits described elsewhere by Waller (1994) are those at Lade Bank, recorded at about -2.5 m OD and of Middle/late Neolithic date (3365–2910 cal. BC). Elsewhere, the majority of the basal peats are of Late Neolithic/Bronze Age date in West Fen, Wildmore Fen and the Witham Valley, from elevations between about -1.7 and 0 m OD. At Gipsey Bridge the peat is of Bronze Age date, accumulation beginning at c. 2885–2455 cal. BC, followed by a marine incursion at c. 2470–2035 cal. BC. The top of the peat at Bettinson's Bridge was dated to 2465–2040 cal. BC (Shennan 1994b), while at Midville the woody basal peat was recorded at levels between -1.28 to -0.24 m OD and was found to be of Early Bronze Age date (2470–2040 cal. BC/2455–2030 cal. BC).

Intercalated peats (i.e., those embedded within other sedimentary layers, in this case alluvium), generally present at higher elevations within the alluvial sequence, were recorded in boreholes BH2 and BH6 at between 0.04–0.22 and 0.00–0.08 m OD respectively, in both boreholes overlying a sequence of silty or in places gravelly sands. During the present investigation, two separate radiocarbon submissions of plant material from BH2 failed because of insufficient carbon (see online data supplement), but the peat in BH6 was dated to the Early Bronze Age (UBA-53366; 3823 ± 29 BP; 2450–2140 cal. BC). Brackish or marine diatoms in the alluvium underlying the peat indicate a marine or estuarine influence prior to peat formation, with the sediments likely forming in intertidal mudflats or saltmarsh before a transition to wetlands comprising either sedge fen or alder carr. At the time of the accumulation of the peats, the wider environment was relatively closed woodland dominated by oak, hazel, birch, elm, ash and pine, with sedges and alder growing on the wetland. Both micro- and macrofossil charcoal were recorded in the peats in boreholes BH2 and BH6, although in the absence of other definitive indicators of human activity (for example cultivars) it is uncertain whether these are derived from natural fires or anthropogenic burning.

On the basis of the sediments observed in BH2 and BH6, the peats recorded here likely represent a phase of local marine regression during the Early Bronze Age, albeit one occurring within a broader period of sea level rise. Brew *et al.* (2000) describe the coastline rising from -6 m OD (mean sea level) and -3 m OD (mean high-water spring tides; MHWST) at 3000 cal. BC, to about -4 m OD (mean sea level) and about -1 m OD (MHWST) at 2000 cal. BC, with much of the north-western Fenland being inundated by c. 2200 cal. BC. Brew *et al.* (2000) do, however, point out that a regressive phase occurred in the south-eastern Fenland, with the development of an intercalated peat, between c. 2430 and 2200 cal. BC, and it seems likely that BH2 and BH6 represent a similar event in the north-western Fenland, broadly equivalent to Shennan's (1986) Fenland IV.

After the maximum extent of marine transgression during the Early Bronze Age (c. 2200 cal. BC), Brew *et al.* (2015) describe a reduction in the rate of relative sea level rise to less than 2 mm/yr, resulting in a series of local regressive and transgressive phases. This pattern continued until a regional transgressive event inundated much of the north-western Fenland at the beginning of the Iron Age (after c. 650 cal. BC), broadly correlated to Shennan's (1986) Wash VI. However, the evidence recorded during the Viking Link investigations for human activity, including occupation features, at Hagnaby

Grange, Back Lane and Staunch Farm demonstrates the availability of dry land surfaces (albeit likely prone to flooding at fen-edge locations) suitable for exploitation during the Late Iron Age and into the Romano-British period, likely correlated to Shennan's (1986) Fenland VI marine regression.

Across Zone 3 this period appears to have been largely dominated by minerogenic sediments forming in intertidal mudflats and saltmarsh, albeit interrupted by stabilisation of the land surface during marine regressive phases. Above the peat where it is present, and generally elsewhere above a level of about 0 m OD, is a sequence of laminated silts and silty clays, fining upwards into silty clays. While forams and ostracods were not preserved in these sediments, the diatom assemblages overlying the peats in BH2, BH6 and BH7 are dominated by brackish-marine and marine-brackish diatoms typical of fully tidal, shallow water, mud or sand surface habitats, indicating that these sediments likely formed in intertidal mudflats or saltmarsh. A period of marine regression and the presence of land surfaces suitable for human exploitation is attested by evidence for Romano-British activity within Zone 3 at Mown Rakes and Six Hundreds Drove, where these sediments have been cut by archaeological features. Pottery, charcoal and cereal grains here were principally of mid-2nd and 3rd-century AD date, with evidence for salting in the form of briquetage, coinciding with Shennan's (1986) Fenland VI regressive phase.

There was no evidence across Zone 3 for an upper peat of Romano-British date (Fig. 2.4), such as that identified by Waller and Alderton (1994) at Swineshead, although it is possible that such a deposit has since largely been lost to the combined effects of modern drainage and ploughing.

The upper fine-grained sediments across Zone 3, present to modern levels of about 1.0–2.5 m OD, are cut through in places by coarse-grained, predominantly sandy, alluvium, most likely forming within channels or as part of a network of tidal creeks. These sediments as a whole are overlain by the modern topsoil or ploughsoil.

Land reclamation from the Romano-British period onwards, culminating in extensive drainage in the 17th century (Darby 1940; Robson 1985), has shaped the present-day land surface of the north-western Fenland. Associated with former intertidal environments, a common landscape feature within Zone 3 are roddons (or rodhams) which are the silted remains of former channels, around which the drained former peatlands and tidal muds have shrunk, leaving the roddons as linear prominences (Fowler 1932). These features are clearly visible in LiDAR data across Zone 3 (Malone 2014 and see Fig. 2.3), and the location of the broad main channels (which were in some cases over 1 km across) demonstrates continuity throughout the Holocene, where these channels have exploited valley forms that are evident in the underlying till. As areas of relatively drier land, such roddons were favoured as both routes across the Fenland and for occupation, particularly in the Romano-British period, as attested by evidence of ceremonial behaviour from the present investigation at Gibbet Hill.

Conclusion

Sea level rise had a profound impact on Zones 1 and 3 of Viking Link from the Late Mesolithic period onwards, initially confined to low-lying valleys incised into the underlying glacial sediments, but becoming more broadly apparent from around the Middle to Late Neolithic. Prior to the Middle to Late Neolithic, much of the scheme area would have been a broad expanse of dry land with a ready supply of resources associated with the lower reaches of rivers that cut through both Zones 1 and 3; however, any archaeology associated with these periods is likely to be deeply buried by several metres of alluvial sediments that have accumulated since this time.

After the Middle to Late Neolithic, tidal environments dominated by mudflats and saltmarsh, and in places fully submerged subtidal environments, would have expanded,

and the opportunities for human exploitation were likely confined to the margins of these developing wetland environments or to periods of marine regression, when formerly uninhabitable areas became once again suitable for human use. The absence of archaeology of earlier periods on the Viking Link scheme is likely a result of the deeply buried nature of their associated land surfaces, but evidence for Iron Age and Romano-British exploitation attests to the significant impact, and opportunity, that phases of marine regression provided the human communities living in this area.

Boreholes targeting the deeper sediments beyond the depth of conventional archaeological excavation have provided an opportunity to examine the evolution of the landscape and environment from the Late Mesolithic onwards, enabling the archaeology of Viking Link to be examined, and placed within the context of a wider landscape that has changed as a response to sea level rise and subsequent land reclamation in a way almost unparalleled in the British Isles.

CHAPTER 3

SUMMARIES OF PRINCIPAL SITES

Introduction

Table 3.1 The principal sites
(from north-east to south-west)

Site name	Civil parish	NGR	Height (m OD)	Summary of remains and dating
Sea Bank Farm	Mablethorpe and Sutton	552799 379640	2	Pits, flooding deposits and palaeochannels with evidence of saltmaking in the Romano-British and Anglo-Saxon periods
White Crofts	Bilsby	549350 378250	5	Prehistoric, Romano-British and Anglo-Saxon features, including Romano-British inhumation cemetery
Ailby Lane	Bilsby	543400 377185	10–15	Bronze Age pit, Late Iron Age–Romano-British field system and Early Anglo-Saxon sunken-featured building
Walk Hill	Langton by Spilsby	539633 371395	93–97	Early Neolithic pits, Iron Age post-built structures and Romano-British field settlement including crop-dryers
Callow Carr	Dalby	540507 370720	88	Bronze Age ring ditch, Romano-British trackway and Anglo-Saxon inhumation cemetery
Cheals Close	Sausthorpe	539444 369160	20	Anglo-Saxon post-built structures; land boundaries of Romano-British, Anglo-Saxon, medieval and post-medieval date
Mown Rakes	Swineshead	521196 345029	1	Late Iron Age–Romano-British occupation, peri-Conquest saltmaking features and Romano-British cremation-related deposit and burial
Six Hundreds Drove	Swineshead	521068 344384	3	Romano-British settlement with indirect evidence of saltmaking and pot production

Sea Bank Farm

Introduction

The site covered 0.5 ha of former marshland located approximately 600 m inland of the current shoreline, centred on NGR 552799 379640 and at 2 m OD. The geological substrate is mapped as Chalk of the Burnham formation, with superficial deposits of Tidal Flats clay and silt (BGS 2024). The Tidal Flats deposits comprised a series of sandy silts (200202) encountered at depths of 0.35 m below ground level; all archaeological features were cut into this horizon.

This site would have been located close to the southern bank of a tidal creek that is now sand-choked and canalised by the Boy Grift Drain (Green 2023, 48–49; fig. 32; York Archaeology 2022). The evidence for salt production found at this location presumably indicates that this creek was active in the Romano-British and Anglo-Saxon periods, with the creek's presence probably being crucial in the establishment of the site.

The preceding evaluation trenching encountered the eastern palaeochannel, although there was little correlation between the geophysical survey results and the archaeological remains revealed.

The Lincolnshire Historic Environment Record (LHER) contains data on various sites and findspots in reasonable proximity to Sea Bank Farm, although none are of any great relevance to its archaeology. The earliest recorded find in the vicinity comprises the neck of a Beaker pot found on the beach 600 m to the north-east (LHER MLI41443). Medieval agriculture is evidenced by an extensive area of ridge and furrow (LHER MLI15845) identified through aerial photography to the north of the excavation and the earthworks of a late medieval enclosure and associated field boundary (LHER MLI88750) 400 m to the south-west. Several post-medieval–modern farmsteads are recorded in the vicinity of the site. A previous desk-based assessment undertaken along the coastline to the south-east of the site established that medieval–early post-medieval salt production is likely to have taken place there, given the position it occupied on an extensive saltmarsh (York Archaeology 2021). During the post-medieval period, saltmarshes along the Lincolnshire coast were reclaimed for agriculture (*ibid.*).

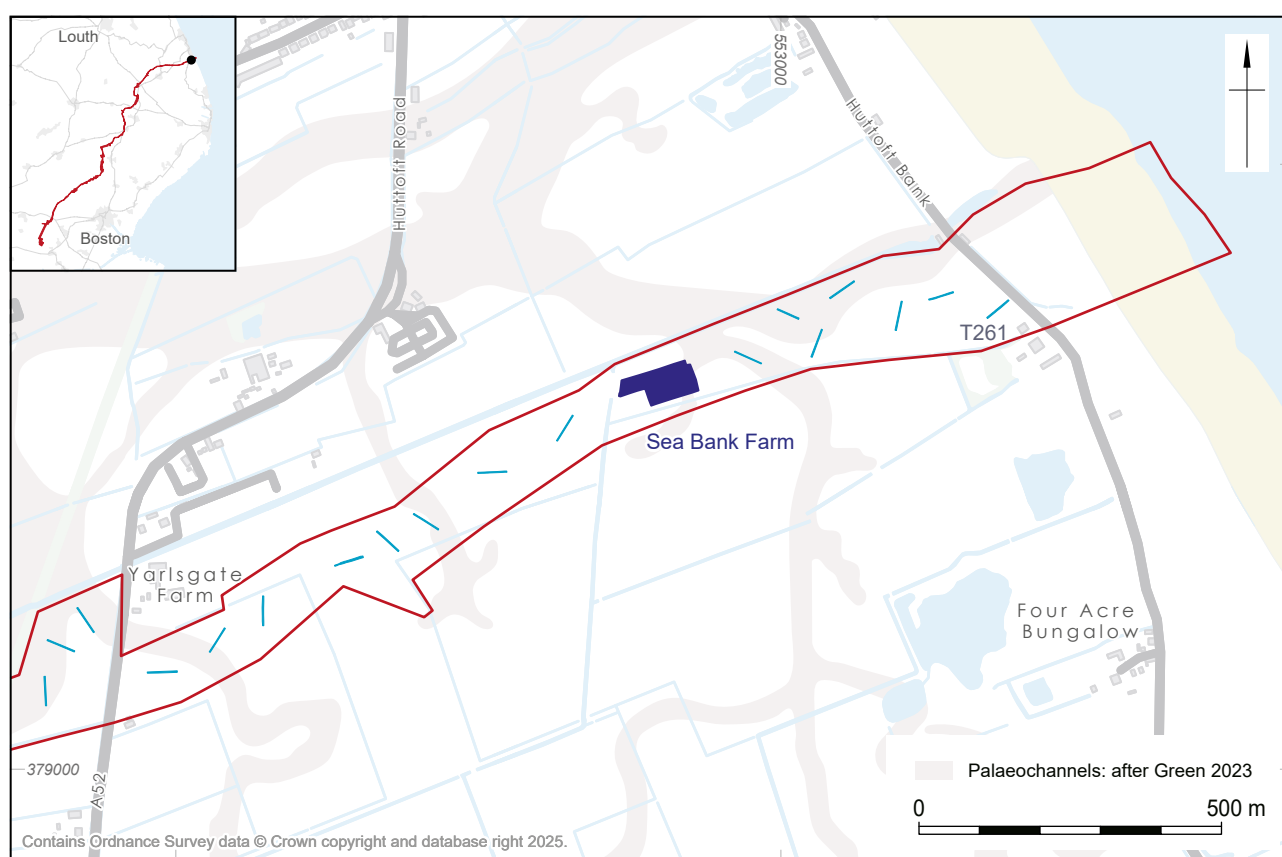


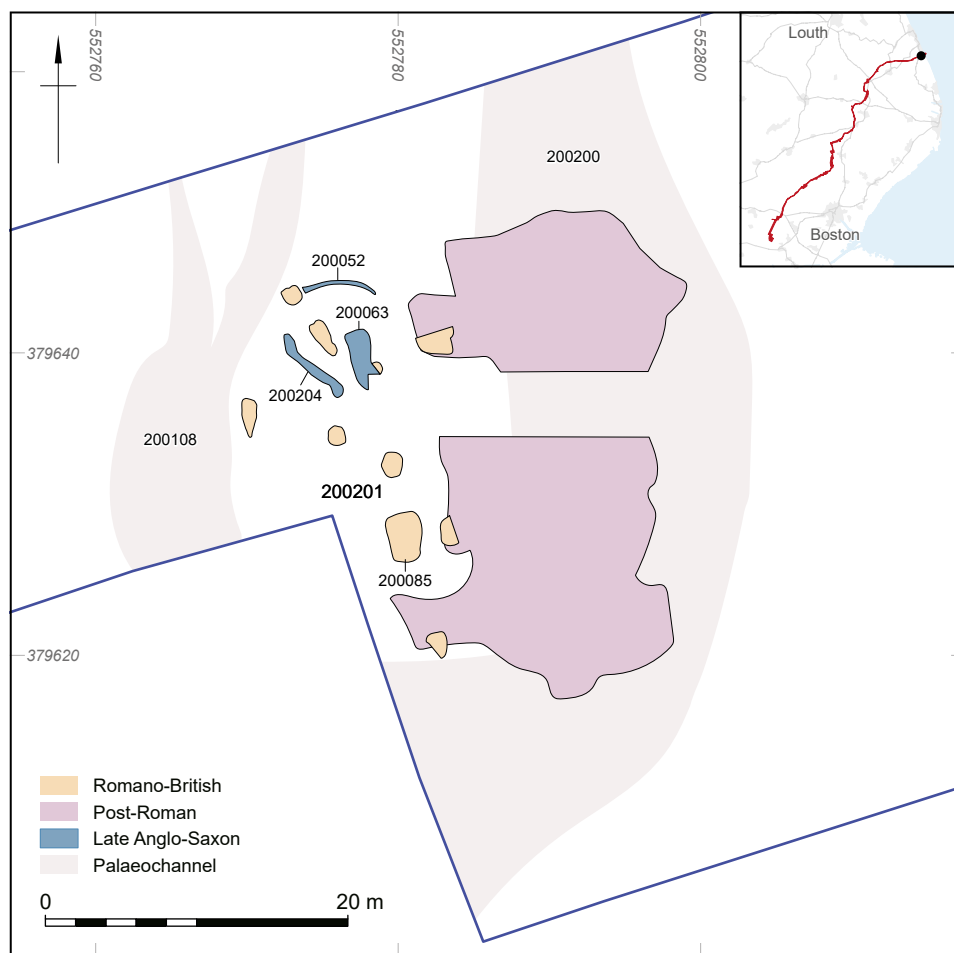
Figure 3.1 Sea Bank Farm: site location figure and overview

Overview of Results

The archaeological excavation at Sea Bank Farm uncovered two phases of activity situated between two palaeochannels: a concentration of 2nd–4th-century pits containing saltmaking debris was followed by Late Anglo-Saxon features with similar remains (Figs 3.1 and 3.2).

Romano-British occupation or settlement in the locale was indicated by the large finds assemblages recovered from both palaeochannels and the Tidal Flats deposits. Radiocarbon dating of carbonised deposits on pottery sherds provided early–middle (Tidal Flats: UBA-54358) and middle–late (palaeochannel: UBA-54360) Romano-British dates. Environmental evidence from the palaeochannels indicated crop-drying processes took place nearby, with associated refuse deposited directly into the channels (Fig. 3.3).

Figure 3.2 Sea Bank Farm:
phased plan showing
all features



Ten pits clustered between the palaeochannels contained debris from a Romano-British saltmaking structure that probably lay nearby (Fig. 3.4). Fragments of oven/kiln bricks were recovered along with large amounts of fired clay, some of which was identified as briquetage (fired clay equipment used in the saltmaking process) by the presence of patches of salt-bleached colours. Pottery from the pits dates to the 2nd–3rd century, and radiocarbon dating of charred plant remains confirmed a middle–late Romano-British date (FTMC-MB96-4). A large deposit of alluvium that covered the paleochannel and the pits in the east of the site was likely deposited prior to the Late Anglo-Saxon activity located to the west of it.

Late Anglo-Saxon evidence from the site suggested some form of occupation had taken place nearby during this period. Remains of a high-temperature activity situated between the paleochannels comprised a curvilinear gully partially encircling a subrectangular pit. Evidence for turf-burning was recovered from the pit and most of the pottery from this period showed signs of sooting and salt-bleaching, indicative of association with processes such as saltmaking or food salting. Radiocarbon dating of cereal grains (UBA-52955 and UBA-52956, combined/modelled at *cal.* AD 990–1020) and mid-10th-century pottery confirmed a 10th–11th-century date.

White Crofts

Introduction

At White Crofts, three separate excavation sites spanning 350 m and totalling 0.65 ha were centred on NGR 549450 378250 (Figs 3.5 and 3.6). The areas are located on the coastal marsh at a height of 5 m OD; the geological substrate is mapped as Chalk



Figure 3.3 Palaeochannel 200108, from the north-west (2 m scale)



Figure 3.4 Pit 200085 (group 200201) from the south-west (1 m scale)

of the Welton formation, with superficial deposits of Devensian till (BGS 2024).

The geophysical survey revealed clear outlines for most enclosures uncovered in the central part of the investigation area (although this was not the case in the east and west), while the results of the evaluation trenching confirmed the presence of Romano-British features.

The site is located in an area of known medieval and post-medieval activity, although nearby evidence pre-dating these periods is limited to the reported location of three Neolithic stone axes (MLI41470) and the site of a suspected Bronze Age barrow (MLI41469), respectively to the north-west and north. The shrunken medieval settlements of Markby (MLI90886) and Asserby (MLI41479) are 500 m and 600 m to the north and south respectively, and the remains of the medieval Augustinian priory (MLI43628) at Markby are approximately 800 m to the north-west. The priory was dissolved in 1536 and now comprises a moated site with fishponds and earthworks; the current parish church for Markby is located at the priory site.

Overview of Results

Most features revealed at White Crofts were Romano-British; few were found to pre-date this period. The remains included an extensive series of intercutting Romano-British ditches and gullies, an inhumation cemetery and a possible droveway, followed by a small amount of Anglo-Saxon activity.

Late Neolithic or Early Bronze Age worked flint from a ditch in the central area represented the earliest activity. Other prehistoric remains included ditches and a pit in the east, all of which were phased based on their stratigraphic relationships with Romano-British features. The moderate amount of Late Iron Age–early Romano-British pottery found across the site, as well as a truncated ditch in the north of the area, indicate enclosure activity had preceded the extensive later Romano-British remains.

The Romano-British activity that dominated White Crofts can be split into several phases of enclosure, with dateable material spanning the 1st–4th centuries. Generally, the phases followed the same alignments, although some reorganisation is visible (Figs 3.7–3.9). Activity shifted to the west during the 2nd–3rd centuries, with minimal remains from this period located in the east. In the western area, the enclosures extended from a north-east to south-west-aligned trackway. A large enclosure in the east was the focus of 3rd–4th-century activity, with geophysical survey results indicating it measured at least 100 x 100 m.

The inhumation cemetery comprised ten graves containing the remains of twelve individuals, predominately adult males. Single graves were mostly situated within separate 'compartments' of the enclosure to either side of the trackway. In only one instance was a cluster of three graves observed. Radiocarbon dating of four individuals suggested the burials had been made over an extended period (mid-2nd–mid-6th centuries), while isotopic analysis has revealed at least two individuals had non-local origins. Generally the inhumations were unfurnished, with grave goods limited to a



Figure 3.5 White Crofts: site location figure and overview

copper alloy bracelet, a grey ware bowl, and several iron nails suggestive of a small wooden box. A concentration of hobnails indicates one individual had been buried with footwear, and larger iron nails suggested one burial had been coffined.

Anglo-Saxon activity was limited to two pits (3211 and 5202), disarticulated human remains within grave 301291, and an intrusive strap end in an earlier ditch. Environmental assemblages recovered from both pits were substantial and indicative of midden material. Radiocarbon dating revealed consistent Middle/Late Anglo-Saxon dates (UBA-52871 and UBA-52901) for the pits. The disarticulated human remains present above the individual in grave 301291 returned a 5th–6th-century date (SUERC-126779, 1602 ± 24 , cal. AD 415–505), and had seemingly been placed there during the original burial as no visible later disturbance was present, indicating the *in situ* burial also dated to the post-Roman period.



Figure 3.6 White Crofts central site from the north-west

Discussion

White Crofts lay just south of a sinuous water channel unnamed on Ordnance Survey mapping but which joins the Boy Grift Drain about 1.3 km downstream from the site (Fig. 3.10). The excavation area occupied a slight bank that follows the course of the water channel within an area of undulating ground, with the flatter and lower land of the Lincolnshire Marsh proper (here at 2–3 m OD) opening out to its east. It is likely that this slight rise, as well as the site's position adjacent to a water supply and on the fringe of the Marsh, formed sufficient inducements to occupation at this location. The advantages of the setting seem to have been appreciated before its floruit in the Romano-British period: the earliest datable activity at White Crofts comprised two pieces of worked flint, one a scale-flaked knife, typical of an Early Bronze Age or Later Neolithic date, and some of the ditches at the site appear to be Iron Age. The site was intensively utilised in the Romano-British period, with much reworking of the enclosure ditches, and probably represents a small farmstead thought worthy of such prolonged effort and which also came to contain a group of inhumation burials. The pottery evidence indicates activity at the site was at its most intense in the 3rd–4th century AD, with deposition of ceramics continuing until the end of the Romano-British period.



Figure 3.7 Ditch 3205 from the west (1 m scale)



Figure 3.8 Ditches 300520 and 300522 from the west (2 m scale)



Figure 3.9 Pit 301005 from the south-east (0.2 m scale)

The finds assemblage from the Romano-British phases is varied, with – alongside the animal bone and pottery – marine shell, personal dress accessories (bone pins and a brooch, supplemented by a bracelet found with one of the inhumation burials), bone tools used in textile production, and eight of the ten Roman coins found along the Interconnector. The site received pottery that had been transported some distance, notably a sherd of Gallic amphora, with mortaria from the Nene Valley and Mancetter-Hartshill also present. Aspects of the animal bone assemblage indicate further evidence for wider provisioning and involvement in trade in the form of the possible presence of cured beef shoulder joints, likely imported from Lincoln or some other urban centre. The impression, therefore, is of a relatively prosperous and well-connected settlement, whose status, it could be argued, is further expressed by its use as a burial ground.

White Crofts was among the minority of sites showing evidence for sustained activity in both the Romano-British and Anglo-Saxon periods (see Chapter 5 below for a wider consideration of continuity in the context of the Interconnector sites). Although slight, the early medieval evidence is varied in terms of date and activities represented, comprising as it does the contents of grave 301291 (5th–6th-century AD) and two pits (radiocarbon dated to the later part of the period) that contained a range of remains indicating middening/settlement. Whether the reoccupation of the site was encouraged by some connection with the earlier remains or was merely a matter of topographic expediency is difficult to resolve. This was the latest of the evidence for settlement from the site, although its subsequent cultivation is signalled by the presence of furrows (these were aligned to drain into the water channel to the north) and also ditches that match plot boundaries recorded on Ordnance Survey mapping. Foci for medieval activity within the landscape not far from the site demonstrate the development of settlement within the locale. The hamlets of Markby and Asserby, 500 m to the north and 600 m to the south respectively of White Crofts, might represent some form of settlement drift from an earlier focus at White Crofts, although only Markby is mentioned in the *Domesday* survey, with Asserby entering the historical record in the early 13th century (Ekwall 1960, 17 and 315), around the same time as the foundation of a priory at Markby. Earthwork remains of medieval activity around both villages suggest each represents a shrunken settlement (MLI41479 and MLI90886). The Augustinian priory of Markby was founded in the second half of the 12th century. The site survives as earthworks and fishponds within a moated enclosure (MLI43628) and contains St Peter's, the current parish church for Markby. This dates to the mid-16th century and was built using masonry re-used from the priory and possibly on the foundations of its priory church; it is the only thatched church in Lincolnshire (MLI41487).

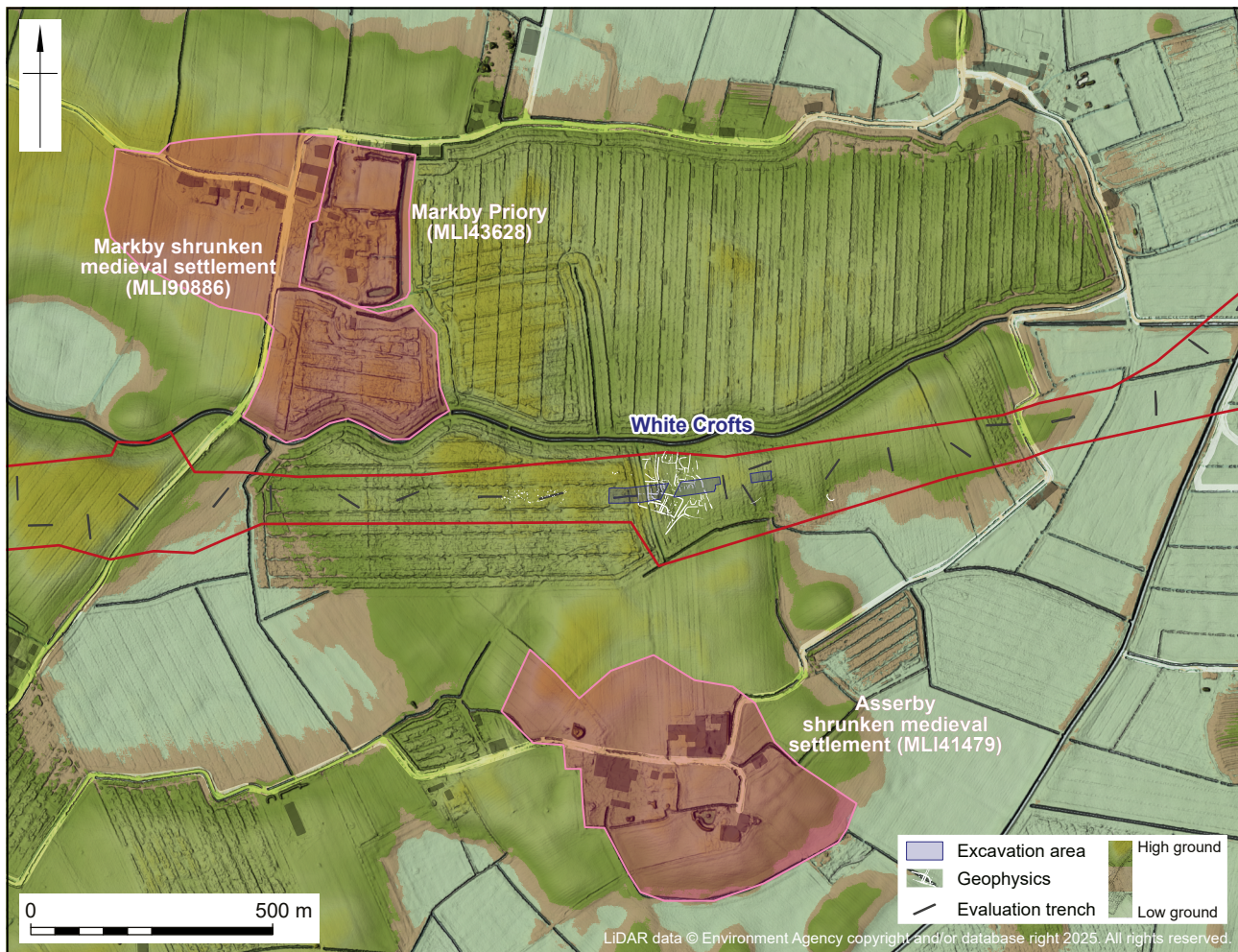


Figure 3.10 Setting of White Crofts

At some point the water channel to the north of the White Crofts site was adopted as the boundary between the civil parishes of Markby and Bilsby, probably in recognition of its conspicuousness in the local landscape. As with Callow Carr (see below), the link between the early medieval burials and a parish boundary appears significant, with almost one-fifth of Anglo-Saxon furnished burial sites located on or within 50 m of a such a parochial division (Goodier 1984). This raises the question of which came first: were the burials positioned on a pre-existing division, later utilised as a parish boundary, or were the burials an influence on the course of the parish boundary when it was set out? Given the early date of the burials, it is proposed that the parish boundary here adopted an earlier land division that was already utilising the natural and obvious marker that the water channel provided. An alternative explanation might be offered in the study by Cox of settlements within Suffolk (2023), which suggested that the (real) correlation between Early Anglo-Saxon activity and parish boundaries was brought about by neighbouring parishes extending their areas to take in the lands formerly controlled by settlements that had failed: 'Such equitable distribution of the territory of the previous settlement resulted in the newly formed boundaries overlaying the once occupied site' (*ibid.*, 15). Given the territorial clarity offered by the water channel and the presence of the Romano-British burials it seems likely that this was already a significant line, but the termination of the Late Anglo-Saxon settlement activity at White Crofts might have led to the parish boundary being marked where it was in the manner suggested by Cox. Whatever the exact scenario, the results from the Interconnector reveal something of the time depth of the activity associated with this innominate watercourse and thereby open up the issue to debate.

The site at White Crofts appears to be another of the inland 'island' settlements identified by Green in her review of the Lincolnshire coastline, one of a number of 'gentle rises in the landscape of the Outmarsh ... clearly once of enormous importance, offering dry

land for settlement and agriculture' (2023, 50). Another example is known 5 km south-east of White Crofts at Cumberworth (*ibid.*, 157), where chance finds also indicate activity between the Romano-British and Late Anglo-Saxon period, including a Middle to Late Anglo-Saxon cemetery, and so offering a similar archaeological profile to White Crofts. Other 'island' settlements are known at Huttoft, 2.8 km south-east of White Crofts, with another 'close to Chapel St Leonards [that] has produced a particularly impressive collection of Romano-British and Anglo-Saxon material, spanning the full range of these periods' (*ibid.*, 52). It is likely that these locations formed the primary settlement network from which the local land was farmed, and resources gathered from the Marsh, with the sea beyond. A degree of trade, exchange and communication between them is probable, with White Crofts having better evidence for access to the wider world than seen on many of the inland Interconnector sites. Although these sites are characterised by occupation during several different time periods, questions remain regarding settlement permanence: might patterns have shifted as changes to drainage affected the availability of land, with some places depopulated in favour of new locations, either further inland away from storm surges or on 'new' land closer to the coast – can the local settlement pattern be best described in terms of transience or permanence? Notwithstanding such issues, by capturing excavated evidence from one of these Outmarsh islands, the project has allowed the time depth of activity on them to be better appreciated, and highlighted the importance of such sites in general for revealing the archaeological character of the wider landscape.

Ailby Lane

Introduction

The site extended either side of Ailby Lane and was centred on NGR 543400 377185, at the interface between the coastal marsh and the Wolds. The areas were located on a gentle slope rising from 10 m OD in the east to 15 m OD in the west. The geological substrate is Chalk of the Ferriby formation in the east and of the Hunstanton formation in the west, with superficial deposits of glaciofluvial Devensian sand and gravel (BGS 2024). The preceding geophysical survey had partly identified some of the enclosures, although the trench placed to target these anomalies encountered only two of the smaller ditches.

Varied yet widely dispersed remains have previously been encountered in the vicinity of the site, the earliest comprising an Early Neolithic barrow utilised through to the Late Bronze Age around 500 m to the north-west; associated finds included flint flakes and cores, pieces of a quernstone and a whetstone (MLI42429). Slightly further afield (1.2 km south-east) is the findspot of a Neolithic stone axe (MLI42542). Two undated ring ditches visible as cropmarks to the north-west of the Neolithic–Bronze Age barrow are suspected to represent Bronze Age barrows (MLI82271, MLI82272). Romano-British activity is limited to sherds of pottery recovered 950 m to the north of the site (MLI42521). Several areas of extant woodlands with origins in the medieval period are within 0.4–1.2 km of the site, including Hornby, Mother and Greenfield (MLI43037), Swinn (MLI43035) and Rigsby (MLI43036). An area of medieval ridge and furrow survives as earthworks to the north-east (MLI88742) and the remains of the deserted medieval villages of Ailby (MLI42435), Tothby (MLI42529) and Rigsby (MLI42798) are visible as cropmarks and earthworks.

Overview of Results

Multiple phases of activity were identified at Ailby Lane, ranging from the prehistoric to the post-medieval, with the main focus of activity in the Romano-British period (Figs 3.11 and 3.12).

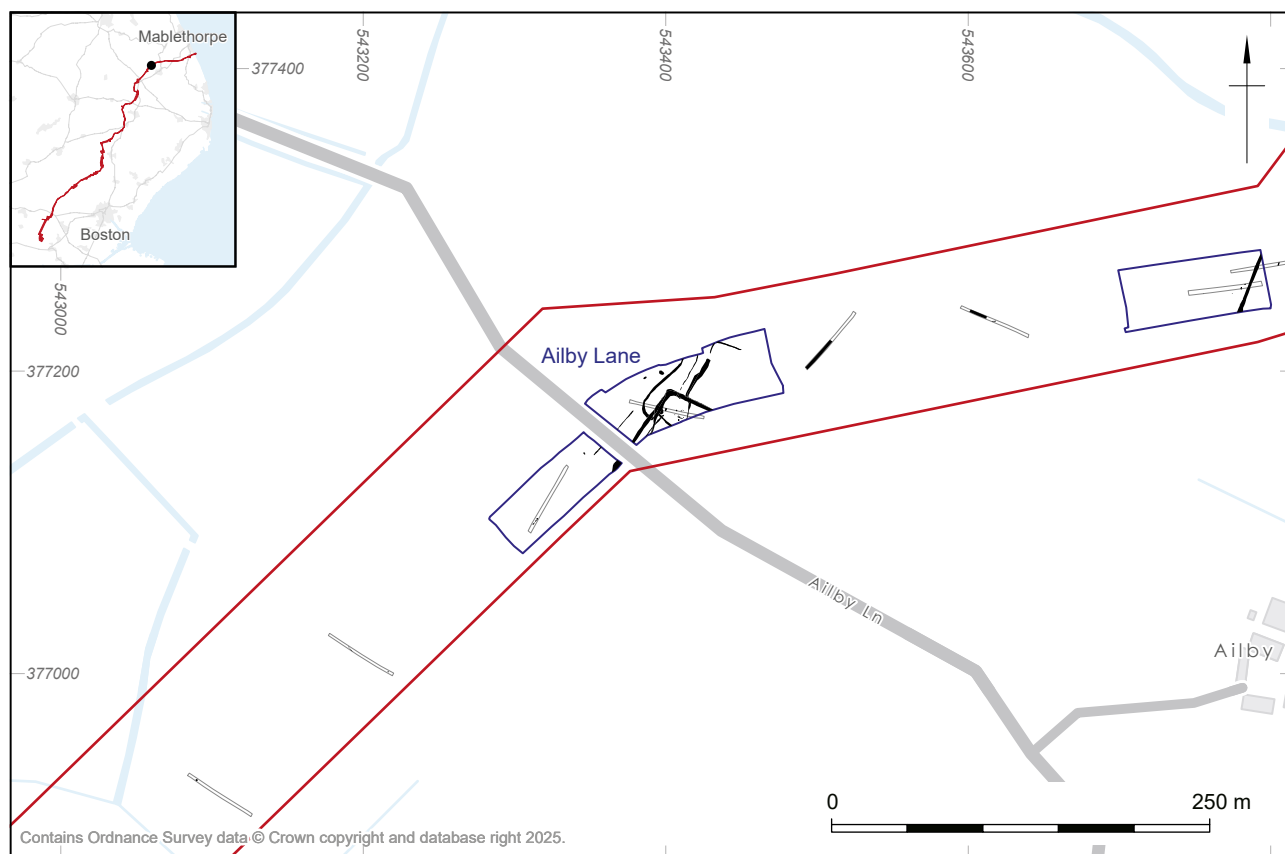


Figure 3.11 Ailby Lane: site location figure and overview

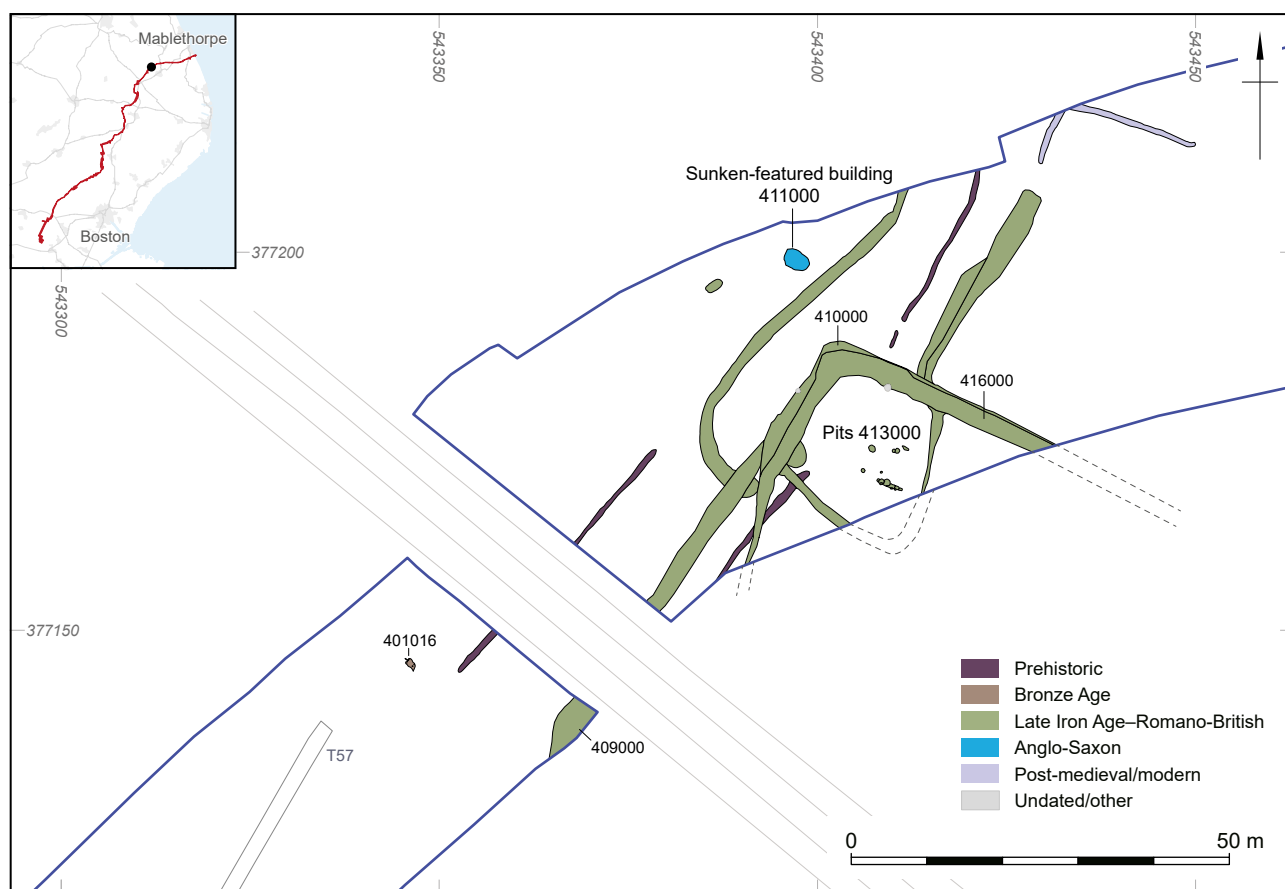


Figure 3.12 Ailby Lane: phased plan



Figure 3.13 Fire pit/hearth 401016 from the east (1 m scale)



Figure 3.14 Ditch 410000 and recut 416000 from the north-west (2 m scale)



Figure 3.15 Sunken-featured building 411000 from the north-east (1 m scale)

A Bronze Age fire pit or hearth (401016: Fig. 3.13) contained an environmental assemblage comprising charred hawthorn stones, hazel nutshells and wood charcoal. A Middle–Late Bronze Age date was obtained through radiocarbon dating of a burnt hazel nutshell (UBA-52870). A small group of later Bronze Age or earlier Iron Age pottery was also recovered from the site. Further prehistoric remains comprised a north-east to south-west-aligned trackway that pre-dated the 1st–2nd-century AD rectilinear enclosures. Finds recovered from the trackway are minimal, but include Late Neolithic or Early Bronze Age flint and Late Iron Age or Romano-British pottery.

Late Iron Age and Romano-British activity comprised multiple phases of north-east to south-west-aligned rectilinear enclosures and scattered pits. These replaced the prehistoric trackway but broadly followed its alignment. Recutting of the ditches was visible (Fig. 3.14). A group of 10 intercutting pits (413000) were likely used for the deposition of refuse from nearby occupation; radiocarbon dating of wood charcoal from one of these pits confirms a Late Iron Age–early Romano-British date (FTMC-MB96-5).

An Anglo-Saxon sunken-featured building (411000: Fig. 3.15) contained an extensive environmental assemblage indicative of settlement activities. Radiocarbon dating of free-threshing wheat and broad beans provided an Early Anglo-Saxon date (UBA-52881 and UBA-52883: *cal.* AD 440–575), while finds include a large amount of handmade pottery of types not previously recorded, fired clay including a probable clay plate, animal bone and an Early Anglo-Saxon decorated copper girdle hanger. An inconsistent Late Iron Age/early Romano-British date obtained from a third radiocarbon sample (FTMC-MB96-6) is considered residual and derived from earlier activity at the site. Post-medieval and modern use of the site was characterised by ditches and furrows representing land management and agriculture. Perpendicular ditches in the north of the site, present on 1889 OS mapping, sustained the alignment of the earlier enclosures. Similarly, remnants of ridge and furrow were aligned north-east to south-west.

Discussion

The remains at Ailby Lane provide the clearest evidence for Bronze Age settlement activity across the Interconnector route, and the area appears to have been utilised during almost every succeeding period. The prehistoric trackway signals the earliest iteration of the north-west to south-east-aligned boundary that characterises the site. This boundary was a persistent one; it was marked during all periods except the Anglo-Saxon, with Iron Age and Romano-British replacements in the form of rectilinear enclosures that continued its alignment. The post-medieval perpendicular ditches in the north of the site sustained a

north-east to south-west alignment and were components of a wider field system. This landscape division is one of considerable longevity; indeed the remains are perpendicular to the current orientation of Ailby Lane. The position of the site at the interface of the Wolds and the Marsh may at least partly account for the longevity of its occupation: its location facilitated the exploitation of resources of both landscapes. The sunken-featured building is considered alongside the other structural remains of Anglo-Saxon date from the Interconnector and its vicinity in Chapter 5 below.

Walk Hill

Introduction

This site occupied a 330 m stretch of the Interconnector route between Ulceby Cross and Partney (NGR 539633 371395) and lay on a rolling chalk wold named Walk Hill on historical mapping. This was among the most elevated of the excavation sites, with a high point of 97 m OD at the northern end, from where the stripped ground surface descended to 93 m OD at the south-eastern limit.

The geological substrate is mapped as Chalk of the Ferriby formation (BGS 2024). The top of the chalk lay directly beneath a dark brown silty clay ploughsoil (0.45 m deep), the sequence indicating the archaeological remains had suffered from truncation by ploughing.

The chalk geology responded well to the geophysical survey and provided a clear preview of the ditched enclosure and settlement remains at this location. With little doubt over the site's archaeological potential, no evaluation trenches were dug over the detected remains, and Walk Hill proceeded straight to open-area excavation instead.

The remains at Walk Hill have previously been mapped as cropmarks that extend for around 320 m to the north of the Interconnector route (MLI85352; Fig. 3.16). An alignment of three areas where Romano-British pottery has been found during fieldwalking (MLI42475–42477) may extend the site northwards for another 400 m, while a southern continuation may account for another area of cropmarks (MLI85353) mapped 100 m in that direction.

Cropmarks of possible round barrows 300–600 m to the south and east (MLI82315, MLI82328, MLI125065) provide some context for the earlier prehistoric activity recorded on the site. The barrow excavated at Callow Carr as part of the Interconnector investigations lay 1 km to the south-east.

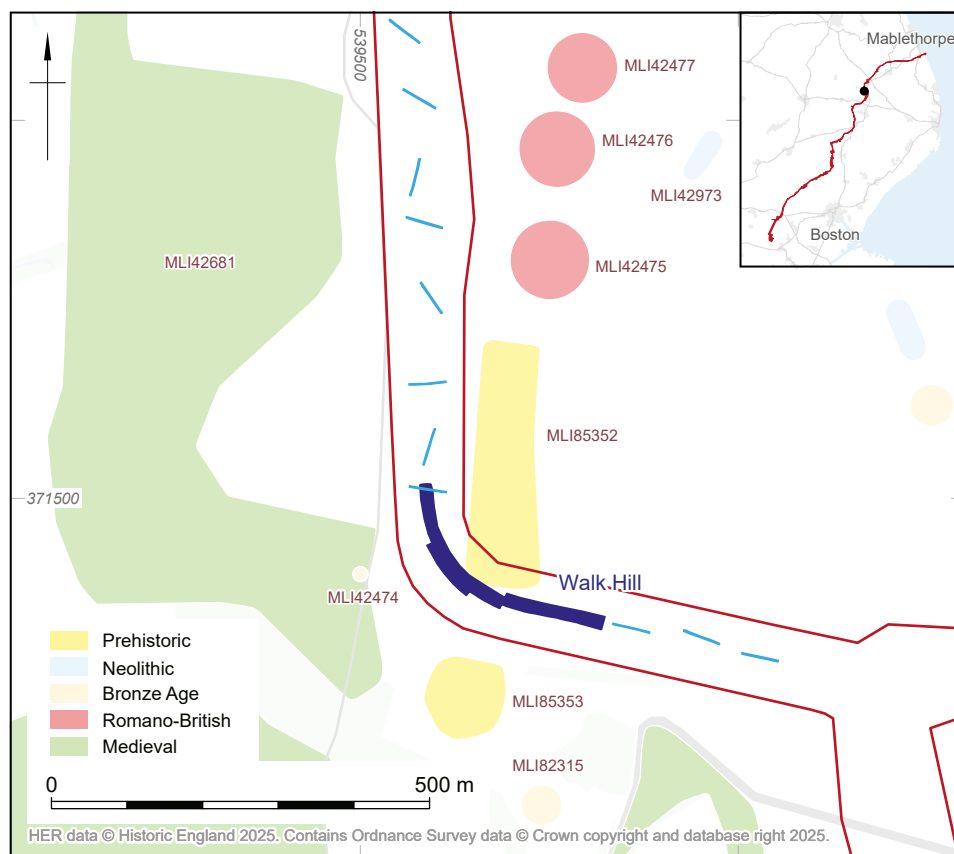
Remains of a medieval field system have been mapped just to the west (MLI42681), but no associated remains were recorded at Walk Hill, with the focus of the site's archaeology lying first in the Neolithic and then in the Iron Age to Romano-British periods.

Overview of Results

Investigations revealed a range of archaeological features, including Neolithic pits, Iron Age four-post structures and Romano-British ditched enclosures. Associated with the Romano-British phase were two crop-drying kilns and human remains (Fig. 3.17).

At the eastern end of the site, a group of five pits with charcoal-rich fills formed a rectangular arrangement with an outlier to the south. Two contained worked flint, and a wheat grain and hazel nutshell fragment from one of these (800332) returned consistent dates that when combined/modelled span 3530–3375 *cal. BC* (UBA-52873 and UBA-52874). This is the earliest direct result for the exploitation of cereals in

Figure 3.16 Walk Hill: site location and setting



the region and one of the earliest from the country as a whole (see López-Dóriga in Volume 2, Chapter 7).

Iron Age evidence comprised a small assemblage of pottery, mostly residual, and three radiocarbon dates on cereal grains (UBA-52903, UBA-52906 and UBA-52878) that point to activity between the 5th and the 2nd century BC. Two of the radiocarbon dates came from one of the five or so four-post possible 'granary'-type structures on the site (Figs 3.17B and 3.18). These formed a broadly NNW–SSE alignment in its northern part; the features were not otherwise well dated, but an Iron Age attribution seems most likely. The third radiocarbon date came from a pit within an alignment (800004) rather than a four-post structure; this feature also contained cereals (both barley and wheat).

The bulk of the remains at Walk Hill were of Romano-British date and represent a settlement that lay directly to the east of a broadly north–south-aligned, 15.5 m wide, double-ditched trackway or boundary (Fig. 3.19). This phase of the site seems to have begun in the Late Iron Age and lasted until the mid-2nd century AD, after which the settlement expanded westwards to impinge on the trackway, although the ditch that defined the trackway's western side seems to have been respected for as long as the site was occupied. The latest phase of ditch-digging and enclosure definition occurred in the late 3rd–4th century AD. Two crop-dryers (800089 and 800465; Fig. 3.20) are dated to the last phase and point to the local cultivation and processing of barley and spelt wheat on the site at that time. The uppermost fill of crop-dryer 800089 contained fragments of an unburnt human skull, deriving from an adult (35–55 years old, possibly male). This provided a 3rd to late 4th-century radiocarbon date, contemporary with the pottery it was found alongside, and marked the cessation of dateable activity on the site. Further disarticulated human remains, from a ditch, comprised a fragment of left humerus belonging to a neonate, also associated with 3rd–4th-century Romano-British pottery.

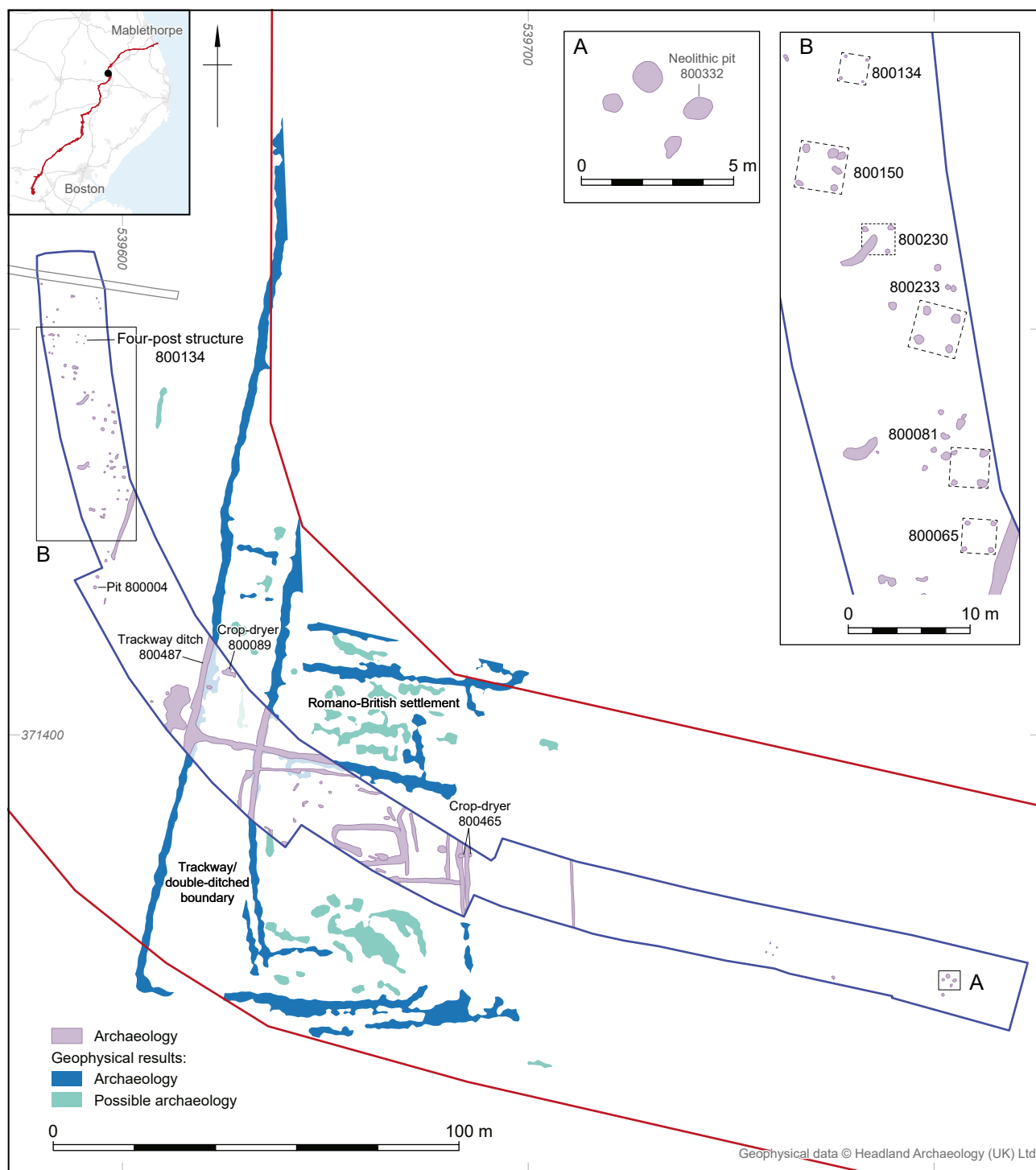


Figure 3.17 Walk Hill:
overview of features

Discussion

Within each phase of activity at Walk Hill, the remains appear to be part of a wider landscape of exploitation. The presence of cereals on the site in the Early Neolithic period is noteworthy, and provides context for the concentrations of long barrows and other ceremonial monuments that demonstrate the importance of the Lincolnshire Wolds later in this period (Bennet 2009; Jones 1998b; Last and Willis 2023, fig. 4). Although slight, the Iron Age evidence from Walk Hill forms part of a broader swathe of occupation recorded on the route of the Interconnector across the Wolds, with two further sites of the period excavated within 1.5 km to the north (see 'Sutterby Field' and 'Pitchmoor' in Chapter 4 below). Iron Age activity at these two sites was also of a somewhat vague character, but included a probable four-post



Figure 3.18 Four-post structure 800134, view from south-east



Figure 3.19 North-facing section of ditch 800487 (1 m scale)



Figure 3.20 Crop-dryer 800465, view from east (0.5 m scale)

structure at Pitchmoor and a roundhouse at Sutterby Field. Finally, as outlined in the site introduction above, the excavated Romano-British remains formed part of a north–south grouping of cropmark and finds evidence. As a ‘site’, therefore, Walk Hill provides a 21st-century window on a landscape that was extensively exploited over millennia. The thread that connects the three phases at Walk Hill appears to be the suitability of the local chalk for the cultivation of cereals: there was radiocarbon evidence for the presence of wheat in the Early Neolithic, further cereal grains, as well as granaries, in the Middle Iron Age, and crop-dryers in the Romano-British period.

With its linear form and prominent, if relatively short-lived, double-ditched boundary, the settlement at Walk Hill (of possible Late Iron Age origin and certain Romano-British use) would appear to be an example of a ‘ladder settlement’, so-named because of their form. The term should be used with caution, however. It has ‘found itself applied to a wide spectrum of Roman sites’ (Derych 2012, 35), and even within those that do meet the criterion of consisting of enclosures either side of a linear trackway, different forms can be distinguished and highly varied uses identified (Millett and Wallace 2017, 13–15). Walk Hill, where enclosures can only be discerned on one side of the trackway, which itself was decommissioned by having a ditch and other features dug across or within it, seems to be a good example of the reality of such sites.

Ladder settlements are more commonly associated with the Yorkshire Wolds (Fenton-Thomas 2005; Stoertz 1997), and Walk Hill is an unusual example of a modern excavation of such a linear settlement on the Wolds south of the Humber. As a settlement type, ladder settlements were not confined to the chalk, however, with examples recently investigated on the Lincolnshire Marsh at Healing (Allen Archaeology 2019) and Humberston Road (Tuck 2023, 345–6) (43 km and 32 km NNW of Walk Hill respectively). As at Walk Hill, the occupation at both these sites is evidenced throughout the Romano-British period, potentially signalling the opportunities for adaption that linear settlement forms afforded. At Walk Hill demarcation of land became more sharply focused later in the Romano-British period, demonstrating how those using the settlement were able to alter it to suit their needs. It was around this time that the trackway had a crop-dryer built within it. It would be unwise to read too much into this single development, although there is a sense of localised, possibly household-level, practices related to increased production gaining primacy at the expense of unimpeded access along a route that may formerly have been open to the whole community.

Callow Carr

Introduction

An excavation was undertaken on the summit of Langton Hill towards the southern tail of the Lincolnshire Wolds. This exposed the ring ditch of a Bronze Age barrow and the Anglo-Saxon inhumation cemetery that it had attracted. A Romano-British trackway clipped the southern edge of the barrow (Fig. 3.21).

The site covered 0.17 ha centred on NGR 540507 370720. From this location the land drops dramatically away to the south and west, towards the valley of the River Lymn, with the stripped ground level at the site sloping relatively steeply from 88.8 m in the north to 86.5 m OD in the south.

Local context for the funerary remains excavated at Callow Carr is provided by the scheduled Bronze Age bowl barrow known as Ring Holt (NHLE 1017466), situated 200 m away in the adjacent field to the south-west of the site. Cropmarks of other barrows are recorded in the vicinity. Anglo-Saxon funerary sites are not unknown in the southern part of the Lincolnshire Wolds, although fewer cemeteries have been excavated than in the north. The best-known nearby comparator is Scremby, which lies 4.1 km to the south-east and is set at the slightly lower altitude of 60 m (Brundle 2019). Other records of Anglo-Saxon funerary remains in the vicinity are less complete, but include another round barrow containing early medieval inhumations; this was levelled in 1950 during construction of the A158 near Partney, 3.1 km to the south-east

of Callow Carr (MLI42150), and 'human remains together with weapons and other objects' unearthed during excavation for a reservoir north of Candlesby, a further 2.5 km to the south-east (MLI42181).

The area around Ring Holt barrow was subject to detailed geophysical and LiDAR assessment, which detected remains interpreted as relating to prehistoric settlement and ceremonial activity. The Callow Carr ring ditch was found at this stage, and given its apparent significance, work on the feature proceeded straight to excavation. The site takes its name from an area of woodland to the immediate west, which is marked on both historical and modern mapping.

The geological substrate is Chalk of the Ferriby formation, with no superficial deposits recorded (BGS 2024). The chalk was encountered at 0.3 m below ground level and was weathered, with several periglacial hollows and scars filled with pale yellowish brown silty clay noted. Dark brown silty clay ploughsoil overlay the geological substrate and all features. Finds from the ploughsoil include early Romano-British pottery, human bone and a copper alloy brooch, their presence at this level providing further evidence that the site has suffered plough-truncation.

Overview of Results

The barrow and trackway

The barrow ring ditch (900166) had an internal diameter of 15.5 m and contained struck flint, animal bone and Beaker pottery (Fig. 3.22). Inconsistent Late Neolithic–

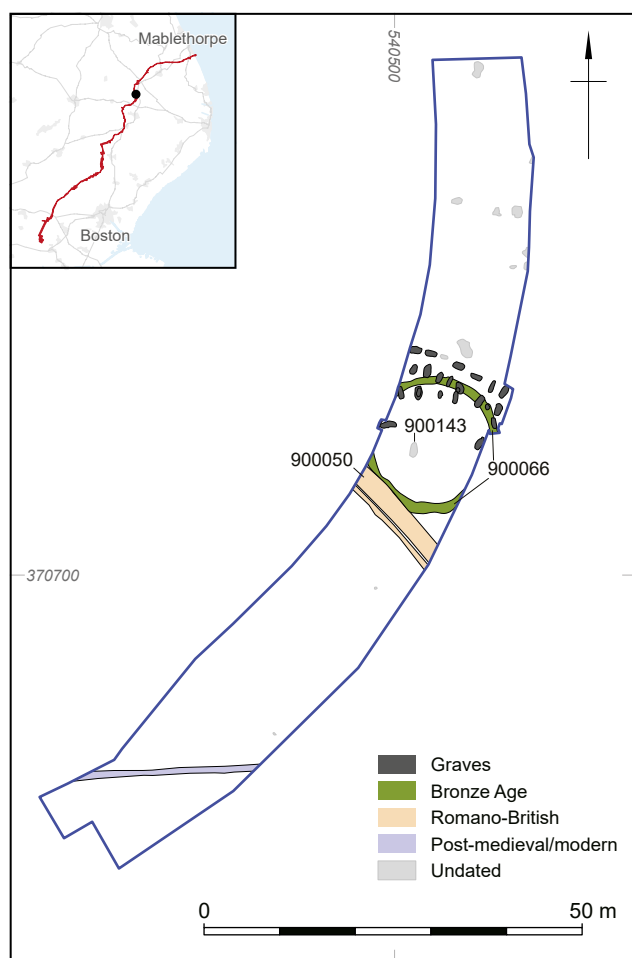


Figure 3.21 Callow Carr: overview of features

Early Bronze Age and Middle Bronze Age radiocarbon dates were obtained on a hazel nutshell fragment and a cereal grain from the feature (FTMC-ME96-2 and FTMC-ME96-1). No funerary remains attributable to the Bronze Age were recovered, although the monument comprised only the ditch, and any accompanying mound had presumably been levelled. One cut feature (900143) close to the centre of the area covered by the putative mound proved archaeologically sterile upon excavation. The southern side of the ring ditch had been cut by a 2.8 m-wide trackway (900050). Romano-British pottery was recovered from wheel-ruts within the base of the trackway.

Figure 3.22 Callow Carr:
Grave 900205 (burial
900206) and ring ditch
900066, view from south-east
(1 m scale)



The Anglo-Saxon cemetery

Burials began in the middle or later 6th century AD and continued for around 80–100 years. Twenty-two graves were exposed and investigated, and these are thought to represent the majority of those originally present. No cremated bone was found and inhumation was the only rite evidenced. The 22 graves contained 23 *in situ* burials (one grave contained two individuals: Fig. 3.23), with a small amount of redeposited human bone also recovered. There was a range of grave/body orientations, although 10 graves and 11 individuals lay on a north-east (head) to south-west (feet) or NNE–SSW alignment. The deceased had generally been laid on their sides (most commonly their right sides) in a flexed position within the graves. There was no clear indication that the cemetery population was skewed towards either biological sex or any particular age group. Sex distribution was fairly even (11 females:10 males) and while the most common age-at-death of adults of both sexes was 28–45 years, there were seven immature individuals present and a further three aged 50 or over. The small size of the cemetery means it is difficult to identify differential treatment of any particular cohort within the assemblage. Isotope study of some of the individuals (see Volume 2, Appendix C) suggests that these people were not incomers but had grown up locally, albeit not on the surrounding chalk Wolds (or near the coast), with a home range in a region just to the south more likely instead. Intriguingly, the one individual for whom the isotope data suggests a non-local origin had probably suffered a violent death: a cut mark was noted to the back of his neck. Grave goods were present in all of the graves and include items in amber, copper alloy, garnet, glass, gold, iron, silver and stone.

Discussion

Full details of the cemetery layout and the results of the study of the human remains and grave goods are presented in Volume 2. As the findings have proved directly relevant to research aims concerning funerary monuments and the use of material

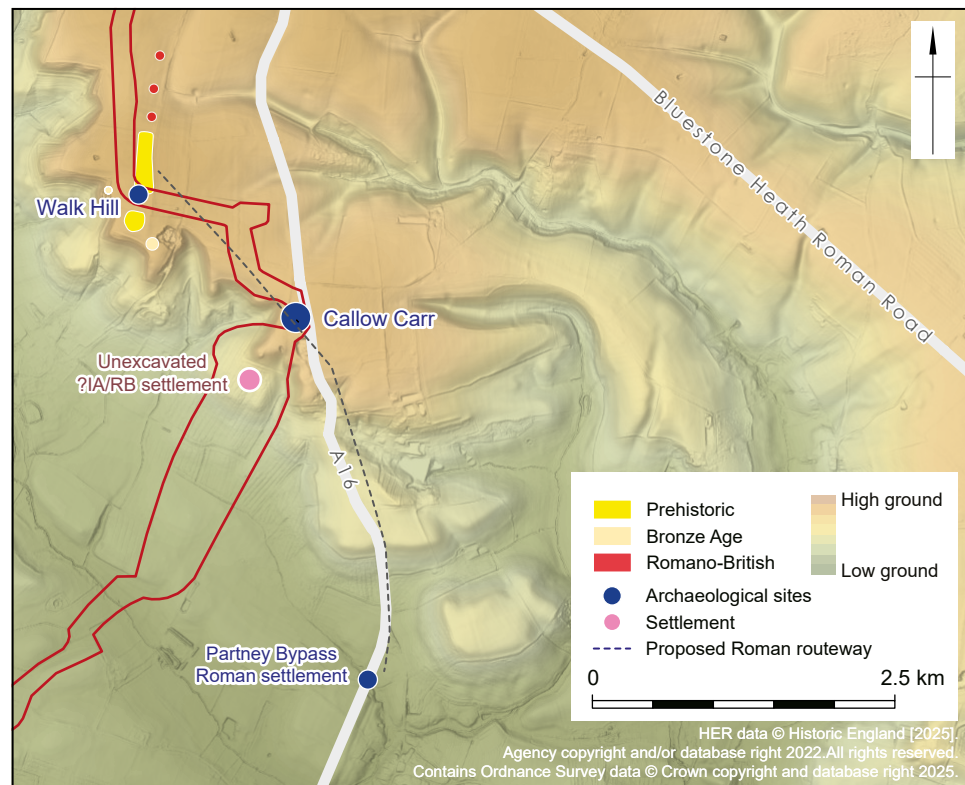


Figure 3.23 Jasmine Porter preparing burials 900021 and 900047 for recording

culture within burial rites, particularly within the Anglo-Saxon period, Callow Carr is considered more fully in Chapter 5 below. One aspect of the archaeology of the site that may be discussed at this point is its Romano-British trackway (Fig. 3.24). There are no records of a routeway from this period in this vicinity in the Lincolnshire HER, so its precise role in the contemporary landscape is unknown. Its north-west to south-east course mirrors that of the Bluestone Heath Roman Road, although that passes 2 km to the north-east on its passage between Lincoln and Burgh le Marsh. To continue north-westwards along the course of track 900050 for 1 km would have taken the traveller on a route that skirted the brink of the steep slope overlooking the Lymn Valley and brought them to the Romano-British site excavated at Walk Hill. Given

the steep topography it seems that this was the trackway's immediate destination on that course, but what it linked to in the opposite direction is less clear. Geophysical survey undertaken as part of the Interconnector project located a 0.8 ha enclosed settlement of probable Iron Age or Romano-British date (subsequently avoided and as-yet unexcavated) around 350 m south-west of the Callow Carr barrow, although trackway 900050 was not aligned on that. Instead, the most obvious known centre in the Romano-British landscape that the south-eastward continuation of the trackway may have connected with is the settlement and shrine site excavated in advance of the construction of the Partney bypass (Archaeological Field Unit 2005). This lay 1.8 km away and is a little 'off-route', being on a more southward bearing, but this is the course followed by the modern A16. The suggestion that Walk Hill and the Partney settlement were connected by a trackway that is partly reflected by a main route across the modern landscape seems reasonable, especially as the A16 utilises a natural rise with a relatively shallow gradient to connect the base of the Lymn Valley and the rolling Wold-tops (Fig. 3.24). Within this scenario, the barrow was perhaps utilised as a sighting feature where the Romano-British track altered its course.

Figure 3.24 Callow Carr: proposed route of Romano-British trackway



Cheals Close

Introduction

Three structures and numerous ditches alongside artefacts ranging in date from the prehistoric to post-medieval periods were recorded on land to the immediate south of a small stream that flows south-east to join the River Lymn (Fig. 3.25). The stream is unnamed on Ordnance Survey mapping but forms the boundary between the parishes of Sausthorpe and Partney. The excavation site occupied 0.53 ha centred on NGR 539444 369160, and lay at around 20 m OD.

The geological substrate is mapped as Sandstone of the Spilsby formation with no superficial deposits recorded (British Geological Survey 2024).

The site was not accessible when the geophysical surveys were carried out, but two evaluation trenches later dug here revealed a density of linear and discrete features, along with a small amount of prehistoric and Romano-British pottery. The field within which the site lies is recorded as 'Cheals Close' on tithe mapping for the parish of Sausthorpe.

The site is set within a landscape already known to contain evidence from a range of periods (Fig. 3.26). Worked Bronze Age flint has been recovered from nearby fields (MLI42479, 42480 and 42482). Cropmarks attributed to Roman activity have been plotted within 200 m of the site to the north-east (MLI85360), with another concentration 520 m to the south (MLI85191). An undated cropmark settlement consisting of boundaries and enclosures is recorded 160 m to the south of Cheals Close (MLI85188). More tangibly, around 1.4 km downstream from Cheals Close, excavations in advance of the construction of the Partney bypass revealed a medieval rural monastic hospital and an Iron Age/Romano-British settlement site (Archaeological Field Unit 2005; Atkins and Popescu 2010). This range of material surrounding Cheals Close is to a certain extent reflected in the archaeology of the site itself.

Overview of Results

The attribution of nearby cropmark evidence to the Romano-British period is supported by a few ditches on a co-axial alignment in the east of the site that produced nothing later than finds from the period in question. The excavated remains reveal the land was enclosed and farmed following the Roman Conquest, although further conclusions are limited by the sparseness of the evidence.

Subsequent occupation of the site in the 8th–9th century AD is indicated by finds evidence and radiocarbon dates. During this period, three largely artefactually sterile post-built structures were constructed at Cheals Close, along with a rectangular enclosure that occupied much of the central part of the site. The eastern and western sides of the enclosure were subsequently replaced by more substantial boundaries later in the Anglo-Saxon period. A small farming settlement may be envisaged, although understanding of its function is hampered by a lack of finds, and its original layout had been impacted by ridge and furrow cultivation and repeated episodes of boundary definition from the Anglo-Saxon period onwards.

Nearby Interconnector Sites

Four other excavation areas were investigated within 0.5 km of Cheals Close, two to the north-east and two to the south-west (Fig. 3.26). Although there is no corroboration of the present site's Anglo-Saxon activity, overall, their

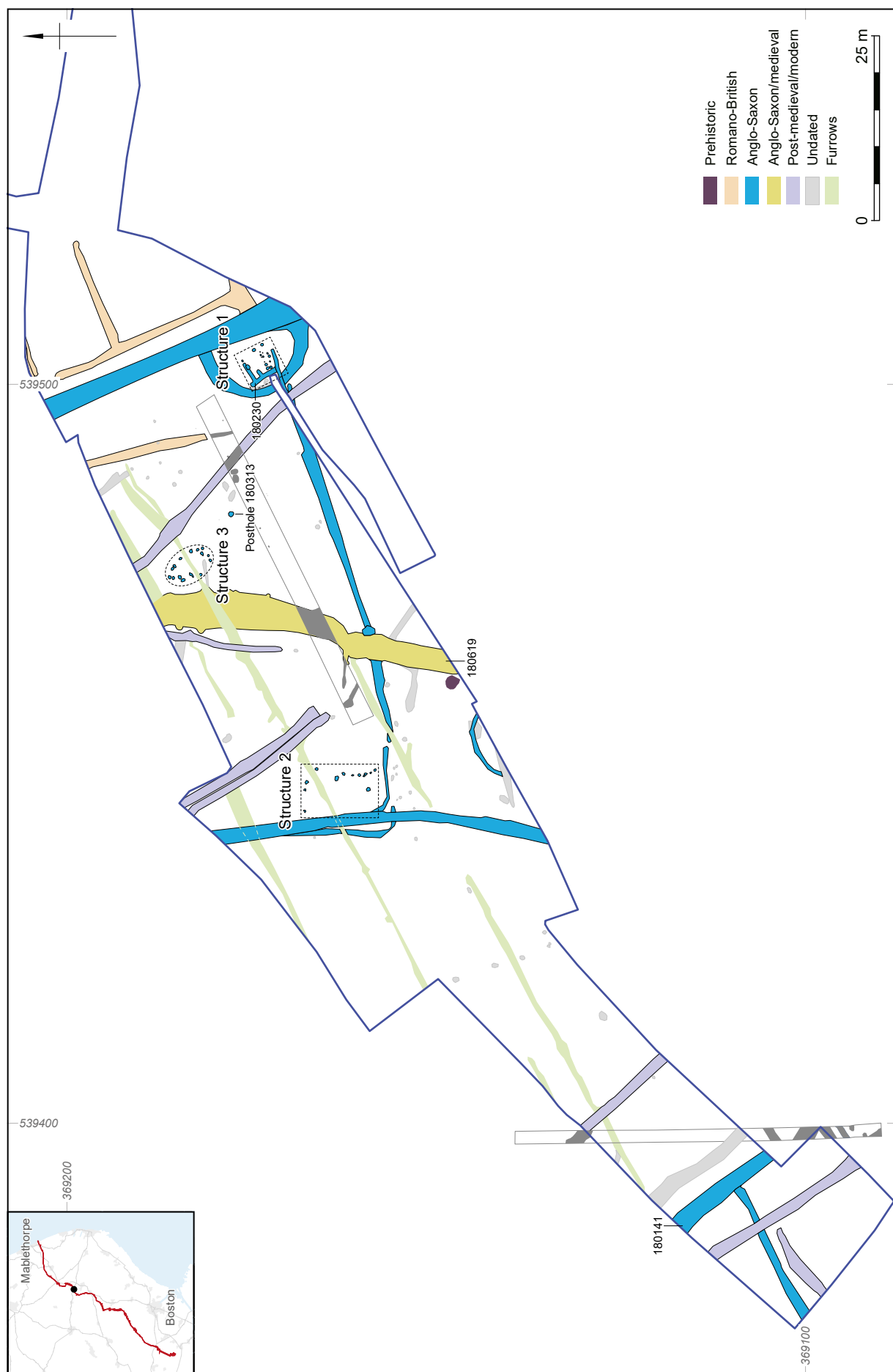


Figure 3.25 Cheals Close: overview of features

period of time, although the narrowness of the investigated transect means, as ever, that the land parcels once defined by the various excavated ditches cannot be identified. Despite the longevity of the activity at Cheals Close, it appears to have been directly settled only during the Middle–Late Anglo-Saxon period, shortly after the cessation of burials at Callow Carr, which lay 1.8 km to the north-east.

The settlement pattern of Anglo-Saxon Lincolnshire is poorly understood (Albone 2000; Everson 1993), but the favourable conditions offered by the Lymn Valley mean that one does not have to look far for comparators for Cheals Close. Around 4 km south-east of the site, Early–Middle Anglo-Saxon activity (7th–9th century) was focused around three sunken-featured buildings discovered at Halton Hologate (Ramsey 2004), while approximately 8 km north-west of Cheals Close, another sunken-featured building has been excavated, this one at Salmonby, close to the head of the River Lymn (Everson 1973). This was assigned to the 7th century and so a little earlier in date than the structures at Cheals Close. The use of post-built construction techniques at Cheals Close probably reflects the 8th–9th-century use of that site, as sunken-featured buildings are uncommon after the late 7th century, especially in rural settings (Tipper 2004, 11–3). Building function may also have determined the construction technique utilised, but a lack of evidence prevents further comment.

Figure 3.27 Cheals Close, view from south-west towards stream



Probably of most relevance is the monastery founded at Partney in the mid- to later 7th century (Coppack 2010, 208), as the Anglo-Saxon activity at Cheals Close would have occurred in its hinterland. The place-name *Partenau* was first recorded c. 700 by Bede (*ibid.*). The precise location of the monastery is unknown, but it would have probably been close to the modern settlement and so within a kilometre or two of Cheals Close. Recent investigations at Fair Field in the centre of Partney exposed numerous pits and ditches dating from the Middle Anglo-Saxon period and extending into the later part of the period (PCAS Archaeology 2019). The presence of Ipswich Ware pottery at the Fair Field site has been taken as an indicator of its high status, 'likely to be the estate of a Saxon thegn and also likely to be associated with the monastery recorded by Bede' (*ibid.*, 35).

Excavations along the Partney bypass, the route of which lies between Fair Field and Cheals Close, 'found very little evidence of Anglo-Saxon activity' (Archaeological Field Unit 2005, 205), which gives the impression that Cheals Close would have been a minor neighbour of Partney, with open agricultural land separating the two. The occupation of Cheals Close does not appear to have been particularly long-lived, although its

cultivation was – similar to the better-known settlement at Quarrington (Taylor *et al.* 2003). Sausthorpe, the closest extant settlement to Cheals Close, is not recorded until the 12th century (Ekwall 1960, 405; Everson 1973, 66). The monastery at Partney is thought either to have been sacked by Viking raiders in the 9th century, or to have succumbed to the downturn that followed the raids (Coppack 2010, 209), and it may be that similar forces were responsible for the end of the occupation at Cheals Close around the same time. However, the pottery assemblage from Fair Field signals a more resilient settlement there, with activity continuing (or resuming) in the Saxo-Norman period and beyond.

Mown Rakes

Introduction

This site comprises three separate excavation areas lying along a 1 km stretch of the cable route that crosses an area marked as ‘Mown Rakes’ on historical mapping.

A total of 1.16 ha was stripped at Mown Rakes (centred on NGR 521265 345160). The geological substrate hereabouts is recorded as Mudstone, Siltstone and Sandstone of the West Walton, Ampthill and Kimmeridge clay formations, overlain by clay, silt and sand alluvium (British Geological Survey 2024). The Mown Rakes site lay within the Fenland section of the Interconnector route; as such, the ground was low-lying and largely flat, albeit with subtle differences in elevation: at the northern end the stripped ground surface lay at around 0.8 m OD and was 1 m higher a kilometre to the south.

The excavation of the three areas making up Mown Rakes was due to the density of features revealed in the evaluation. By contrast, although geophysical survey was carried out across the entire area, most of the detected anomalies were interpreted as geological. Little archaeological material had been recorded previously near Mown Rakes, but after the construction of the Interconnector, a large-scale trench evaluation undertaken to its immediate west, across Heckington Fen in advance of a proposed solar farm, revealed further Romano-British remains (Wessex Archaeology 2023d).

The majority of the pottery from Mown Rakes can only be given a broad Romano-British date. The most chronologically diagnostic wares suggest activity was focused on the mid-Roman period (mid-2nd to mid-3rd century AD), with a cessation of pottery supply to the site sometime in the second half of the 3rd century. The central of the three excavation areas that make up Mown Rakes contained material with a slightly later date range than that to the north. The pottery assemblage from the northern and central areas amounted to nearly 500 sherds, but only a handful of sherds were recovered from the southern area, demonstrating its fringe status.

Overview of Results

This was a zone of relatively intense Romano-British activity, with recorded features including ditches, lozenge-shaped pits or short ditches, circular pits, ponds and spreads (Fig. 3.28). Pottery dates suggest a focus of activity in the 2nd and 3rd centuries AD. A substantial assemblage of briquetage was collected from Mown Rakes; cremated human bone was recovered from two other features.

The earliest activity at Mown Rakes dated to shortly before the Roman Conquest, when – to judge by the presence of briquetage – curvilinear ditch 530296 in the centre of the site formed a focus for saltmaking (Fig. 3.29). A nearby pond (530220) may have had a role in saltmaking, perhaps as a reservoir for brine. No briquetage was recovered from the feature, but the types of foraminifera (single-celled organisms) recorded within



Figure 3.28 Mown Rakes: overview of features



Figure 3.29 Mown Rakes: ditch 530296 with in situ briquetage, east-facing section (1 m scale)

the feature do indicate brackish estuarine or marsh conditions in the past. A second and later (i.e., Romano-British) concentration of briquetage was found in the northern part of the site, but quantities were much lower there.

Field system remains spanned most of the 1 km length of Mown Rakes and point to widespread enclosure and cultivation of the local Fen-edge around the 2nd to mid-3rd century AD. The constituent ditches tended to be fairly shallow and many followed a common co-axial north-east to south-west/north-west to south-east arrangement (Fig. 3.30). The two discrete burials of

cremated human bone were found within this field system. They lay over 200 m apart and comprised a pit (530132) containing a cremation-related deposit and a shallow grave (540003). The northernmost remains (in pit 530132) derived from an adult aged 18–40; the most identifiable bone fragments from the southern feature were also from an adult, possibly a male. Osteological analysis has identified duplication of skeletal elements across the two features, establishing these are the not remains of the same individual. Radiocarbon dating indicates these features were contemporary with the mid-Romano-British field system.



Figure 3.30 Mown Rakes: north-east-facing section of ditch 540049 (1 m scale)

Six Hundreds Drove

Introduction

An excavation was undertaken 230 m south of the Mown Rakes site (see above), close to the route known as Six Hundreds Drove.

At 0.77 ha, the Six Hundreds Drove site was the largest of the excavation areas, occupying a 370 m stretch of the Interconnector route (centred NGR 521068 344384). The stripped ground surface rose from 1.7 m OD at the northern limit of excavation to 3.3 m OD at the southern limit. The underlying geology is mapped as Mudstone of the Ampthill clay formation, overlain by clay and silt of the Tidal Flat deposits.

The geophysical survey revealed very few anomalies of archaeological interest, with the decision to excavate the site prompted instead by the results of the evaluation

trenching, which uncovered Romano-British features, some with deposits of high environmental potential, and evidence of a nearby pottery production site. Although the Six Hundreds Drove site forms a southward continuation of the swathe of Romano-British archaeology represented by Mown Rakes, it has been treated in this account as a different 'site' because of the localised evidence of potmaking, and the distance (230 m) separating it from Mown Rakes.

Overview of Results

The work exposed multiple linear drainage features and a large pond (Fig. 3.31). Pottery dates suggest activity began on the site in the mid- to late 1st century AD and

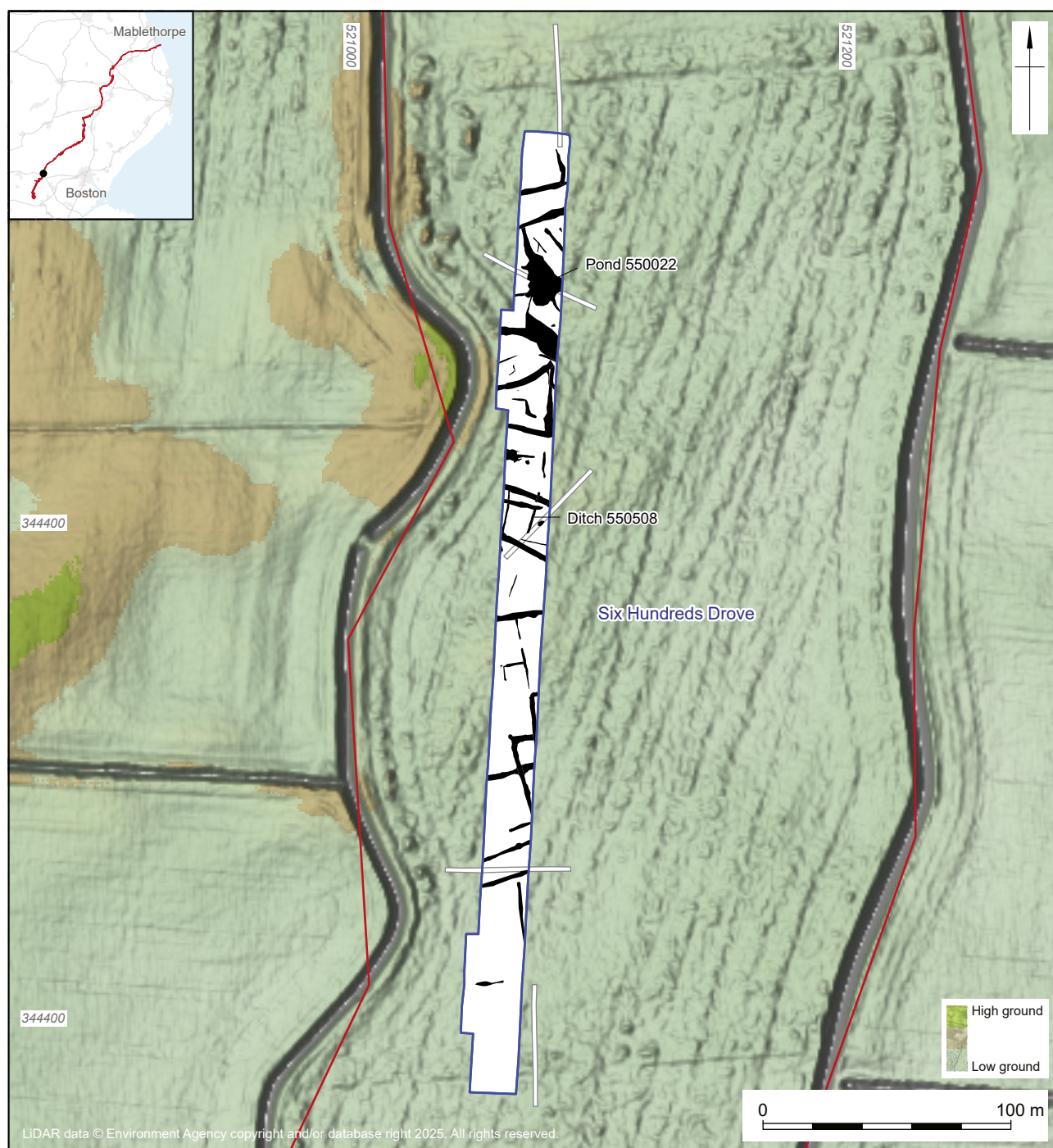


Figure 3.31 Six Hundreds Drove: overview of features

continued until some point in the first half of the 3rd century AD. Pottery wasters and briquetage provide evidence of Romano-British pottery production and saltmaking, although there was no indication either had occurred on the site itself.

The pond (550022; Fig. 3.32) lay in the northern part of the site and was found to contain a large and fairly undisturbed pottery assemblage that included pottery wasters: the presence of misfired or overfired grey ware sherds suggests the presence of a potmaking kiln somewhere nearby. As at Mown Rakes, field boundary ditches were the most common type of feature recorded, and these spanned a further 350 m of the Interconnector, underlining the widespread enclosure and cultivation that this part of the Fen-edge underwent in the early–middle Romano-British period. There was better evidence here than at Mown Rakes that the layout of fields was adapted during the relatively short period that they were in use. Abundant environmental evidence indicates the low-lying position of the site and proximity of saline soils were not barriers to the cultivation of cereals at that time; spelt wheat was probably the main crop, with barley also grown. There was no clear structural evidence associated with the field system, although plentiful charcoal from structural timbers found in one ditch (550508) may represent redeposited debris from a nearby burnt-down building. A possible house site at Mown Rakes (appended to the northern side of ditch 530308) also demonstrates the potential for such occupation. Saltmaking may also have formed part of the Romano-British economy at Six Hundreds Drove, with briquetage found redeposited in a few features, albeit in much more modest amounts than was seen at the peri-Conquest saltern at Mown Rakes, 700 m to the north.

Figure 3.32 Pond 550022, view from south (2 m scale)



Discussion

At the time of their occupation in the first three centuries AD, Mown Rakes and Six Hundreds Drove would have lain on the edge of the former large estuary known as Bicker Haven (Fig. 3.34), close to an inlet that led upstream towards Sleaford (14 km away), an important centre during the later Iron Age and a roadside settlement in the Romano-British period. Sleaford has been described as probably 'a port of some significance in the late Iron Age' (Jolliffe 2010, 180). Mown Rakes and Six Hundreds Drove are situated within the parish of Swineshead, a place-name translated as 'the head of the creek' (Green 2020, lxviii) and 'the place in a low situation/source of the Swin' (Ekwall 1960, 457). Further waterborne connections for the inhabitants may have been offered by the Car Dyke, a large canal held to be of Roman construction (as a catchwater and/or transport infrastructure: Hall and Coles 1994, 105–7), which lies 4 km west of the sites, and the River Witham, which would have led into the Bicker Haven embayment about 10 km to the north. Within the Fens,



Figure 3.33 A rim fragment from a Romano-British jar in ditch 550518 at Six Hundreds Drove (0.3 m scale)

settlement, especially prior to the large-scale drainage of the landscape from the post-medieval period onwards, tended to favour roddons, sinuous banks representing silted-up former drainage channels (Hall and Coles 1994, 19; Lane 1988, 315; Malone 2014, 2; Murphy 2005, 262). The clearest roddon nearby is that followed by the course of the modern A17 where it runs between Heckington and Swineshead Bridge; Mown Rakes and Six Hundreds Drove are not situated on the crest of the roddon itself but on the slope that descends northwards from there. Set against this topographic context it is interesting that the Mown Rakes saltern was not found at the northern – and therefore lowest – end of this area of activity (here at 0.8 m OD), but at around 1.4 m OD instead.

Most of the Interconnector sites cannot be linked with results from excavations in their vicinity because of a general lack of comparable work. However, this is not the case with Mown Rakes and Six Hundreds Drove, as following their excavation a large (587 ha) area to their immediate west was evaluated during works (ongoing at the time of writing) associated with a proposed solar farm at Heckington Fen (Fig. 3.35; Wessex Archaeology 2023d). No obvious westward continuation of the activity at Mown Rakes was detected during the evaluation, in accordance with LiDAR data showing the ground level descending to the west. By contrast, Romano-British pottery was relatively plentiful from the trenches to the west of the Six Hundreds Drove excavation area, where the ground level rises and a settlement area of at least 10 ha seems likely. To judge by the

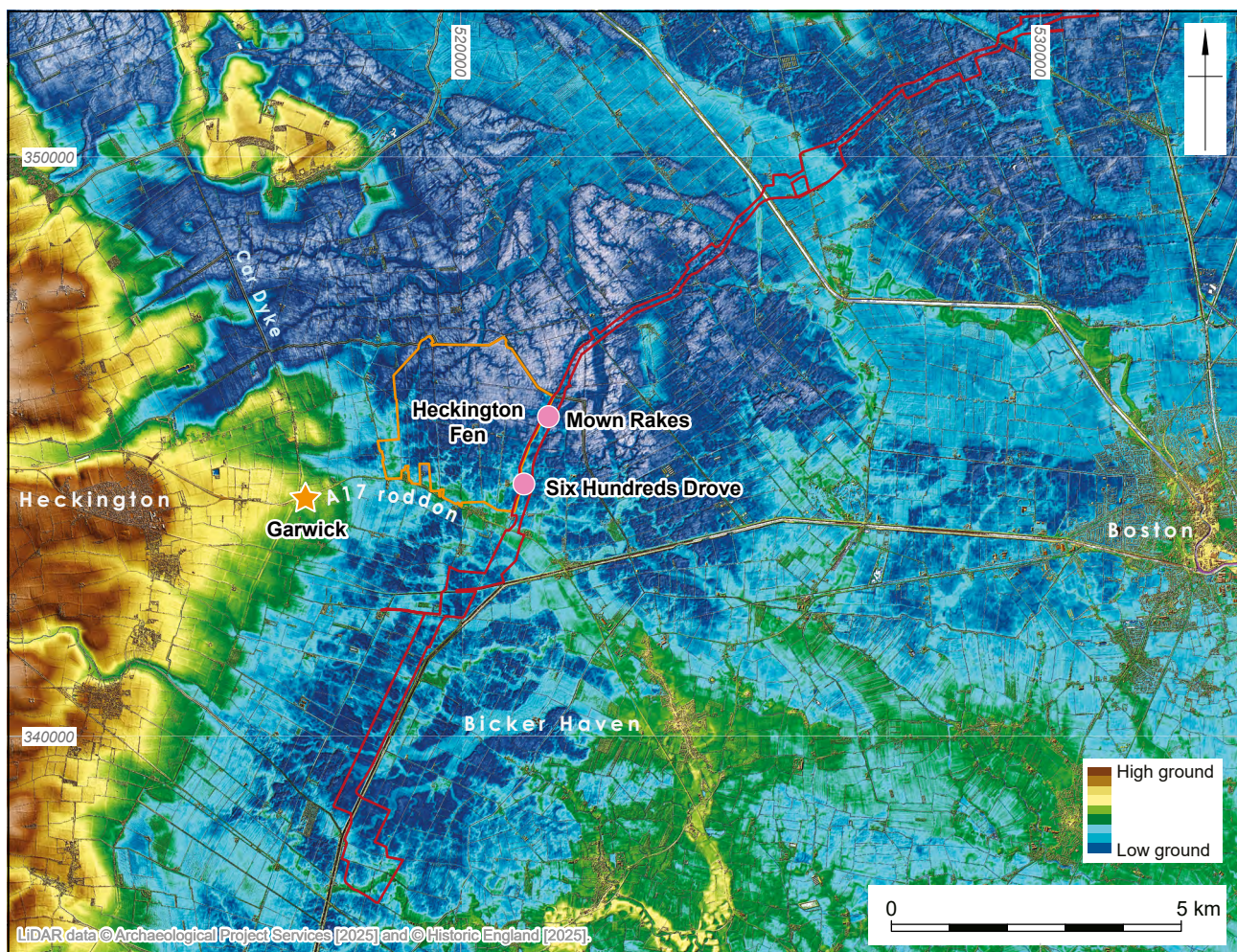


Figure 3.34 Setting of Mown Rakes and Six Hundreds Drove

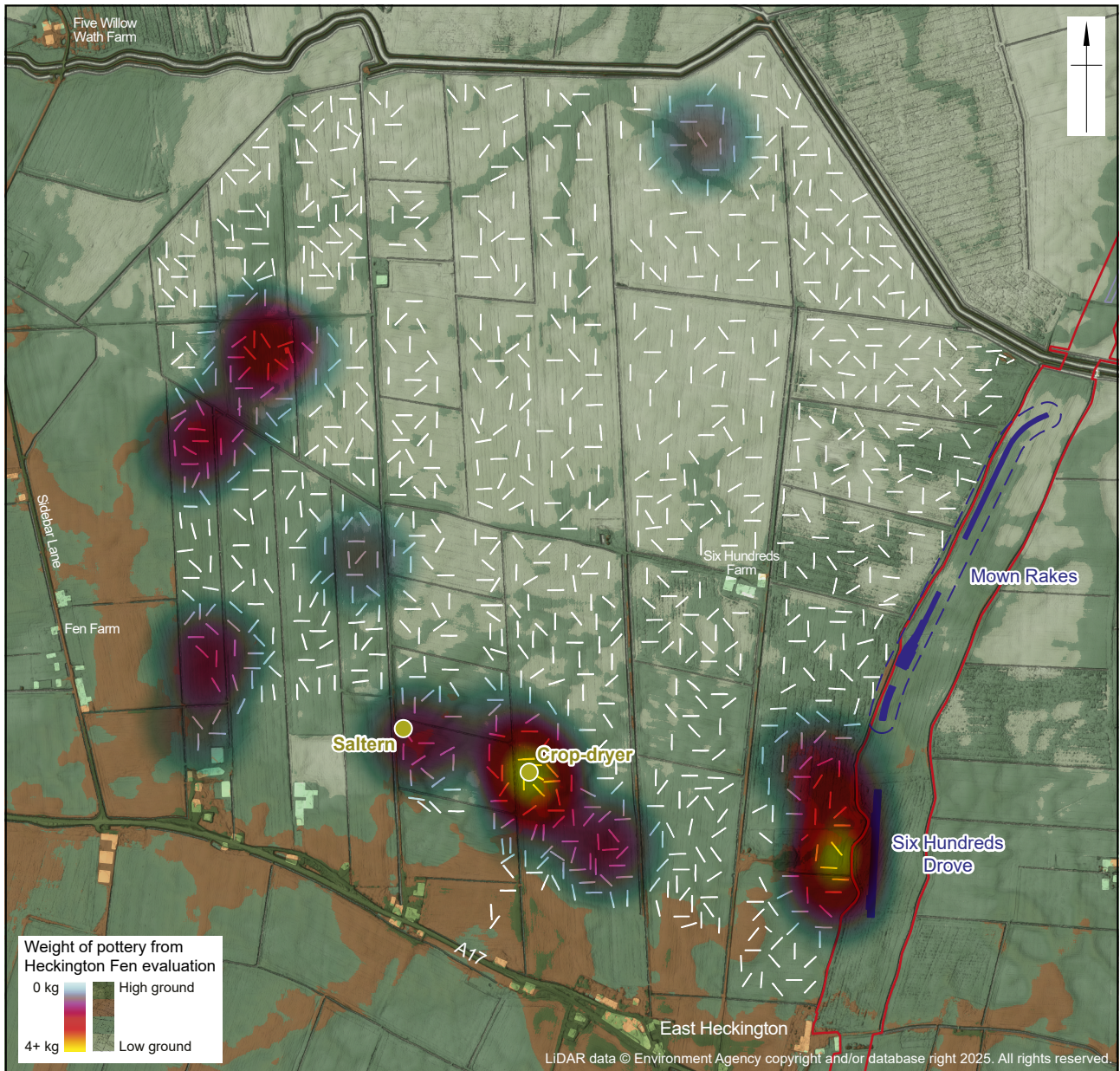


Figure 3.35 Mown Rakes, Six Hundreds Drove and the results from the Heckington Fen evaluation

quantities of ceramics recovered from the Heckington Fen trenches, two or three further foci of settlement, or at least pottery discard, are situated on the slightly higher ground around the southern and western edges of the solar farm site. Preliminary assessment of the pottery from the evaluation suggests a similar ceramic profile to the Interconnector results, with an assemblage that 'predominantly consists of utilitarian coarsewares, with a smattering of both imported and regional British wares' (*ibid.*, 32), albeit with more evidence of pottery use continuing into the 4th century at Heckington Fen. No mention is made in the evaluation report of any wasters or misfired pot relating to the kiln identified near Six Hundreds Drove, and no such feature was found during the evaluation, although a possible saltern with around 4 kg of briquetage was located at NGR 519630 344750 on the southern edge of the solar farm site. As with Mown Rakes and Six Hundreds Drove, there was a long archaeologically barren hiatus between the Romano-British and post-medieval periods, but Heckington Fen did differ from the Interconnector results in that it generated a small assemblage of worked flint (21 pieces, while no struck flint at all was recovered from Zone 3 of Viking Link). Environmental evidence from both Six Hundreds Drove and the solar farm evaluation points to the cultivation of spelt wheat and barley, along with crop-processing activities and discard of fuel waste, with the type and state of some cereal remains recovered on the southern edge of the solar farm site raising the possibility of a crop-dryer having been located nearby (*ibid.*, appendix 3).

The combined impression from both the Interconnector and Heckington Fen projects is that, on the fringes of the Bicker Haven embayment, there was an expansion of settlement and agriculture onto whatever land was dry enough during the Romano-British period, with saltmaking and pottery production also carried out. Interestingly, despite the widely held belief that sites ringing the Fens were so-located to draw on both wetland and dryland resources ('the possibility of profiting from both environments, the dry and the wet': Louwe Kooijmans 1988, 379), the excavations along the Interconnector recovered very little direct evidence of any distinctly wetland species. For instance, there were no remains of otter or beaver within the animal bone assemblage, and only very low numbers of fish and waterbird bones were recovered. More generally, the animal bone assemblage from the project overall was described as 'rather a monoculture of domesticates with little else' (L. Higbee, pers. comm.). With regard to the Fenland sites specifically, their layout, imprinted with a shifting co-axial grid of ditches, does not differ markedly from those lying at higher elevations. Similar observations were made following the excavation of one site with a characteristic wetland economy, that at Upper Delphs near Haddenham, Cambridgeshire (Evans and Serjeantson 1988). Perhaps the picture would be different from Viking Link if the limited window of sampling had not obscured the full extent of the sites, or if their environmental and faunal assemblages had been better preserved. There are grounds for thinking otherwise, however. No human bone was available for isotope analysis from Six Hundreds Drove and Mown Rakes but the results from White Crofts, on its inland island in the Lincolnshire Marsh, indicate a terrestrial diet with little to no input from marine resources (see Volume 2, Appendix C). Despite its low-lying Fenland setting, with a saltern nearby, Six Hundreds Drove has a distinctly arable character that would not be out of place in the 'breadbasket' areas of the province: samples from some of the features at Six Hundreds Drove were so rich in grains and chaff from cereals that the former presence of a granary there has been suggested (see López Dóriga *et al.*, Chapter 5 below), and of the six querns or possible fragments of quern found on the whole scheme, four came from Six Hundreds Drove. Large-scale cereal production where brackish water penetrated the silt fen has been thought unlikely (Hall and Coles 1994, 121), but where conditions permitted and arable cultivation was possible, it appears that in the Romano-British period the opportunity was grasped, seemingly at the very margins of tolerance of such crops.

The presence of an Early–Middle Anglo-Saxon trading centre has been proposed, on the basis of numerous surface finds, at Garwick, which lies on the A17 roddon about 3.5 km west of Six Hundreds Drove (Green 2020, 192–6). This 'exceedingly interesting site' (*ibid.*, 192) may have been an offloading point for ship-borne goods which were then transported by land inland to the Sleaford–Quarrington area. Although there were no finds from the Interconnector or Heckington Fen solar farm evaluation of direct relevance to this proposed activity, the newly discovered Romano-British sites with their fineware imports provide an antecedent for the bringing in of goods to this point in the landscape, potentially making them forerunners of the Garwick *entrepôt*. The presence of the trading centre at Garwick has been related to its favourable position where a major roddon intersected the Fen-edge (Green 2023, 121), and the sites at Mown Rakes and Six Hundreds Drove would have enjoyed the same advantages offered by this part of the landscape, albeit a few hundred years earlier. The presence of three gold Iron Age coins and Romano-British material amid the early medieval finds around Garwick has been suggested to indicate the existence of 'some sort of votive shrine' (*ibid.*, 196). This may have formed part of the backdrop of the Six Hundreds Drove site, with the deposition of human remains at Mown Rakes representing another way in which this part of the landscape was sacralised around that time.

CHAPTER 4

SMALLER SITES, SCATTERED FINDS

Introduction

PRESENTED WITHIN THIS CHAPTER IS AN OVERVIEW of the excavation results from the sites of secondary importance. These have been arranged by period, in order to give a sense of the chronological development of the landscape.

Mardon Hill

A site at the foot of the southern slopes of Mardon Hill (Zone 2; NGR 537289 363805) stands out as one of the richest for flint finds (Fig. 4.1). The assemblage from it and the nearby trenches includes both Early Neolithic and Mesolithic material.

During evaluation trenching (trenches 122, 124, 149 and 280) almost 40 pieces of worked flint were recovered from the topsoil and subsoil. When the area between

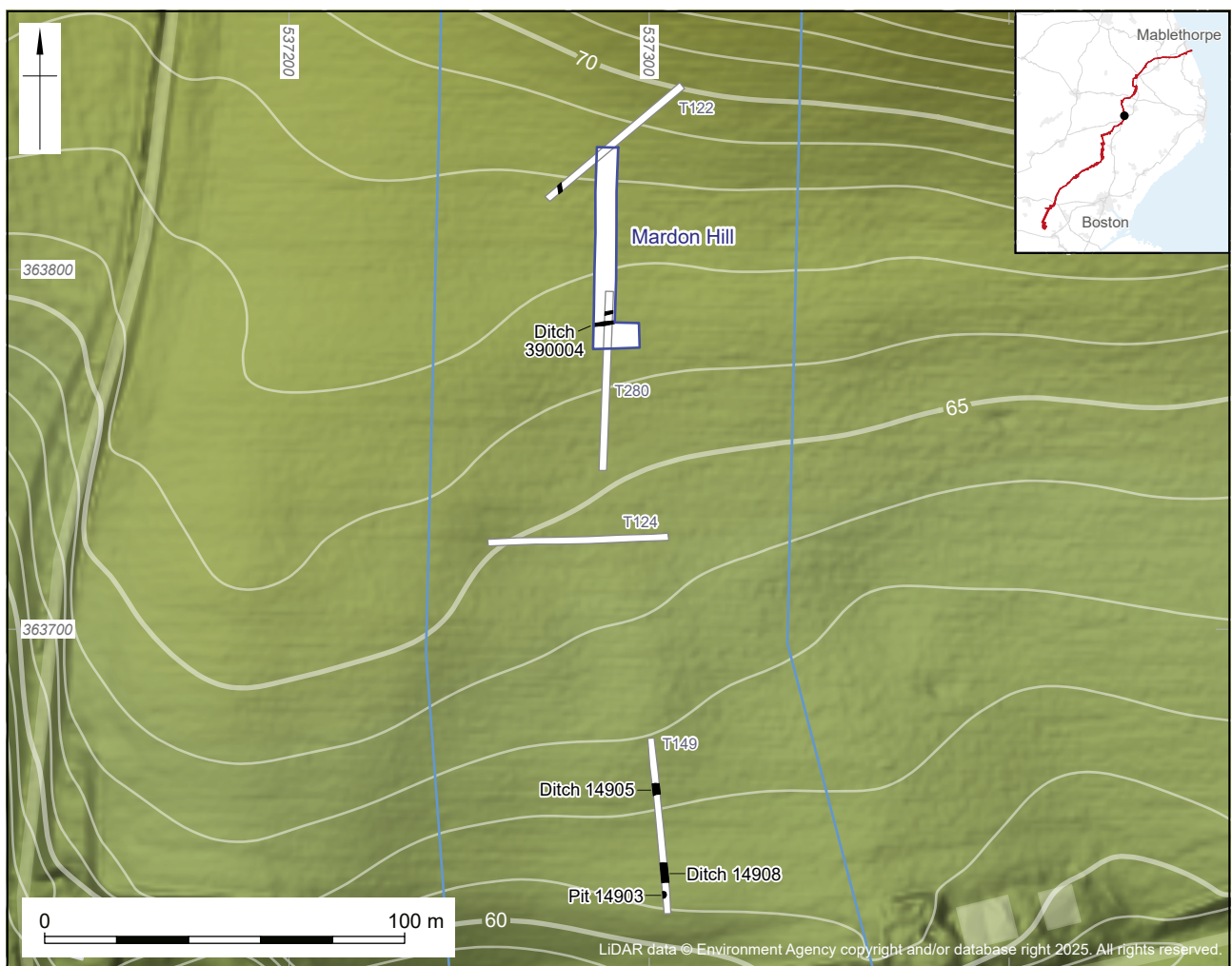


Figure 4.1 Mardon Hill

trenches 122 and 280 was stripped of overburden, an assemblage of 34 struck flints was collected from the stripped ground surface in the northern half of the site. Additionally, four sherds of pottery of probable earlier prehistoric date were found. Two furrows and an undated ditch (390004) crossed the southern part of the site on an east–west alignment. Three worked flints were recovered from the ditch. A report on the worked flint recovered from the Interconnector is presented in Volume 2, Chapter 8.

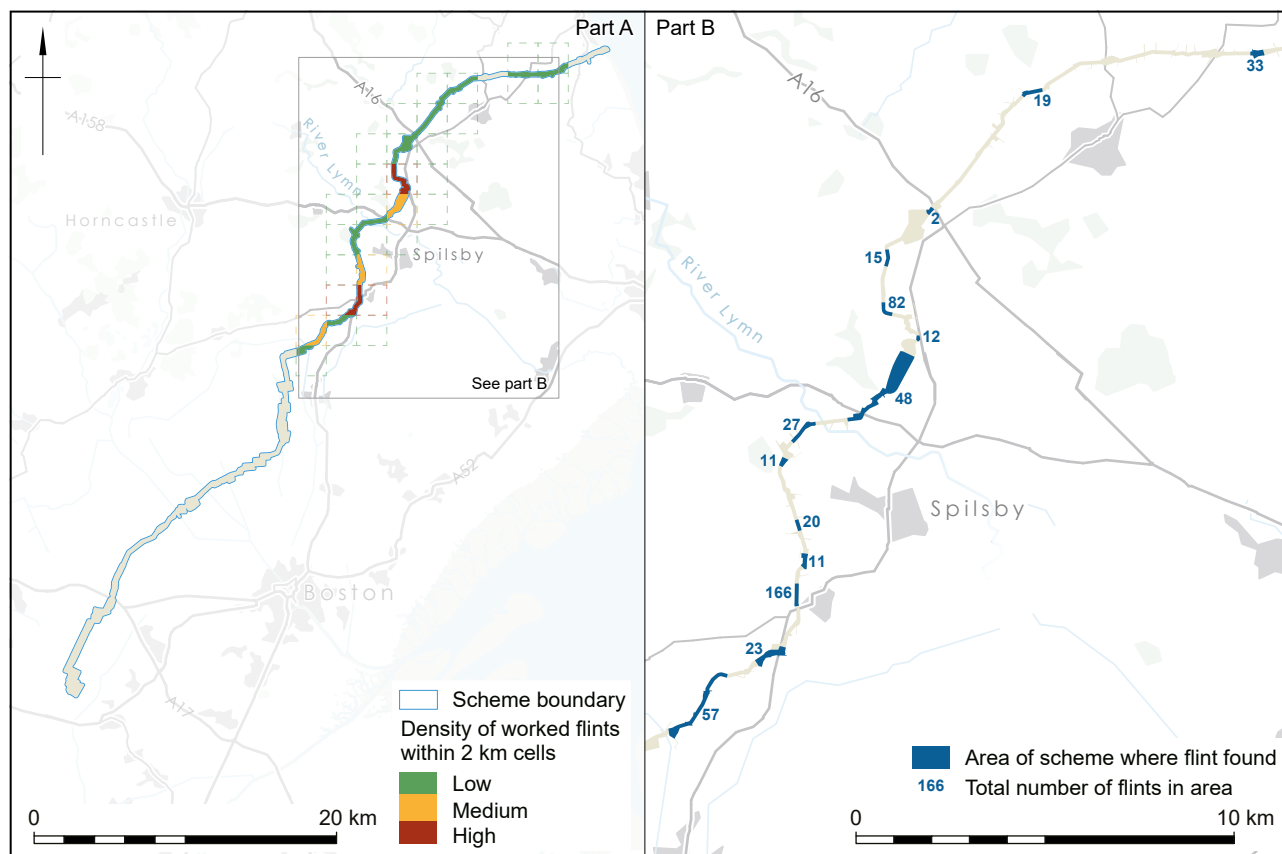


Figure 4.2 Distribution of worked flint along the Interconnector route

Neolithic Sites and Findspots

Aside from worked flint, Neolithic material was extremely rare from the Interconnector route, although a few features can be attributed with confidence to the period on the basis of radiocarbon dating evidence. A generous radiocarbon dating programme was undertaken (78 dates obtained) but, even so, it is likely that had more samples been submitted, more Neolithic features would have been identified.

The butt end of a Neolithic stone axe was retrieved from a shallow pit or natural hollow that extended into evaluation trench 94 (9403: 3.4 x >1 x 0.5 m); this lay 150 m east of the Cheals Close site and on the other side of the tributary of the River Lymn that that site lay alongside. This find represents an addition to the already distinct cluster of Neolithic axe heads found within the Lymn Valley (Bennet 2009, 21–23).

Further confirmed traces of Neolithic activity were found in the Lymn Valley (Fig. 4.3). The small Fourteen Acres site (NGR 539265 368928; 23 m OD) lay just 0.5 km to the south-west of the axe head findspot; its most significant result was an oval pit (370010: 0.68 x 0.24 x 0.13 m; Fig. 4.4). Although the pit was artefactually sterile, it contained an abundant charred plant assemblage that included hazel nutshell radiocarbon dated to the Middle–Late Neolithic period (UBA-52875; 3010–2700 cal. BC). Fourteen pieces of worked flint were also recovered from the Fourteen Acres site; although unstratified, this fair-sized assemblage (by the modest standards of the project) further demonstrates a focus on this part of the landscape within prehistory.

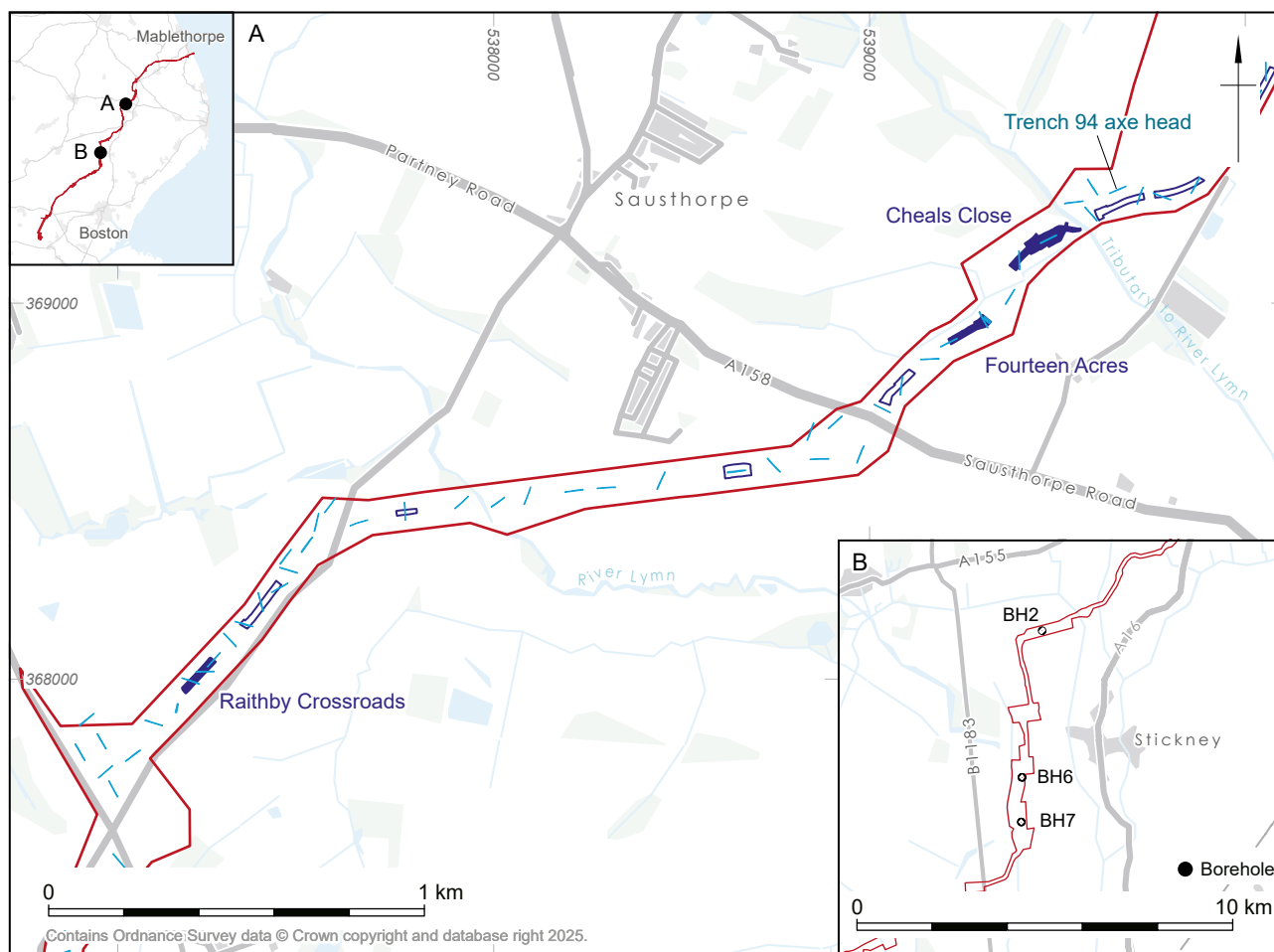


Figure 4.3 Neolithic remains in the Lymn Valley

Around 2.3 km south-west again, and on the other side of the Lymn, lay the Raithby Crossroads site. Traces of activity there were largely from the Iron Age (see below), but this site also provided a moderate struck flint assemblage (16 pieces) accompanied by a hazel nutshell fragment with a Neolithic date, in this instance from much earlier in the period (UBA-52909; 4949 ± 31 ; 3790–3650 cal. BC). Although the nutshell fragment was residual in an Iron Age feature, the evidence as a whole further supports the notion that the Lymn Valley was something of a focus of activity in the Neolithic.

The description of these Lymn Valley sites and findspots, and the aforementioned radiocarbon evidence of Neolithic activity on Walk Hill on the high chalk, completes this overview of the Neolithic archaeological evidence from the Interconnector, although some of the results from the borehole survey (see online data supplement)

provide them with a broad context by revealing something of the contemporary environmental conditions within Zone 3. To the west of the Stickney Moraine, near the Medlam Drain, two radiocarbon dates from two separate boreholes (BH6 and BH7), about 1.2 km apart, indicate periods of peat formation during the Neolithic period (Table 4.1). Associated pollen suggests mixed woodland and/or scrub nearby, composed of oak, alder/hazel/bog myrtle, yew and lime, so this part of the landscape appears well wooded, although the consistent presence of wood charcoal in the peat in boreholes BH2 and BH6 likely indicates human activity (i.e., burning) in the area. At this time, tidal environments dominated by mudflats and saltmarsh would have started to form across the Fenland basin (see D. Young, Chapter 2 above).



Figure 4.4 North-facing section of Neolithic pit 370010 at Fourteen Acres (1 m scale)

Laboratory reference number	Borehole & NGR	Sample depth BGL	Sample details	Radiocarbon age (BP)	Calibrated date (95% probability)
UBA-53366	BH6; 532313 355893	0.86–0.88	Top of peat unit: waterlogged wood; <i>Taxus baccata</i> stemwood fragment	3823 ± 29	2450–2150 cal. BC
UBA-53368	BH7; 532292 354707	4.59–4.61	Bottom of peat unit: waterlogged plant remains; <i>Rubus</i> sp. seed x1	4784 ± 37	3640–3390 cal. BC

Table 4.1 Radiocarbon dating results for peat formation in boreholes BH6 and BH7

Bronze Age

Bronze Age evidence was similarly rare along the Interconnector (Fig. 4.5). While a proportion of the flint assemblage will have been produced and used at that time, the period is nevertheless poorly represented within the Viking Link data. As is often the case with remains dating from the Bronze Age, it is funerary activity that has marked the land most conspicuously, with few other actions clearly evidenced. The Callow Carr barrow has been described above and its prominent Wold-edge location alongside other probably contemporary monuments noted. However, the Interconnector dataset sheds no light upon the population that built and presumably originally used the barrow, with little clear evidence of any contemporary settlement. This is probably in part attributable to the narrow width of the Interconnector sites lessening the chances of encountering datable finds from a period with a somewhat slight archaeological signature. But the primacy of funerary monuments is also an acknowledged characteristic of the period (Bradley 2007, 168; Parker Pearson 1999, 84–6).

More Bronze Age funerary evidence was recovered 12 km south of Callow Carr, at Back Lane. This site is more fully described further below on account of its Iron Age remains, but its Bronze Age component merits a mention here. The site lay at 4.2 m OD in the parish of Stickford, immediately south of the former runway of RAF East Kirkby (NGR 534634 360764). This point is at the 'landward' (northern) end of a north–south promontory of raised ground known as the Stickney Moraine (Brew *et al.* 2015, 73; Lane and Hayes 1993, 41) that projects south into the Fens for some 6 km. That this low ridge offered better-drained ground that provided a suitable platform for occupation from the Bronze Age onwards is already recognised (Lane and Hayes 1993, 31). A settlement site at Hagnaby Lock (LHER MLI41009), lying 700 m to the south-west of the Back Lane site, has been partially excavated on two occasions: in the 1990s as part of the Fenland Project (Crowson *et al.* 2000), and later as site 'Y1' ahead of the construction of the Covenham to Boston water pipeline, when ditches and a midden were found to contain Middle Bronze Age pottery, flint and burnt stone (Oxford Archaeology East 2014, 52–53; see Fig. 5.10).

The site at Back Lane was fairly small (0.07 ha) and contained boundary ditches and smaller curvilinear gullies and ditches, although few were well dated (Fig. 4.6). An east–west ditch at the southern edge of the site (410127) contained pottery for which a Bronze Age date may be likely, along with the majority of Back Lane's assemblage of 10 pieces of worked flint, with no obviously later material apparent. But the most significant feature was a stratigraphically early ring ditch, 410125 (0.57 m wide x 0.19 m deep). A 10 m-length was visible on the site, with a further 2.5 m exposed off-site in evaluation trench 135. It may have originally formed a circle of around 12.5 m diameter; a terminal was apparent at its northern end, although this was shallow and poorly defined, implying it may have been a product of truncation rather than reflecting the original arrangement. Cremated human bone (65.9 g deriving from an adult of unknown sex) was found in the central of the three slots dug across 410125 (see McKinley in Volume 2, Chapter 8). A sample of the bone was submitted for radiocarbon dating and returned a Middle Bronze Age result (SUERC-126879). A small group of ceramic sherds resembling Bronze Age pottery (or briquetage of the same date – see Brook in Volume 2, Chapter 8) was also recovered from this feature, most from the same slot as the cremated bone. The feature may represent the ring ditch

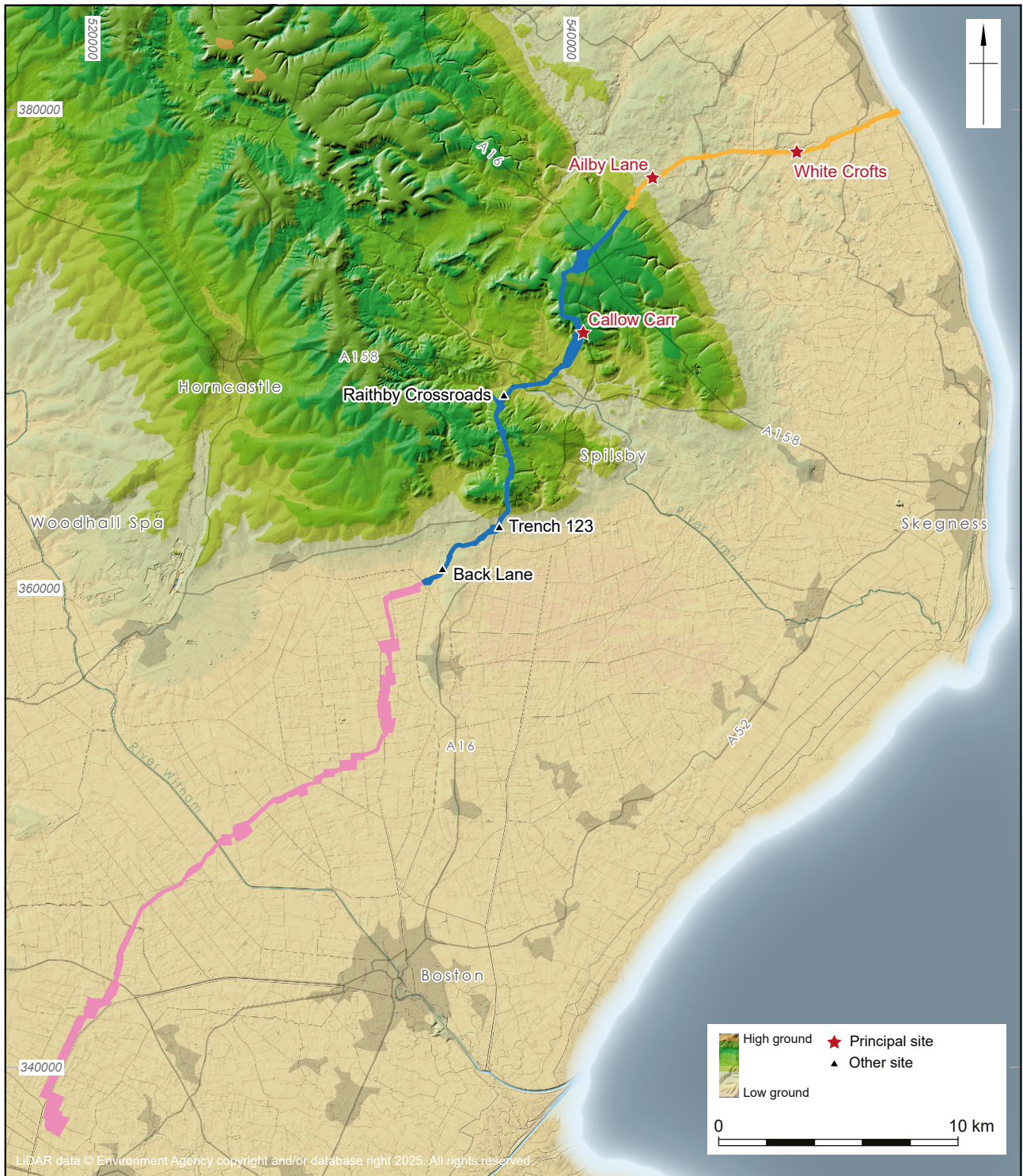


Figure 4.5 Bronze Age sites

of a second Bronze Age barrow from the Interconnector; alternatively, it may have formed part of a roundhouse, given its modest proportions, the nearby contemporary settlement evidence and the fact that it had been comprehensively slighted by a later ditch (410124, which contained Anglo-Saxon pottery), a turn of events that might argue against a central mound having once been present.

Pottery of Bronze Age appearance was recovered from a handful of other locations along the Interconnector route. From east to west along the route these were: at White Crofts, where two thick-walled body sherds of possible Early or Middle Bronze Age date were found residually within Romano-British ditch 301415; at Raithby Crossroads, where another two sherds were recovered from pit 220048; and a posthole from trench 123 in

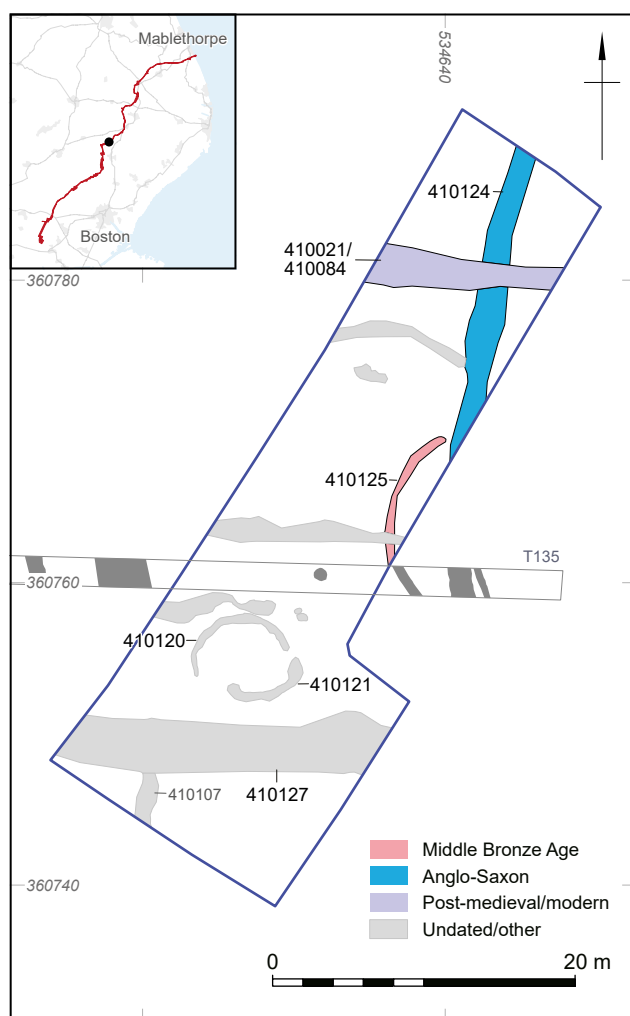


Figure 4.6 Back Lane

development of freshwater fen along Zone 3 of the route (Brew *et al.* 2015; Hall and Coles 1994, 65). That the bulk of the Iron Age evidence derives from the higher ground of Zone 2 that separated the Lincolnshire Marsh from the Fenland portion of the route may well reflect these conditions.

Wheat production formed part of subsistence strategies at this time, with Iron Age radiocarbon dates obtained on cereal grains from seven sites along the scheme. These all lie within Zone 2 (the stretch of the route that encompasses the Wolds and Lymn Valley), and extend for its full length, from near Ulceby Cross (Sutterby Field) in the north to near Stickford on the edge of the Fens in the south (Staunch Farm). Walk Hill was one of the sites with wheat radiocarbon dated to the Iron Age, and this and the other evidence of 1st-millennium BC occupation at the principal sites has already been outlined, with fuller details given in Volume 2. A summary of the most informative evidence of life in the Iron Age from the other parts of the route will now be presented.

Sutterby Field and Pitchmoor

These two closely adjacent sites lay high on the Lincolnshire Wolds in the parish of Langton by Spilsby and contained a scatter of discrete features, with occasional ditches and gullies crossing their stripped areas. Sustained occupation was best evidenced at Sutterby Field (NGR 539726 372792; 98 m OD; Fig. 4.8), the more northerly of the pair, where at least one roundhouse was found. This was represented by two curvilinear geophysical anomalies with an internal diameter of 11.5 m (700299; Fig. 4.9). The eastern terminals of these lay within the stripped

the parish of East Keal (NGR 536955 362475). In addition, burnt hazel nutshell from Ailby Lane was radiocarbon dated to the Middle–Late Bronze Age (UBA-52870; see above). As with the Neolithic sites and findspots, this is a dispersed set of remains that offers little in the way of detailed insights, but instead adds to the emerging general picture of the distribution of activity in the 4th–2nd millennia BC. All the Neolithic and Bronze Age material was recovered from Zones 1 and 2, with Zone 3 – the Fenland section – proving totally devoid of artefacts of confirmed pre-Iron Age date.

Iron Age

Regionally the 1st millennium BC witnessed ‘a major expansion of settlement and a shift towards an increasingly bounded landscape’ (Knight and Howard 2004, 79). This trend is expressed in the archaeological record from the Interconnector with a marked proliferation in archaeologically visible activity from this period. While, as explored more fully in Chapter 5, several of the Romano-British sites may have developed from immediately pre-Roman Iron Age antecedents (conservative native pottery traditions can blur the start of Imperial rule), we may be confident, not least thanks to radiocarbon dating, that several locations along the route saw occupation in the Iron Age proper (Fig. 4.7).

More locally during this period, climatic deterioration would have hampered occupation, with rising groundwater and impeded drainage leading to flooding and the

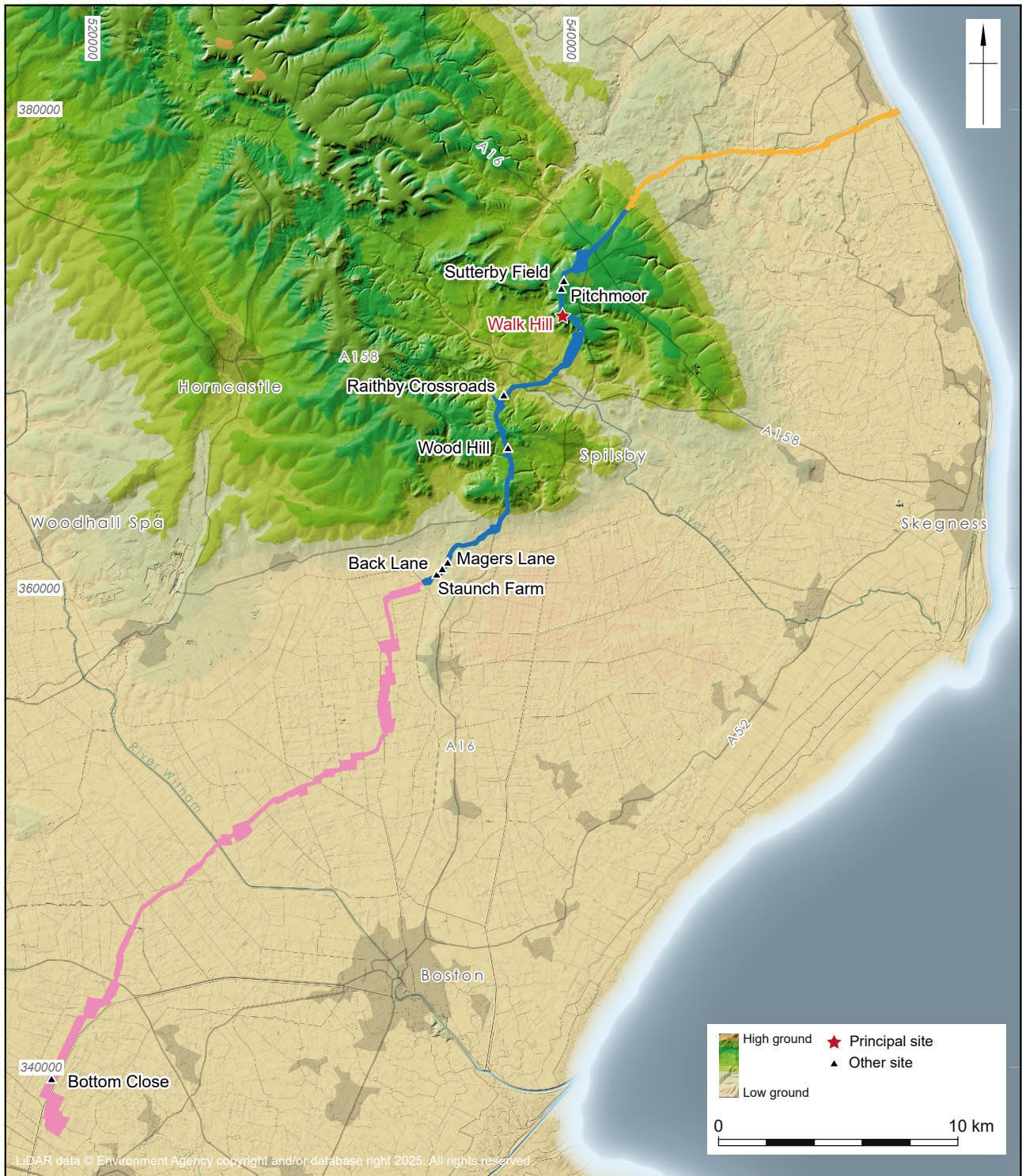


Figure 4.7 Iron Age sites

area where two matching gullies were found; these defined a 3 m-wide east-facing entrance. Two charred barley grains (*Hordeum vulgare*) recovered from the northern terminal (700265) returned non-consistent radiocarbon dates that nevertheless largely lie within the Late Iron Age (UBA-52904 and UBA-52905). Other finds from the roundhouse comprise worked flint, animal bone and pottery of general prehistoric appearance.

The southern arm of roundhouse 700299 had evidence of maintenance as it had been recut (Fig. 4.11.19); pottery from the recut could be more closely dated to the Middle to Late Iron Age. Two postholes located 1.1 m apart at the entrance of the roundhouse most likely had a related structural function. Posthole 700287 to the south measured

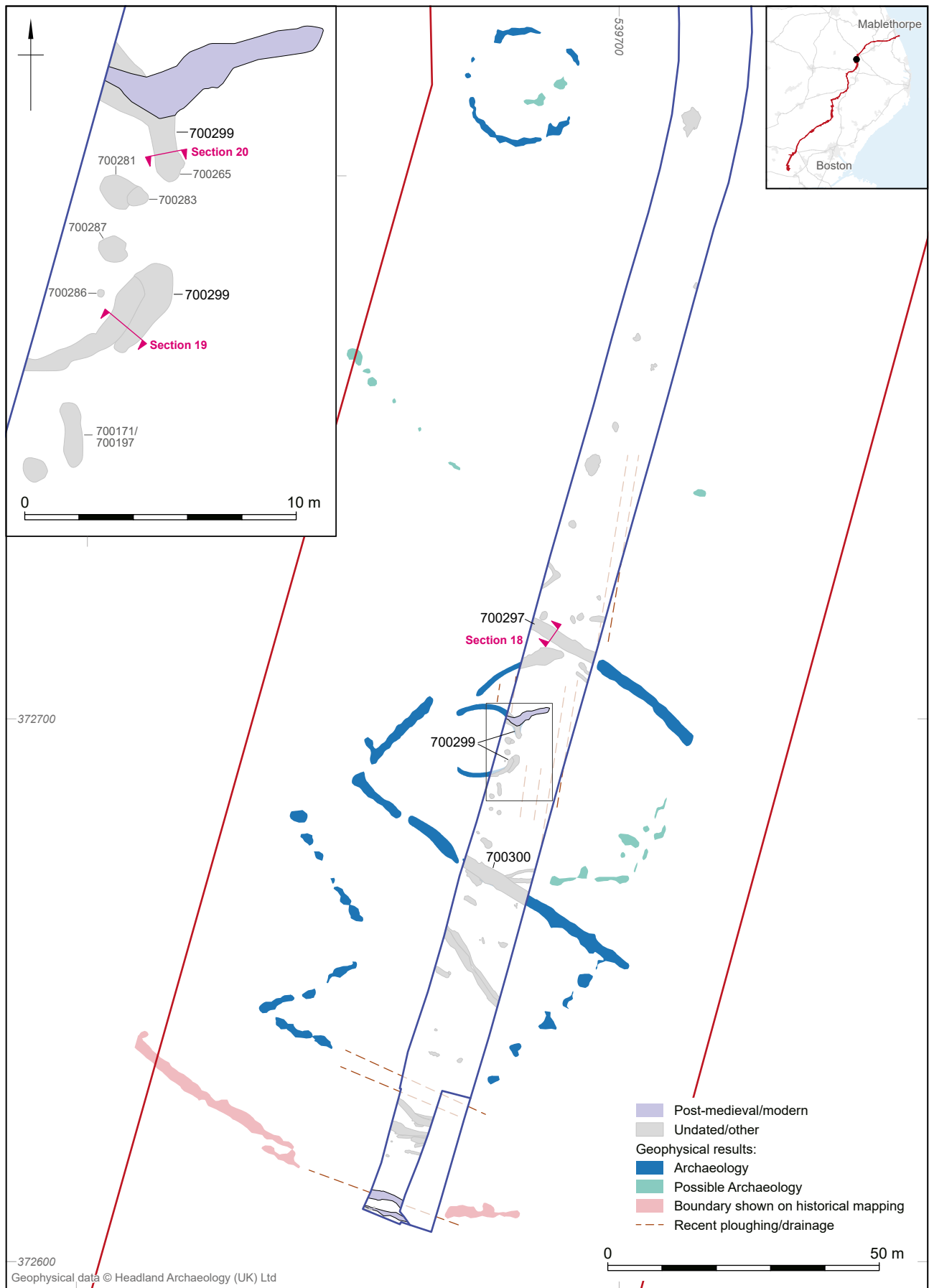


Figure 4.8 Sutterby Field

0.92 m long and 0.62 m wide with a depth of 0.27 m; posthole 700281 was similar in size (0.97 x 0.6 x 0.25 m), with animal bone retrieved from its fill. Two internal features were investigated: a posthole (700286: 0.26 x 0.23 x 0.18 m) and a small, shallow pit (700283: 0.56 x 0.36 x 0.16 m) which contained possible prehistoric pottery. Similar pottery, along with animal bone, burnt flint and charcoal, was recorded within an oval pit (700171/700197: 2.42 x 0.55 x 0.16 m) just to the south of the structure, further marking the occupation of this part of the site.

The focus of occupation represented by roundhouse 700299 and its nearby features was possibly set within a ditched enclosure, defined to the north and south by ditches 700297 (Fig. 4.10) and 700300 respectively. These ditches were substantial enough to fit the suggested function: an average 2.4 m wide and 1.05 m deep, with steep sides. Prehistoric pottery (some sherds of definite Iron Age date), animal bone and a possible pounder or hammer stone were retrieved from ditch 700300. The pottery from ditch 700297 was of possible late Romano-British date, but retrieved from high in the profile and so potentially did not relate to the use-period of the feature. The western side of the possible enclosure lay beyond the stripped area but is visible within the geophysical data; any eastern side is not evident. Dimensions for the enclosure would be 42 m north-east to south-west by at least 61 m north-west to south-east.

Figure 4.9 Roundhouse 700299, view from the south-west (0.5 m scale)



Figure 4.10 Enclosure ditch 700297, view from the north-west



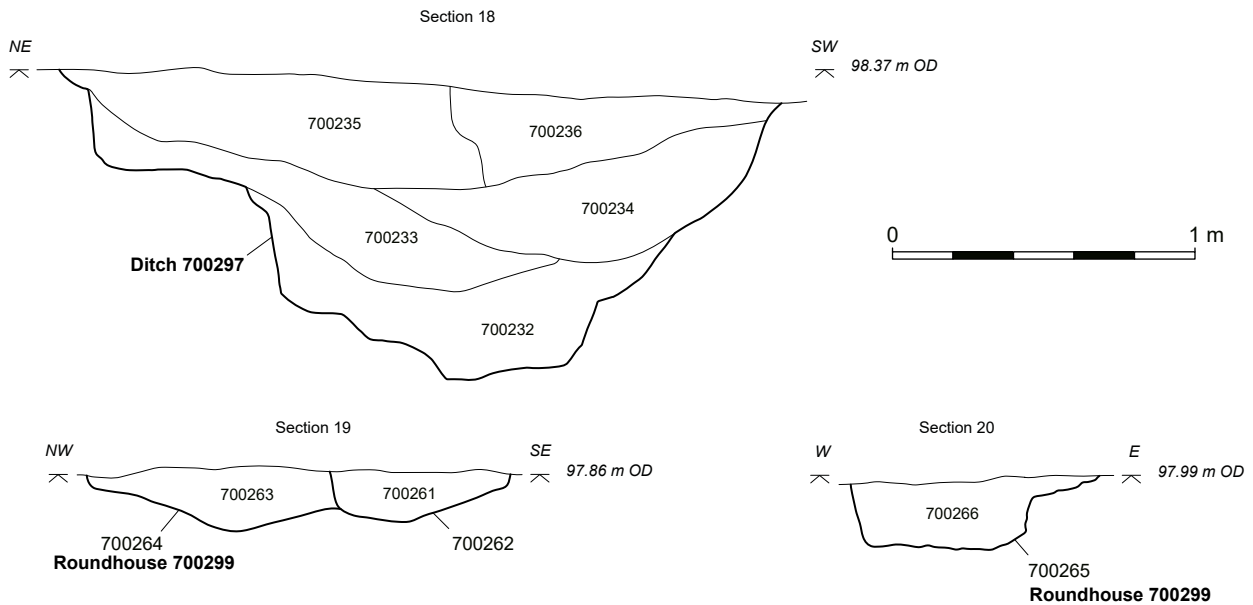


Figure 4.11 Sections from Sutterby Field

A second ring-shaped arrangement of geophysical anomalies at the site was recorded but subsequently avoided by the cable route (and so preserved *in situ*: Fig. 4.8). At 18 m in diameter, this would be relatively large for a roundhouse, and a round barrow ring ditch is a possibility instead.

A ditch (700295; not illustrated) at the far northern end of the stripped area at Sutterby Field, 300 m from the features described above, also contained a wheat grain (*Triticum* sp.) radiocarbon dated to the Middle–Late Iron Age (UBA-52884), and is illustrative of arable cultivation across the wider area at that time.

Further evidence of Iron Age wheat cultivation derives from a posthole at the Pitchmoor site (NGR 539608 372426; 96 m OD; Fig 4.12), located a short way to the south of Sutterby Field. It is possible that together, Sutterby Field, Pitchmoor and Walk Hill represent a swathe of contemporary activity along this part of the chalk Wolds. Fieldwork along a 130 m stretch of the route at Pitchmoor exposed a rather formless set of remains: numerous pits and postholes along with three north-west to south-east-aligned boundaries (Figs 4.13–14). Few obvious patterns can be discerned in the distribution of the discrete features, and the great majority contained no datable evidence. However, small amounts of prehistoric pottery were recovered from some, with Anglo-Saxon sherds in others (see below). One of the artefactually undated postholes, 350091, was found to contain an assemblage of charred plant remains. Two different wheat grains were radiocarbon dated (one *Triticum aestivum/turgidum* grain and one *Triticum dicoccum/spelta* grain) and these returned a result that, when modelled, signals cultivation during the Middle Iron Age (UBA-52898 and UBA-52899; 410–230 cal. BC). Posthole 350091 formed part of group 350100, which may have originally been a four-post structure, but which comprised only three postholes when recorded. Its constituent features were up to 0.54 m in diameter by 0.11–0.24 m deep; had it originally been a four-post structure it would have measured 3.2 m square. These dimensions fit with those of the four-post structures at Walk Hill around 1 km to the south, one posthole of which returned a Middle Iron Age date (UBA-52906), increasing confidence that the Pitchmoor evidence represents a similar arrangement. Two further four-post structures were recorded at Pitchmoor, but these (350177 and 350195) contained Anglo-Saxon pottery. If the sherds were intrusive (a possibility, as only two were present), then it would be reasonable to add these features to the Iron Age evidence from the site.

Figure 4.12 Pitchmoor

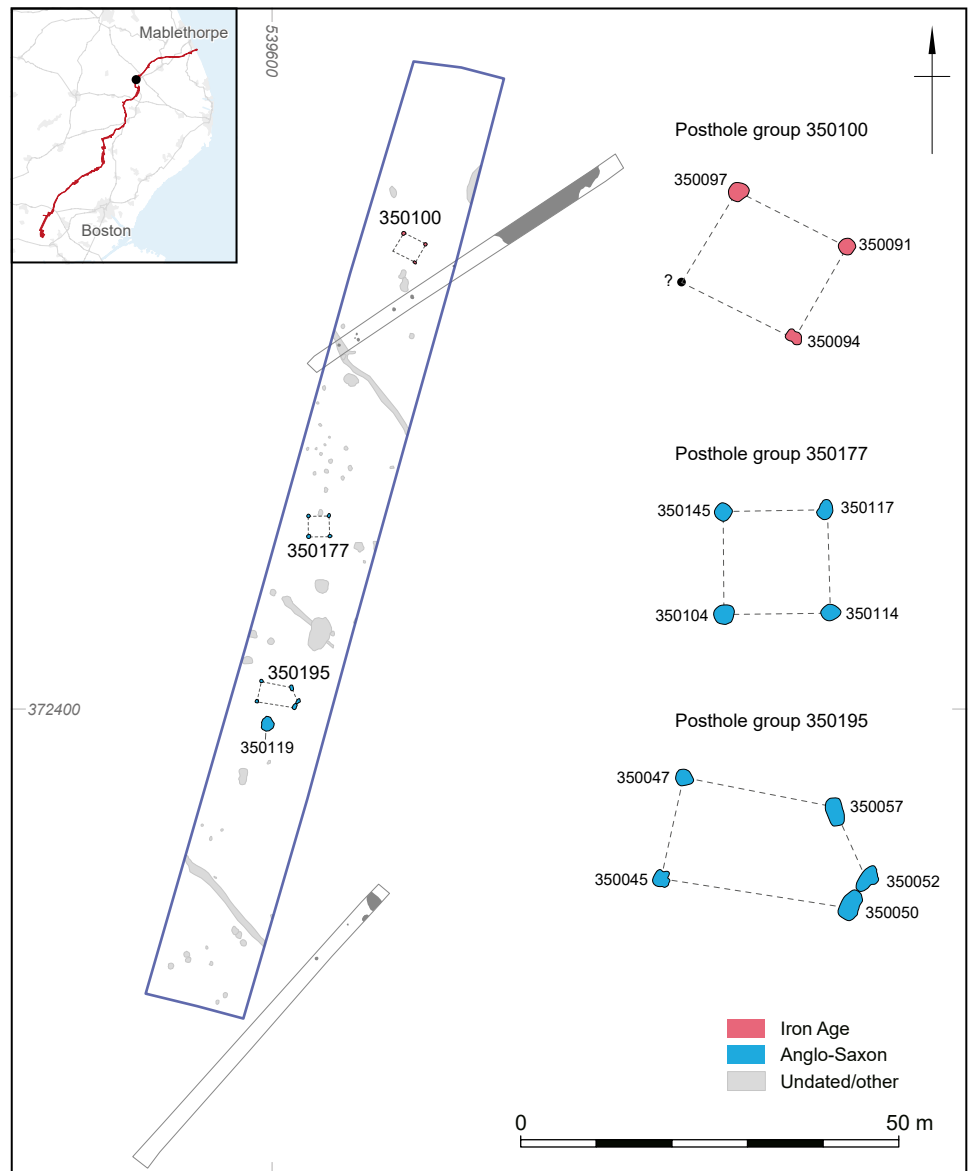


Figure 4.13 One of the many dispersed and discrete features at Pitchmoor. View from south-west. Note thin depth of topsoil, and likely heavy plough-truncation



Figure 4.14 The view northwards along the Pitchmoor site



Raithby Crossroads

More good evidence of Iron Age activity was recorded further south along the scheme at Raithby Crossroads, 1 km to the north of Raithby by Spilsby in the Lymn Valley (NGR 537215 368010; 50 m OD). Another probable roundhouse, with associated pits and gullies, was exposed here, along with ditches and other pits (Fig. 4.15). This probable roundhouse was defined by two curvilinear gullies (220115, 220117) extending into the site from its western boundary (Fig. 4.16). The structure had a sub-oval rather than circular ground-plan, an opening in the east, and a maximum internal diameter of some 14 m. The northern arc of the ring gully (220115: 1.3 x 0.38 m) cut pit 220034 (>0.60 x 0.32 m) which contained fired clay, worked flint and pottery of prehistoric, possibly earlier prehistoric, date. Ring gully 220115 also had prehistoric pottery within its fill. The southern arc, 220117 (1.34 x 0.32 m), contained an Early Bronze Age barbed and tanged arrowhead, animal bone and possibly Middle Iron Age ceramics. The pottery appears contemporary with the radiocarbon evidence: a wheat grain (*Triticum* sp.) from the southern arc of the ring gully (slot 220003) returned a Middle Iron Age radiocarbon date (UBA-52910), although a hazel nutshell found alongside it proved to be residual (from the Early Neolithic: UBA-52909). The southern arc of the ring gully truncated 'L'-shaped ditch 220118, which contained prehistoric pottery and worked flint. Ditch 220118 had itself cut a smaller gully; although no finds were recovered from the last feature, the stratigraphic sequence indicates it too was of prehistoric date and earlier than the roundhouse.

Ditches (220114, 220098) and a spread of greyish brown silty sand (220097) in the northern part of the site appear to broadly correspond to a junction of field boundaries partly visible in the geophysical data. The pottery assemblage from this boundary included some Late Iron Age wares, indicating the boundary was likely later than, or outlasted, the roundhouse. This too is confirmed by the radiocarbon evidence, with a Middle–Late Iron Age date obtained on a wheat grain (*Triticum* sp.) from ditch 220114 (UBA-52885).

With dated material including an Early Neolithic hazel nutshell, an Early Bronze Age arrowhead, Middle–Late Iron Age pottery and cereal remains (as well as Saxon and medieval pottery from its topsoil), Raithby Crossroads is clearly a site with a long history. This seems to be feature of other sites in the Lymn Valley and presumably

reflects its suitability for cultivation and settlement. Even so, the use of this particular part of it was seemingly most intense during the Iron Age, as was the case at the next site to be described.

Figure 4.15 Raithby Crossroads

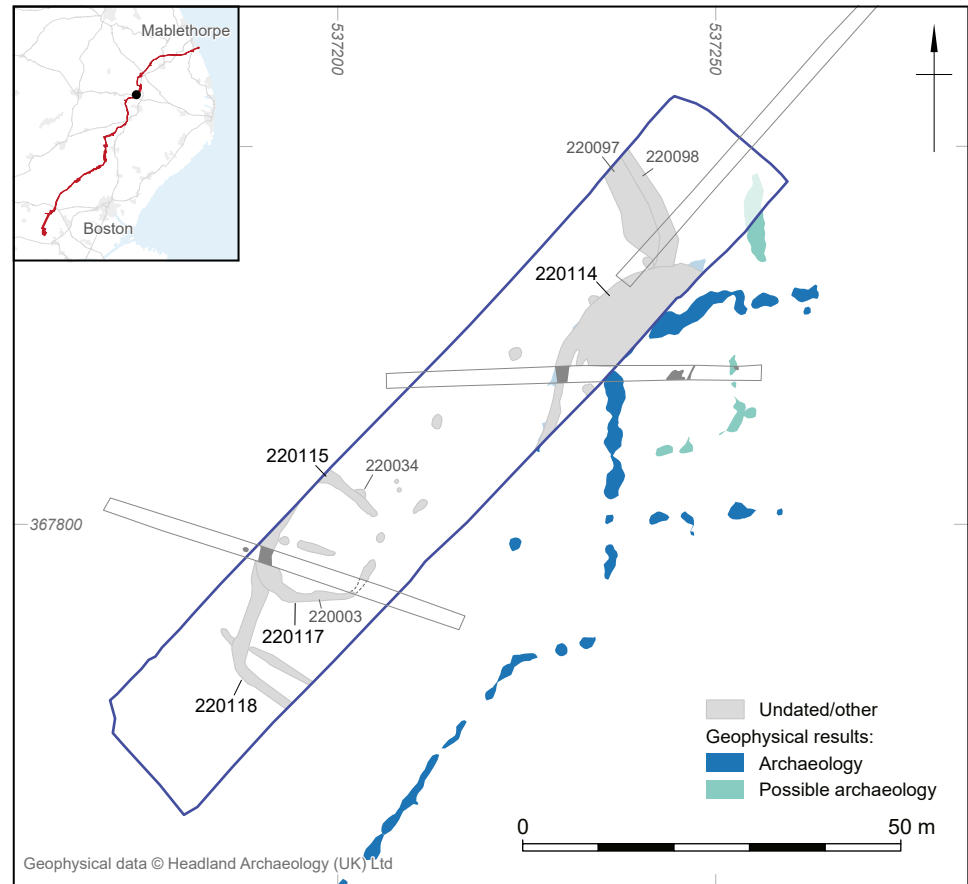


Figure 4.16 Ring gully 220115, view from north

Wood Hill

Iron Age remains were also encountered 2 km further south along the route at Wood Hill, on the southern edge of the Lymn Valley (NGR 537335 365765; 63 m OD; Fig. 4.17). The geophysical survey had detected a square enclosure measuring around 45 x 40 m, and subsequent excavation of its ditch (120088, 120063, 120073; Fig. 4.18) recovered a reasonable amount of animal bone and pottery (just over 0.6 kg and 0.8 kg respectively), along with 11 pieces of worked flint. The pottery assemblage suggested, overall, a Late

Iron Age date for the infilling of the enclosure ditch, which had a maximum width of 3.30 m and depth of 0.96 m. Quantities of fuel ash and charcoal in the fills of the ditch, when considered alongside the finds of the ditch, signal settlement within the enclosure or nearby.

The west side of the enclosure ditch terminated to the north within the stripped area, with no clear return to the east detected in the gradiometer survey. Instead, ditch 120018/120019 (1.65 x 0.48 m) indicates activity adjacent to the enclosure at its north-western corner, this ditch possibly defining a smaller, more irregular enclosure approximately 20 m by 15 m. Ditch 120018/120019 contained prehistoric (possibly Iron Age) pottery, as well as animal bone and a piece of iron rod. Undated curvilinear feature 120030/120050 (1.35 x 0.29 m) appeared to respect the position of this ditch and contained similar fills to it, suggesting both were contemporary.

The geophysical results also indicate the presence of a contemporary, smaller sub-enclosure (approximately 15 m by 12 m in the south-east corner of the main enclosure. A short curvilinear ditch (120087: 8.9 x 1.3 x 0.23–0.42 m) may have defined some other internal subdivision within the main enclosure, but earlier in its lifespan: it contained Iron Age pottery but none of the wares characteristic of the later part of the period that came from the main boundary.

The central/southern part of the site was crossed by north-east to south-west-aligned ditch or hollow 120039 (Fig. 4.19). This had a shallow, dish-shaped profile (being 8.5 m wide by just 0.5 m deep). Animal bone, worked flint and a decorated prehistoric pottery sherd, possibly of Bronze Age date, were retrieved from its base.

Two of the ditches (120032 and 120089) at Wood Hill match the course and position of boundaries recorded on historical mapping. Worked flint and Romano-British pottery found alongside more modern material in these features further illustrate the prolonged occupation of the Lymn Valley, which at this particular location was most pronounced during the Iron Age.

Magers Lane, Back Lane and Staunch Farm

Each of the three southernmost sites in Zone 2, which lay 0.5 km apart close to the Fen-edge near Stickford (Fig. 4.20), returned radiocarbon dates that suggest their occupation during the Iron Age.

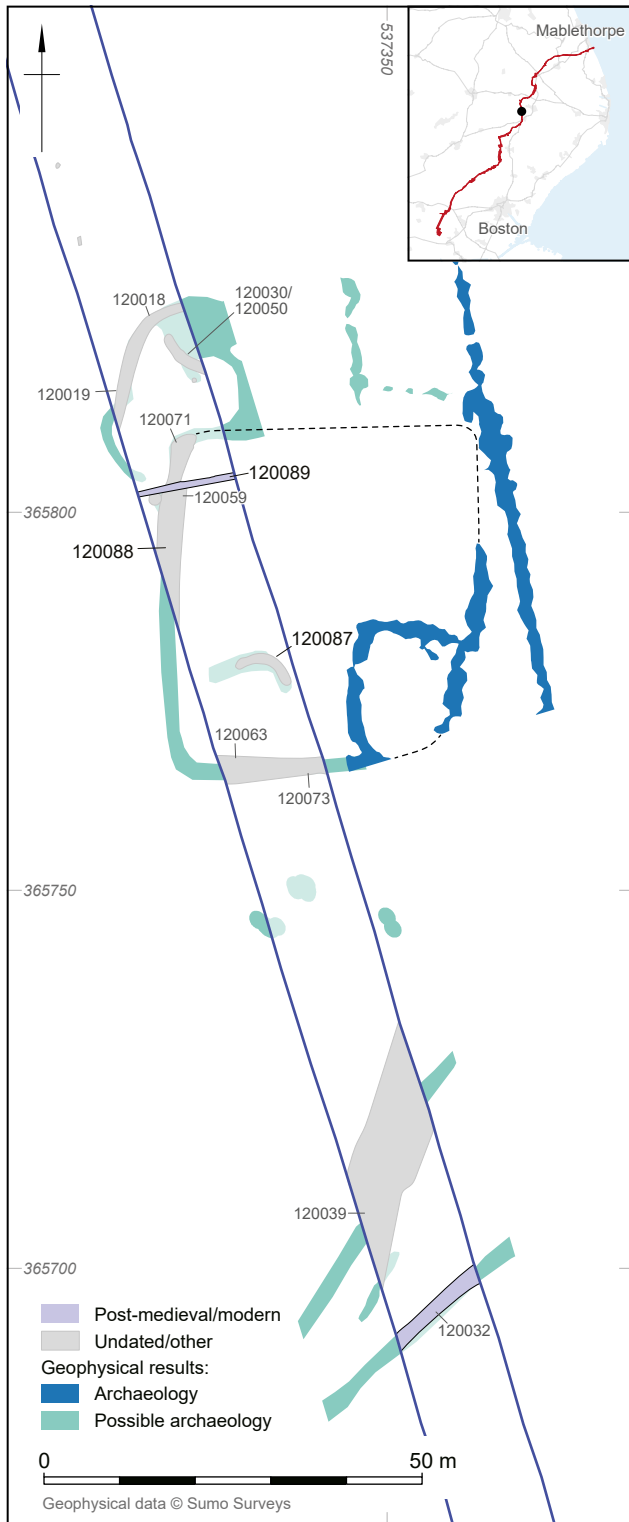


Figure 4.17 Wood Hill

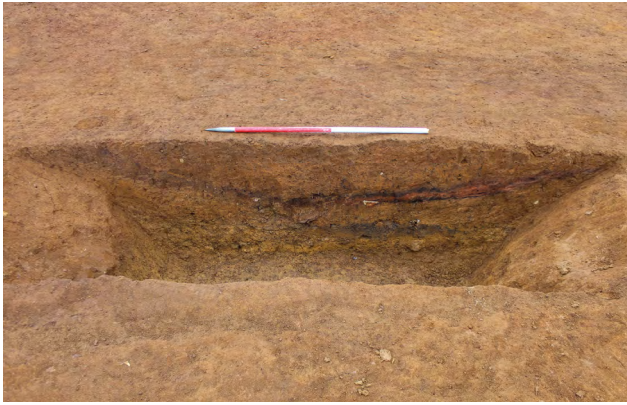


Figure 4.18 South-facing section of ditch 120088 near its terminal (1 m scale)

The site at Magers Lane (NGR 534830 361068; 7.4 m OD; Fig. 4.37) comprised a co-axial arrangement of ditches and gullies, whose intercutting suggests activity over some period of time. The focus of the activity at the site was clearly in the Romano-British period (see below) although radiocarbon dating again suggests wheat cultivation in the vicinity in the Middle–Late Iron Age. Charred remains of wheat (*Triticum* sp.) from an artefactually sterile pit (300086: diam. 0.40 x 0.09 m) are of that date (UBA-52892; 2081±29; 120–40 cal. BC); a second pit without finds (300038: 0.50 x 0.20 x 0.19 m) contained hazel nutshell radiocarbon dated to the same Middle–Late Iron Age period (UBA-52879;

2063±27; 110–1 cal. BC). Ceramic and stratigraphic evidence combine to indicate at least two of the ditches on the site (300053/300065: 7.95 x 0.65 x 0.36 m and 300152: 34 x 0.70 x 0.24 m) also belong to this early phase of activity at the site.

The site known as Back Lane (Fig. 4.6), with its Bronze Age cremated human bone (see above), lay between Magers Lane and Staunch Farm. The remains at Back Lane comprised, aside from the feature that contained the human bone radiocarbon dated to the Middle Bronze Age, an arrangement of boundary ditches, smaller linear features and curvilinear gullies. The pottery suggests some later prehistoric activity on the site, with several sherds of Iron Age appearance, but few features are convincingly dated. Two curvilinear gullies towards the southern end of the site appeared to define a small (around 5 m diameter) ring-shaped feature that may once have formed a drainage gully around a hayrick, turf stack or similar (Fig. 4.21). Gully 410120 (0.45 x 0.22 m) was the northern feature and gully 410121 (0.54 x 0.19 m) the southern. A wheat (*Hordeum vulgare*) grain from 410120 provided a Middle–Late Iron Age radiocarbon date (UBA-52911). Although this may have been intrusive – the feature also contained a sherd of 19th-century pottery along with a modern drain fragment – its presence nevertheless confirms arable cultivation hereabouts prior to the Romano-British period. At the northern end of the site, east–west ditch 410021/410084 (2.45 x 0.49 m) matches a boundary shown on historic mapping. A diverse assemblage of waterlogged wild plant remains was recorded in the feature, with radiocarbon dating confirming it as modern (UBA-52954).



Figure 4.19 Wood Hill, looking north/upslope from ditch/hollow 120039

Figure 4.20 Magers Lane, Back Lane and Staunch Farm

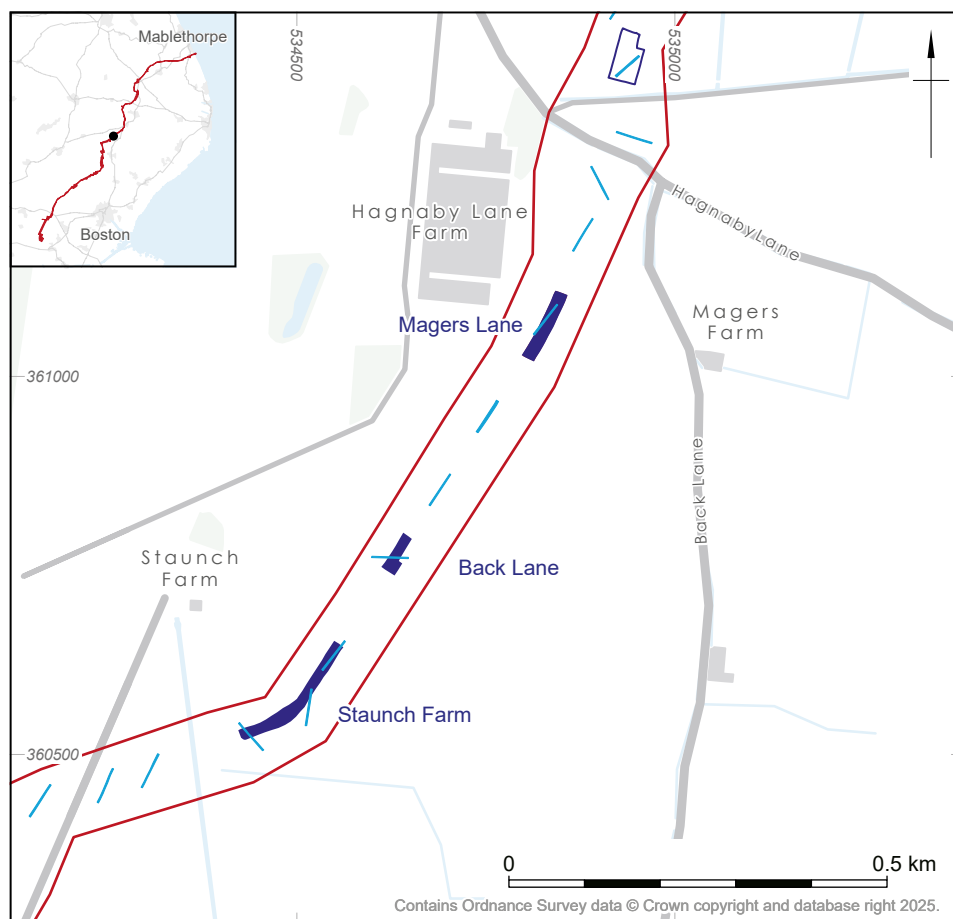
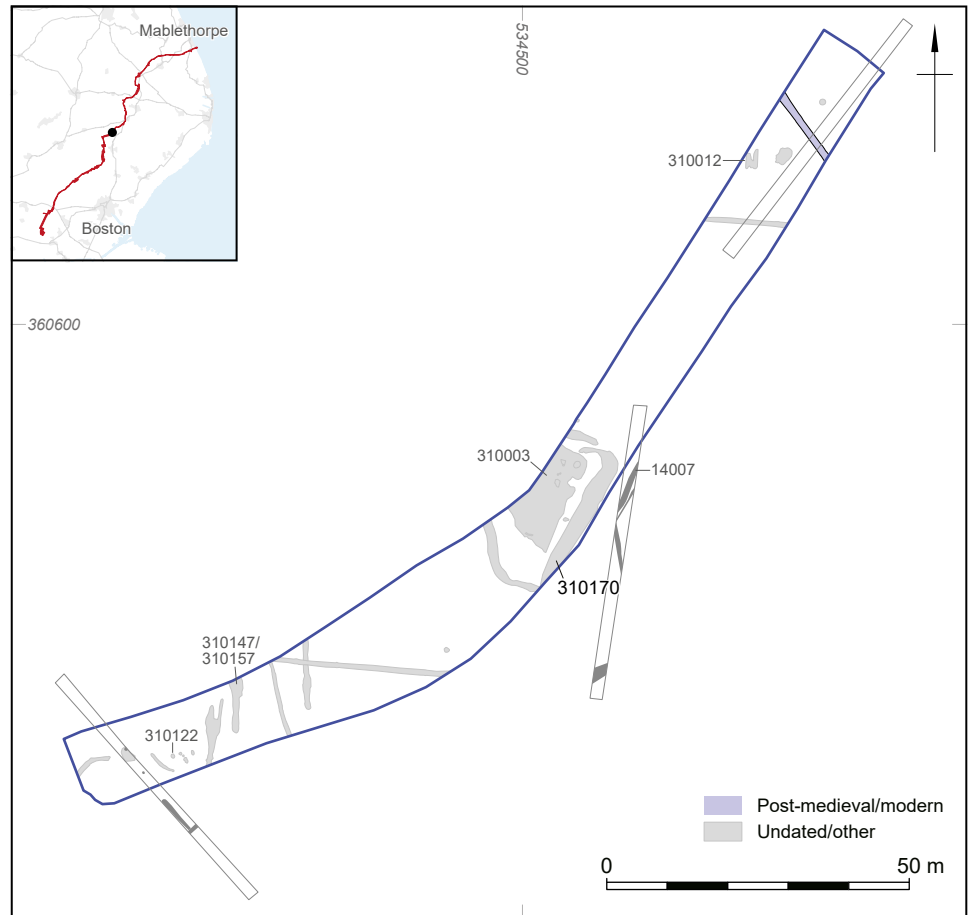


Figure 4.21 Back Lane, gullies 410120 and 410121, view from the south-west



A deposit of undated alluvial material (310003 and 310084) lay in the central part of the Staunch Farm site (NGR 534510 360575; 3.5 m OD; Fig. 4.22). Archaeological features were present beneath this layer, but no dating evidence was obtained from them and their full extent could not be determined within the excavated area. The alluvium indicates this Fen-edge site was vulnerable to flooding. The material formed a two-layer sequence: the earliest was a 0.14 m-thick layer of blackish-orange sandy clay (310084) which was sealed by a reddish-brown silty clay (310003; 0.17 m thick). Three ditches appeared to delimit the area of alluvium. The largest was ditch 310170 (up to 1.9 m

Figure 4.22 Staunch Farm



wide by 0.48 m deep) on the eastern side, which was a finds-rich feature for the site, supplying approximately half of its 4 kg artefactual total. The assemblage comprises prehistoric pottery, fired clay, animal bone and worked flint. The ditch also contained a fairly rich suite of environmental remains, with the combination of cereal grains, chaff and wild plant remains appearing characteristic of domestic crop exploitation practices. This was occurring during the Middle–Late Iron Age as revealed by a date (UBA-52877) on emmer wheat (*Triticum* cf. *dicocum*) glume bases recovered from the feature. Contemporary activity nearby was represented by a sherd of Scored ware from pit 310122. The majority of the other sherds from the site may belong to earlier in the period, with no Late Iron Age wares present. Other finds of interest from Staunch Farm include two flat fragments of jet recovered from ditch 310157, a tiny copper alloy annular bead found alongside prehistoric pottery and flint in occupation layer 310012, and a sawn basal section of horn core suggestive of horn-working.

It seems that the Magers Lane, Back Lane and Staunch Farm sites were broadly contemporary and formed part of an extensive swathe of dispersed Iron Age occupation, similar to that seen on the Wolds, but here some 700 m in length and in this instance focused on the edge of the Fenland.

Bottom Close

Activity of probable Iron Age date was revealed at Bottom Close (NGR 518360 339448; 1.5 m OD; Fig. 4.23), towards the southern extent of the scheme, in the parish of Little Hale. Ring gully 590097 (0.33–0.9 m wide and 0.11–0.27 m deep) may have defined a small roundhouse (internal measurements 4.68 x 4.29 m) that had been extended to the west by a later gully, increasing the external measurements to 7.27 x 5.52 m. Fourteen stake- or postholes within the perimeter of the structure formed no discernible alignment, but likely represented an internal arrangement. A single posthole (590068) lay immediately

to the south of the roundhouse. Although no datable material was recovered from the roundhouse gully, the presence of fired clay, animal bone, charcoal and charred plant remains within its clay sand fill indicates occupation, and the nature of the structure is suggestive of an Iron Age date.

Further undated remains, comprising four ditches and a gully, were encountered across Bottom Close. The close proximity of the roundhouse to the southern ditch (590038) and the gully (590015), and their alignment in an 'L'-shape around it, could indicate a partial enclosure serving the structure.



Figure 4.23 Bottom Close

Romano-British

The Interconnector crossed concentrations of infilled ditches at numerous locations, and the majority of these sites were Romano-British. Such archaeological evidence of land division and enclosure was seen at all of the principal sites described above apart from Sea Bank Farm. As well as at the principal sites, evidence for Romano-British farming – in the form of ditches containing datable ceramics – was recorded at 10 other locations along the scheme (Fig. 4.24; Table 4.2).

Places that were enclosed and farmed during the Romano-British period were the most common site type encountered by the scheme. The distribution of these sites is discussed in Chapter 5 below.

Ulceby Cross

The course of a Roman road connecting Lincoln and Burgh le Marsh has been traced across the Lincolnshire Wolds (Albone 2016, 344–5). This is Road 27 of the scheme by Margary (1967) and its southern portion is known as the Bluestone Heath Road.

Table 4.2 Other sites with Romano-British remains

Site name	NGR	Parish	Altitude (m OD)	Area (ha)	Summary of Romano-British remains	Pottery dating
Ulceby Cross	540832 374077	Ulceby with Fordington	93	0.46	Trackway, ditches and curvilinear gullies	Mid-1st to mid-2nd century AD
Partney Leys	539829 369303	Langton by Spilsby	24	0.22	Ditches and gullies forming rectangular enclosures, several pits and a posthole. Remains of a possible 'lap dog'	Generalised Romano-British; Late Iron Age—early Romano-British radiocarbon date from the dog (SUERC-108719; 40 cal. BC–cal. AD 60)
Area 21	537770 368444	Raithby	22	0.07	Co-axial arrangement of ditches	Generalised Romano-British, one late 4th/early 5th-century sherd
Raithby Lane	537381 368196	Raithby	42	0.24	Co-axial arrangement of ditches	Late Romano-British, including sherds dating to late 4th/early 5th century AD
Area 26	537456 364667	East Keal	66	0.04	One gully	Possible 2nd century AD
Area 29	536294 362097	East Keal	7	0.15	Ditches and curvilinear gullies, along with two pits	Late Iron Age to early Romano-British (1st–2nd century AD)
Hagnaby Grange	534937 361419	West Keal	6	0.22	A large rectangular ditch enclosing numerous curved ditches and gullies, postholes and pits. A ring gully, four-post structure and various other ditches and gullies were exposed elsewhere on the site	Late Iron Age to early Romano-British (1st–2nd century AD)
Magers Lane	534830 361068	Stickford	7	0.14	Ditches, gullies and pits	Late Iron Age—later Romano-British
Gibbet Hill	520871 343357	Swineshead	2	0.32	Two ditches, one with disarticulated human bone	Human bone radiocarbon dated to late Romano-British period (SUERC-108720; cal. AD 250–410)
North Ing	518288 337368	Donington	3	0.71	c. 10 sherds of residual Romano-British pottery	Generalised Romano-British with some 1st or 2nd-century AD sherds

Romano-British remains were investigated just west of the point where the scheme crossed the modern A16 – 500 m north-west of Ulceby Cross and close to the plotted course of the Roman road (Fig. 4.25).

A trackway (500061) lay at the southern end of the site and was set on a north-west to south-east alignment. It comprised a shallow eroded linear hollow in the chalk bedrock, 3.8 m wide and 0.3 m deep, filled with stony brown silty clay (Fig. 4.26). Two wheel-ruts (500077: 0.3 × 0.06 m; 500078: 0.3 × 0.07 m), 1.2 m apart, had been worn into the base of the hollow. The most useful dating evidence is Romano-British (three sherds of pottery), but such a small quantity is not conclusive. Animal bone and fragments of iron, including a spoon-like object, were also recovered.

To the north-east of the trackway, ditch 500060 (0.90 × 0.20 m) extended north-east from the western site boundary for 14 m before terminating. A sherd of Romano-British pottery was recovered from the fill.

Further Romano-British ceramics came from a junction of ditches and gullies (500039) at the north-east extent of the site. Recuts were visible within some elements, but their true form is unclear, with much of the full arrangement presumed to lie beyond the limit of excavation. The most tightly datable pottery from this part of the site is of mid-1st to mid-2nd-century date.

Other features included an undated gully (500098) cut by the trackway, the edge of a chalk quarry pit (500036) marked on historic mapping, and the remnants of a hedgerow (500101) and adjacent ditch (500099) correlating with a parish boundary visible on

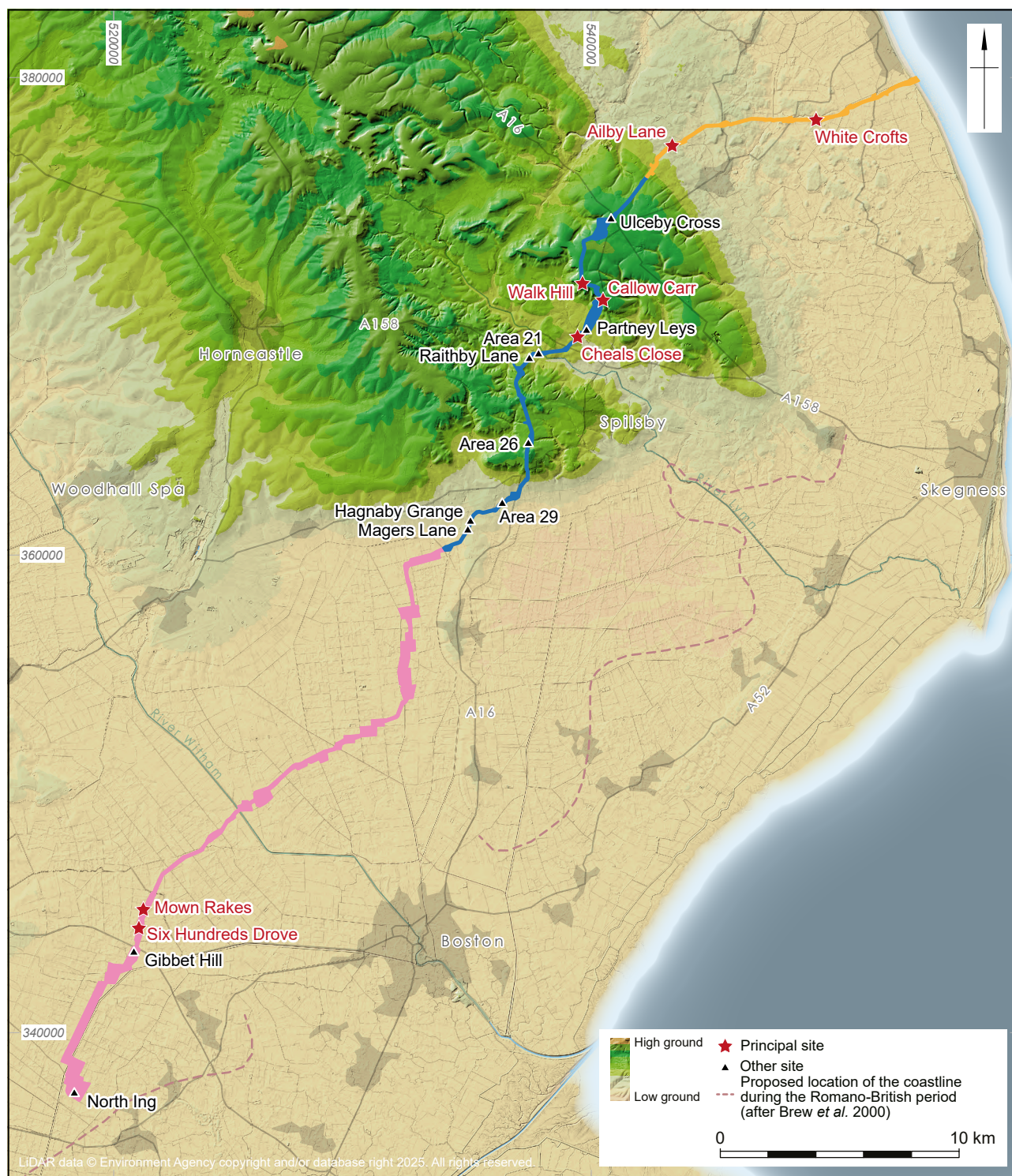


Figure 4.24 Sites with Romano-British remains

19th-century historic mapping between the parishes of South Thoresby and Ulceby with Fordington. The hedgerow was extant beyond the site at the time of the fieldwork. No clear stratigraphic relationship could be discerned between the trackway and the hedgerow base, but the trackway is assumed to be the earlier feature because of the artefacts it contained and the modernity of the hedgerow.

It is not suggested that trackway 500061 represents the Bluestone Heath Roman road. This is primarily because the plotted course of that road lies 600 m to the south-west of 500061. In addition, the dating evidence for trackway 500061 being Romano-British is not especially compelling. The site as a whole clearly did witness some activity in the Romano-British period, although little more can be said. An extensive Romano-British

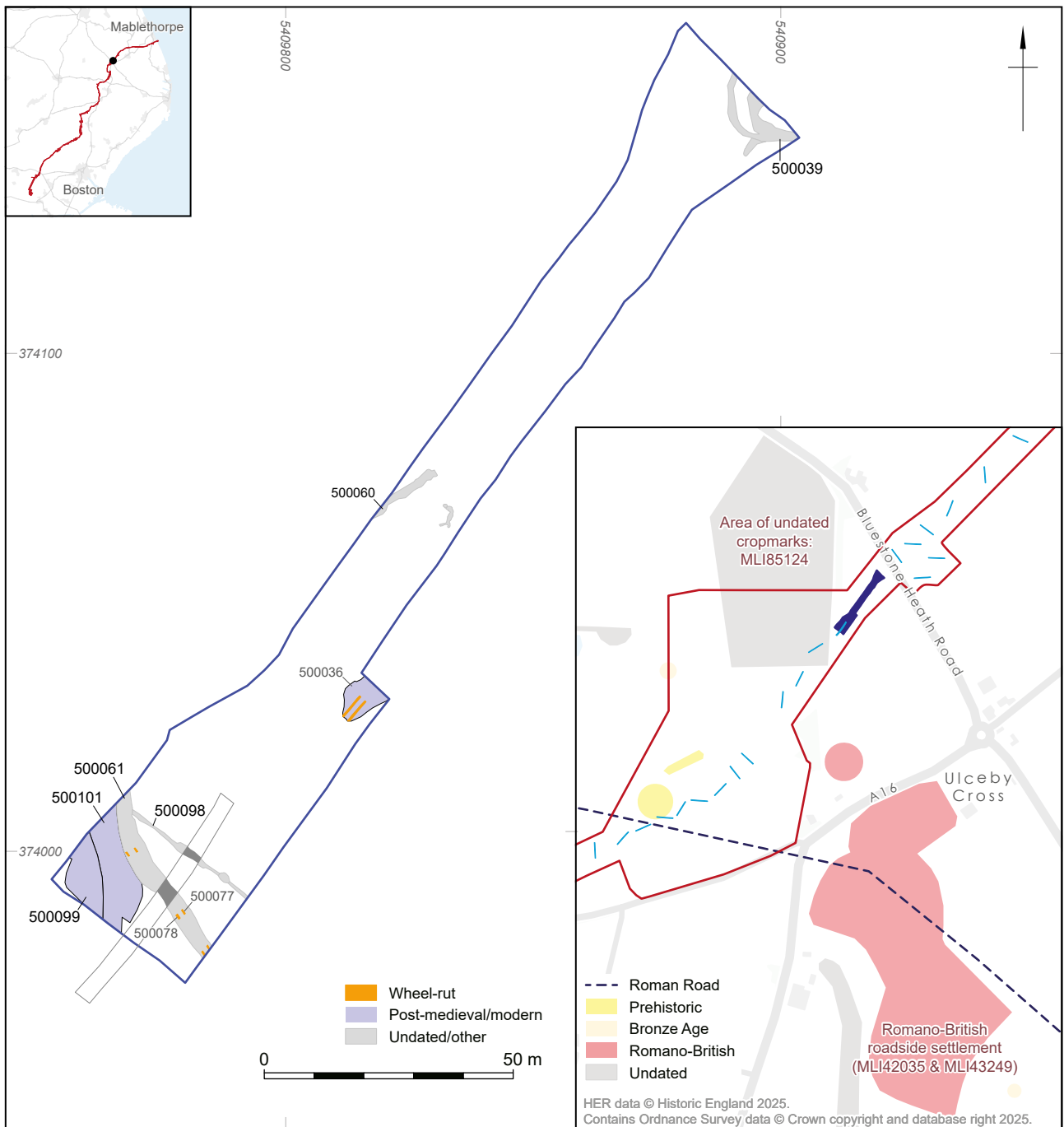


Figure 4.25 Site at Ulceby Cross



Figure 4.26 North-west-facing section of trackway 500061 and wheel-ruts 500077 and 500078 (2 m scale)

roadside settlement was excavated 700 m south near Ulceby Cross in the early 20th century (LHER MLI42035 and MLI43249; Jones 1998a, 69; Whitwell 1970, 74–5; Fig. 4.25), and it is possible that the remains described above represent activities taking place on its periphery, with trackway 500061 (if Romano-British) perhaps forming a minor spur to the larger road. Considering the presence of the roadside settlement, the Interconnector investigations found little material culture from it dispersed into the surrounding countryside.

The Interconnector crossed the plotted line of the Bluestone Heath Roman road at around NGR 540400 373500, but no trace of it was recorded. This point lay within a ploughed field, and such activity may have erased evidence of the road. Where the road has been excavated it was not substantial: over 20 years earlier its line was seen preserved by an overlying modern track in a pipe trench near Skendleby and consisted of merely a thin layer of crushed chalk, 4 m wide by about 0.1 m thick (Network Archaeology Ltd 1999). Such slight evidence could be very vulnerable to mechanised agricultural operations where not sealed by later deposits.

Partney Leys

Numerous cropmark field boundaries have been plotted between Partney and Sausthorpe, and buried archaeological features associated with some of these were exposed at an Interconnector excavation site within a field named on tithe mapping as Partney Leys (NGR 539829 369303; 25 m OD; Fig. 4.27). These features correlate with cropmark MLI85360, catalogued as a 'Roman cropmark enclosure and boundary' (Fig. 3.26). Dating evidence from the excavation was indeed chiefly Romano-British (2nd-century AD emphasis), although later land division was also apparent; this was not well dated, but a medieval/post-medieval date seems likely.

The eastern side of the Partney Leys site contained a sequence of co-axial ditches and gullies (170157–170161) that reveal a period of boundary definition and maintenance in that part of the site, although the Romano-British pottery recovered is not characteristic of any particular part of the period. Further Romano-British remains

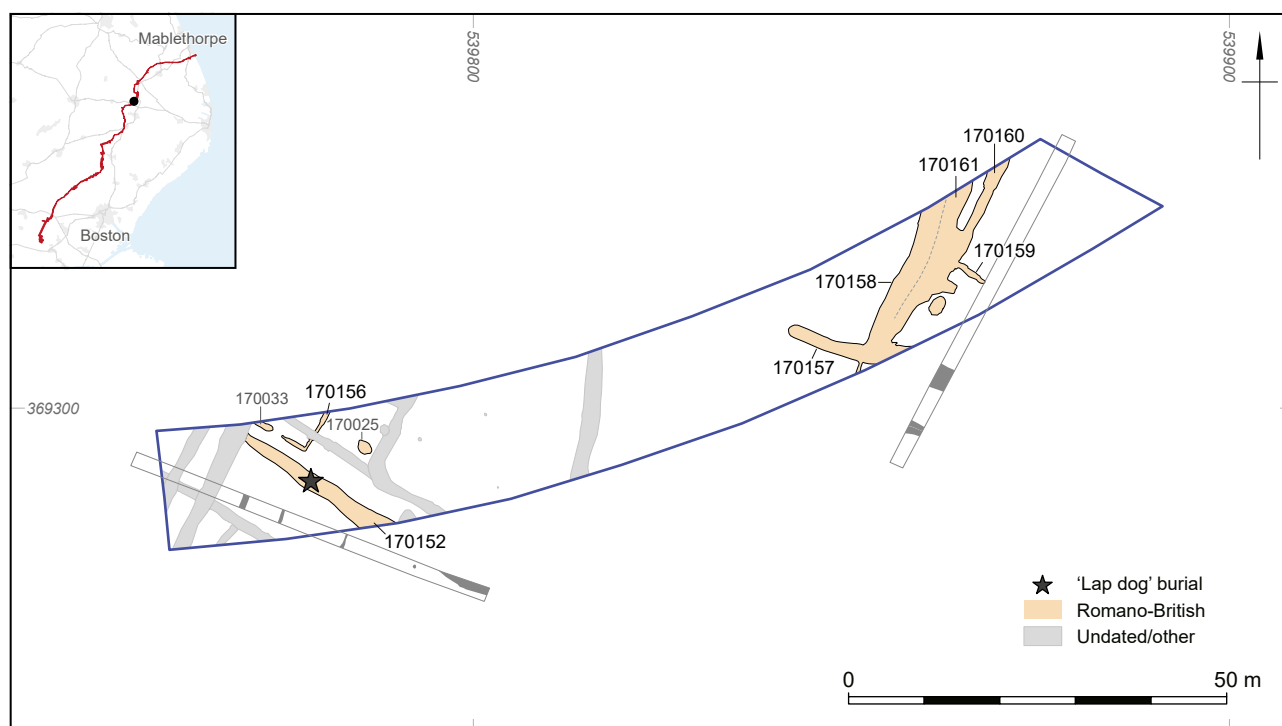


Figure 4.27 Partney Leys

were recorded at the western end of the site, where the corner of a possible enclosure with a 1.2 m-wide entrance gap on its south-western side was revealed. This was defined by gullies 170033 (0.7 x 0.2 m) and 170156 (0.46 x 0.18 m). Pottery dating to the 1st–2nd century AD was found within 170156 and a near-complete samian cup (ON 170002) in the terminal of gully 170033.

A wider Romano-British ditch lay parallel and to the immediate south-west of the enclosure (170152: 21.6 x 1.96 x 0.54 m). The remains of a small dog of 'lap dog' stature were found buried in this feature, and radiocarbon dated as Late Iron Age–early Romano-British (SUERC-108719). A textile comb made from antler (ON 170004) was also recovered from ditch 170152. A nearby pit (170025: 1.92 m diameter x >0.98 m deep) could not be fully excavated because of waterlogging but was found to contain pottery of the mid-2nd century AD and so would also have formed part of the Romano-British arrangement.

The other ditches on the site generally conformed to the same axes that the Romano-British remains followed but their date is unresolved. Some cut the Romano-British features, so were provably later; others may have been so on the basis of a very small number of medieval and post-medieval finds, although these were never sufficiently plentiful to confirm a precise date. The remainder of the ditches and other features were undated.

Raithby Lane

Around 3 km further along the Interconnector route from Partney Leys lay the Raithby Lane site (NGR 537381 368196; 42 m OD; Fig. 4.28). This occupied a north-east-facing slope overlooking a tributary of the River Lymn, which lay 0.6 km to the north-east. As with Partney Leys, the remains comprise a busy sequence of boundaries conforming to a common co-axial template, although here the activity appears to have occurred in the middle and towards the end of the Romano-British period: there was little or no pottery use on the site prior to the 3rd century AD.

As with many of the other excavation areas, the narrowness of the cable route makes it difficult to gain much sense of the wider layout of the plots of land defined by the various ditches and gullies (e.g., Figs 4.29–31). It is nevertheless clear that the configuration of the site changed over time. Unfortunately, the maintenance of the same axes of land division throughout the site's use, and the mixing of pottery assemblages where features crossed and recut, frustrates attempts to identify coherent stages within what was anyway probably a continuous programme of boundary development. The chronology presented within the site plan (Fig. 4.28) is therefore somewhat broad and tentative, but it has generally been possible to distinguish middle and late Romano-British features.

Mid-Romano-British

A group of narrower ditches and gullies in the central part of the site appears stratigraphically early and most may have been contemporary, possibly defining small plots of land. Included in this group are 380255 (0.8 x 0.25 m), 380257 (0.65 x 0.25 m), and curvilinear gully 380179/380186 (0.45 x 0.22 m). Also included in this phase is a segmented, semi-circular gully (defined by 380168/380175, 380262, 380252) that, in conjunction with ditch 380251/380261, may have defined a further subdivision.

Late Romano-British

The later ditches (identified as such by stratigraphic relationships and/or pottery dating evidence) were generally broader than those of the site's earlier period, seemingly signalling a change in the way the land was worked, with an increased emphasis on boundary demarcation. Three overlapping ditches (collectively 380248; Fig. 4.31.22) on the same north-west to south-east alignment towards the north-eastern end of the

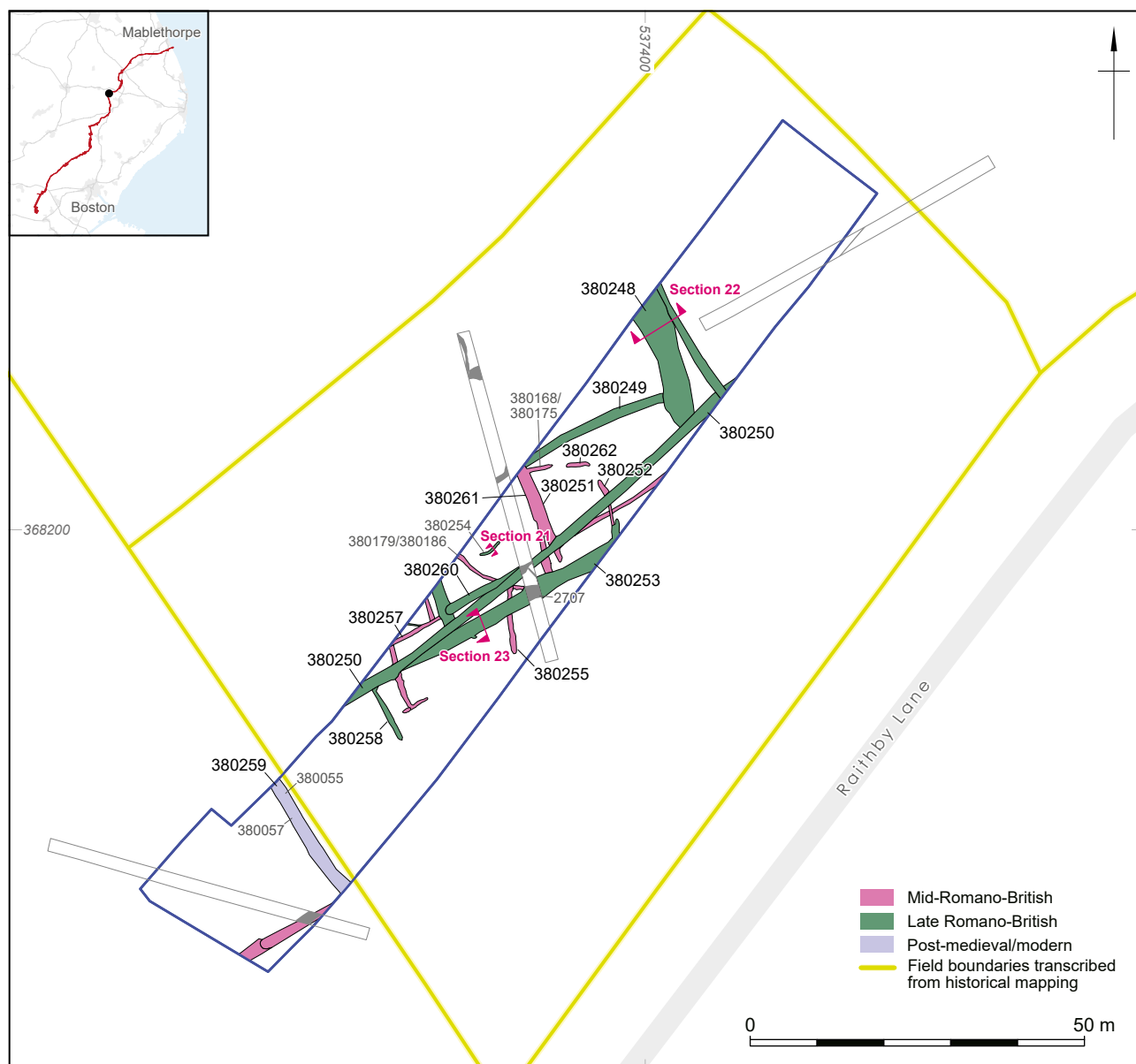


Figure 4.28 Raithby Lane



Figure 4.29 Raithby Lane, ditch 380082, south-west-facing section; St Andrew's, Sausthorpe, in distance (1 m scale)



Figure 4.30 Raithby Lane, gully 380254 cut by modern land drain, view from south-west

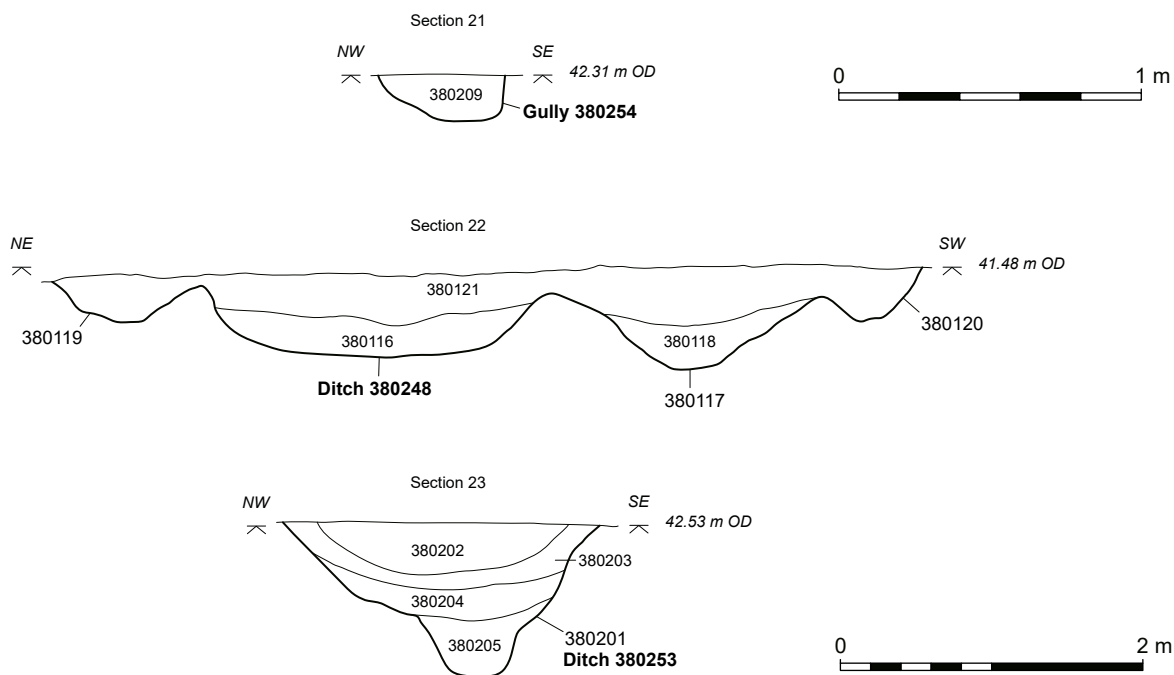


Figure 4.31 Sections from Raithby Lane

site defined a boundary that separated, in all periods, the area of archaeological activity from a more open landscape to the north-east. Each of the component ditches of boundary 380248 was approximately 2 m wide by 0.7 m deep.

A sequence of three superimposed ditches (380250: 1.4 m x 0.27 m; 380253: 2 x 0.94; 380260: 1.4 x 0.35 m) seems to have defined the same general north-east to south-west boundary line across the centre of the site. This was originally marked by 380257 (see above), although 380250 overwrote the early boundaries, and the later site layout shows less evidence of subdivision. This possibly reveals the creation of larger fields associated with a different way of farming hereabouts, such as moving from garden-scale horticulture to more extensive arable cultivation towards the end of the Romano-British period, or increasing drainage capacity: ditch 380253 was one of the few features along the Interconnector to contain environmental remains preserved through waterlogging. Plants typical of wet environments (e.g., rushes, common nettle) were identified, along with the remains of dung beetles, indicating the presence of livestock in the past (see Aerts in Volume 2, Chapter 8).

Late Romano-British or post-medieval

Towards the south-western limit of the site, ditch 380259 (1.98 x 0.53 m) formed a potential cross-member of boundary 380250; its recut (380055/380057) contained a handful of sherds dated to the 4th to early 5th century AD, along with heather charcoal that provided a mid-late Romano-British radiocarbon date (FTMC-MB96-2). However, the course and position of boundary 380259 match that of a trackway and field boundary recorded on 19th-century historical mapping, suggesting the material was either residual or the modern features were continuations of ancient boundaries. The latter is a possibility, as the north-east to south-west orientation of the boundary defined by 380250 and which formed the main axis of the site is approximately replicated by the current alignment of the lane that gives this site its name.

The Fen-edge

Hagnaby Grange

A site near the 19th-century farmstead of Hagnaby Grange in the parish of West Keal, on the northern edge of the Fenland embayment, was the most substantial of

the secondary sites with Romano-British remains (NGR 534937 361419; 6 m OD). No results of interest were apparent in the geophysical survey results, but evaluation trenching exposed features containing Romano-British pottery, and as a result an open-area excavation (0.22 ha) took place.

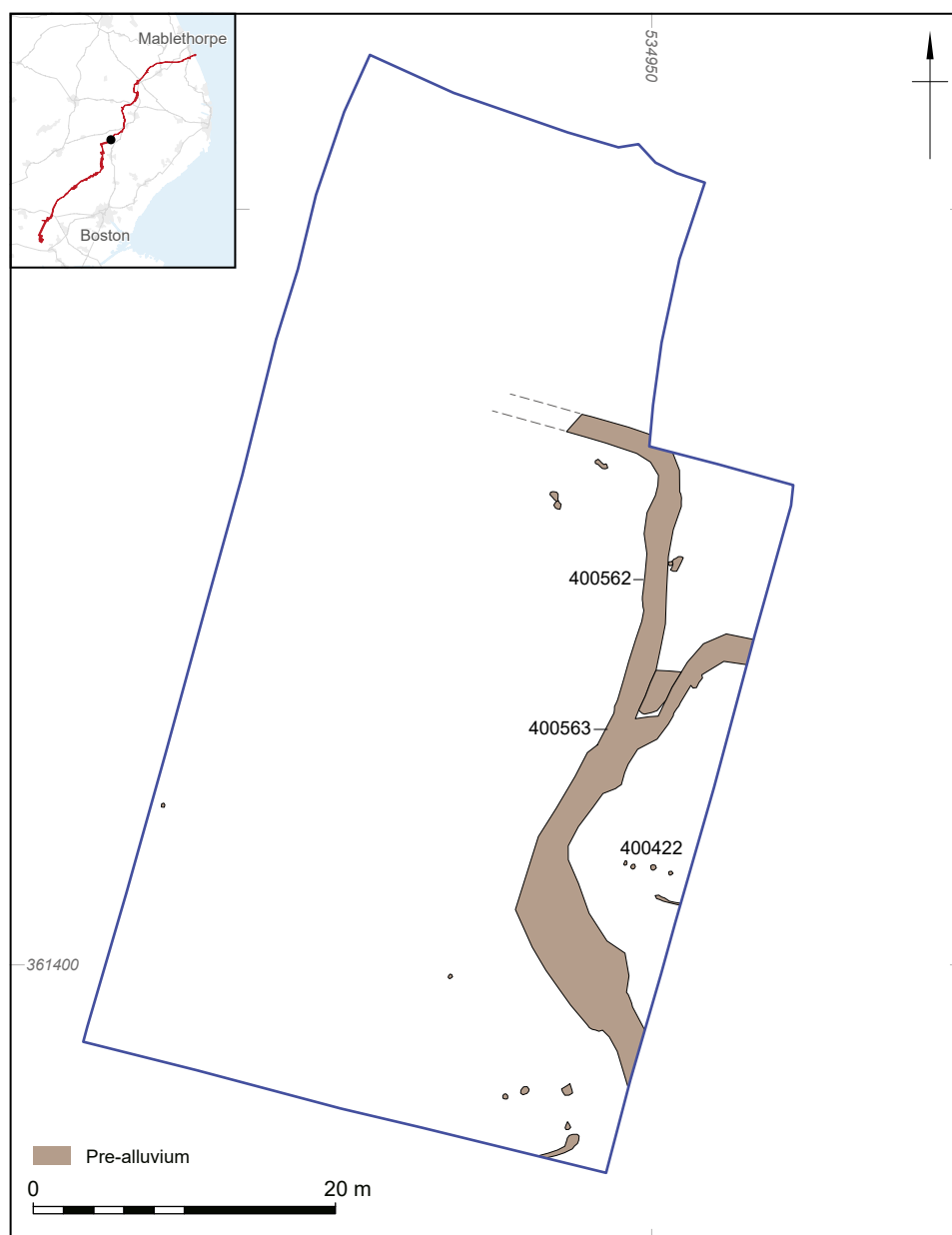
An alluvial deposit was found across the southern and south-eastern parts of the site; most features cut the deposit, although some were earlier. After the features cutting into the alluvial layer had been investigated, it was removed by machine, thereby revealing the features it had sealed.

Remains beneath the alluvium

A roughly 'Y'-shaped arrangement of ditches was exposed in the eastern part of the site (Fig. 4.32). The full extent of the original arrangement was difficult to discern because of the imposition of the later features which post-dated the deposition of the alluvium.

Where investigated, ditch 400562 was 1.75 m wide by 0.76 m deep and ditch 400563 1.52 m wide by 0.46 m deep; together they extended for at least 40 m on a sinuous

Figure 4.32 Hagnaby Grange
(pre-alluvium)



north to south course along the eastern edge of the site, extending beyond the limits of excavation. Where they ran together, ditch 400563 was recorded as cutting the other, indicating a rearrangement of boundaries during this early phase. A small amount of early Romano-British pottery was recovered from ditch 400562, with a slightly larger amount of Late Iron Age date found in ditch 400563.

An alignment of four postholes (collectively 400422) was recorded close to the eastern site boundary. These extended over 3.4 m, were irregularly spaced at 0.3–1 m apart, and may have formed a fenceline. No finds were present. The remainder of the pre-alluvium features comprised small, isolated pits and postholes and a gully terminal. None can be dated.

An episode or period of flooding resulted in the deposition of a 0.2–0.4 m-thick deposit of orangey grey silty sand alluvium over these earlier remains. It contained a small group of finds, including animal bone, worked flint and pottery of Iron Age or general prehistoric appearance.

Remains cutting the alluvium

The dating evidence from the features cutting the alluvium (Late Iron Age–early Romano-British) did not differ from the features described above, indicating that the flooding was fairly short-lived and the site was reoccupied relatively quickly (albeit for only a brief period).

The principal feature was an enclosure defined on its western, northern and southern sides by ditches 400545, 400546 and 400549 respectively (Fig. 4.33). The enclosed area measured 25 m north–south by at least 32 m east–west (>800 m²), with north–south gully 400547 forming a subdivision. The three ditches defining the enclosure were typically 2.8 m wide by 0.75 m deep, their substantial size presumably a reflection of the challenge of keeping their surroundings drained. Silting appears to have occurred rapidly, with many of the excavated sections showing signs of recutting. All contained a variety of Iron Age and early Romano-British pottery, alongside ceramics of general prehistoric date. Space within the south-eastern part of the enclosure appeared to have been repeatedly remodelled and subdivided by a succession of features. These generally contained either few or no finds; the ceramics that were present spanned the same broad period as those recovered from the principal enclosure ditches, although sherds from a 'barrel-shaped' jar of Bronze Age or Iron Age manufacture were found in ditch 400548.

The area beyond the principal enclosure to its south contained the corner of a plot of land defined by a right-angled gully, with a ring gully, a four-post structure and various discrete pits and postholes also present. One of the earliest features in this southern part of the site was north-east to south-west gully 400557. This continued beyond the site limit to the west and had been cut by, but did not extend beyond, curvilinear gully 400554 to the north-east. Gully 400557 produced a scant pottery assemblage probably dating to the 1st century AD. By contrast, curvilinear gully 400554 was a pot-rich feature (Fig. 4.34) and contained almost one-fifth of the pottery from Hagnaby Grange (by weight), with the great majority of that deriving from the feature's eastern terminal. This material was of Late Iron Age and early Romano-British date. Romano-British glass was also recovered from gully 400554.

The right-angled plot boundary was defined by gullies 400555 and 400556 and measured at least 22.5 m east–west by at least 12 m north–south. These gullies both cut the pottery-rich curvilinear gully 400554; they were of similar dimensions to it and also contained early Romano-British ceramics, albeit in much more modest quantities. Features within this plot of land were also found to contain Late Iron Age and early Romano-British ceramics, although a four-post structure (400553) close to its northern edge was artefactually sterile. It measured 1.7 m square, and therefore was at the smaller end of the scale for such features, which are generally around 3 m square

Figure 4.33 Hagnaby Grange
(post-alluvium)

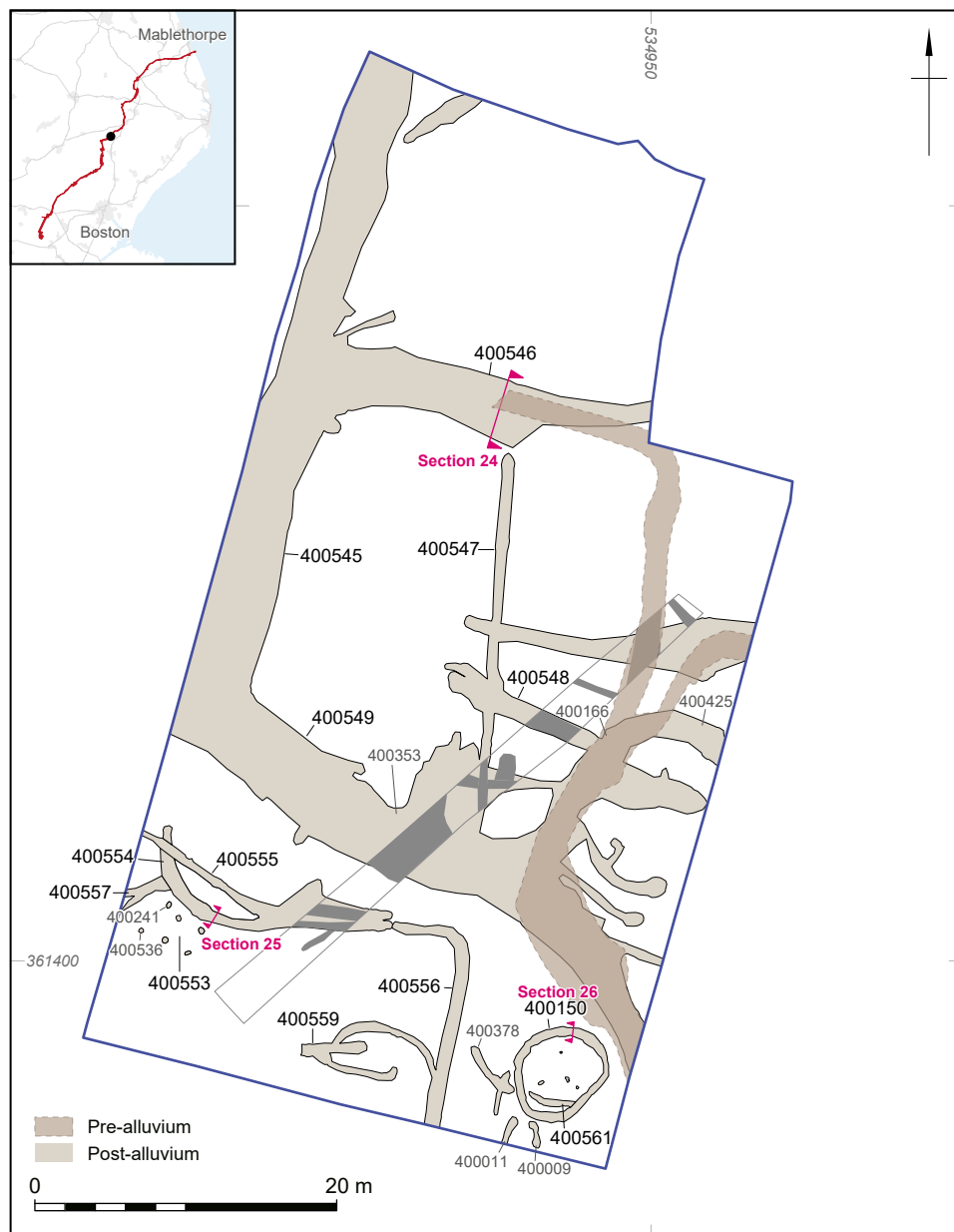


Figure 4.34 A rim fragment
from a grey ware carinated
necked bowl in situ in gully
400554 (0.1 m scale)



(Thomas 2011, 155). Its constituent postholes were 0.4 m in diameter by 0.1 m deep. Two outliers (400241 and 400536) were noted to the north-west and may have been associated with the four-post structure.

The ring gully (400150) in the south-eastern corner of the site had a maximum internal diameter (on its north-east to south-west axis) of 5.6 m (Fig. 4.35). The gully formed a complete circuit with no obvious entrance, and it had a steep, 'U'-shaped profile; it was typically 0.5 m wide and 0.27 m deep with either a dark greyish-black or mid-orangy grey sandy silt fill. The relatively steep-sided cut (Fig. 4.36.26) suggests this was a footings trench rather than a drip gully. Some form of small roundhouse or field shelter seems likely here. Ring gully 400150 contained pottery of prehistoric date, as did the small gully (400561) within the interior of the ring gully (and recorded as cut by it). Gully 400561 also provided the only radiocarbon date from the Hagnaby Grange site: a bean (*Vicia faba*) seed dated to 150 cal. BC–cal. AD 60 (UBA-52876). Four small postholes within the footprint of the ring gully neither formed any regular pattern nor contained any finds.

Figure 4.35 Ring gully 400150, view from the east

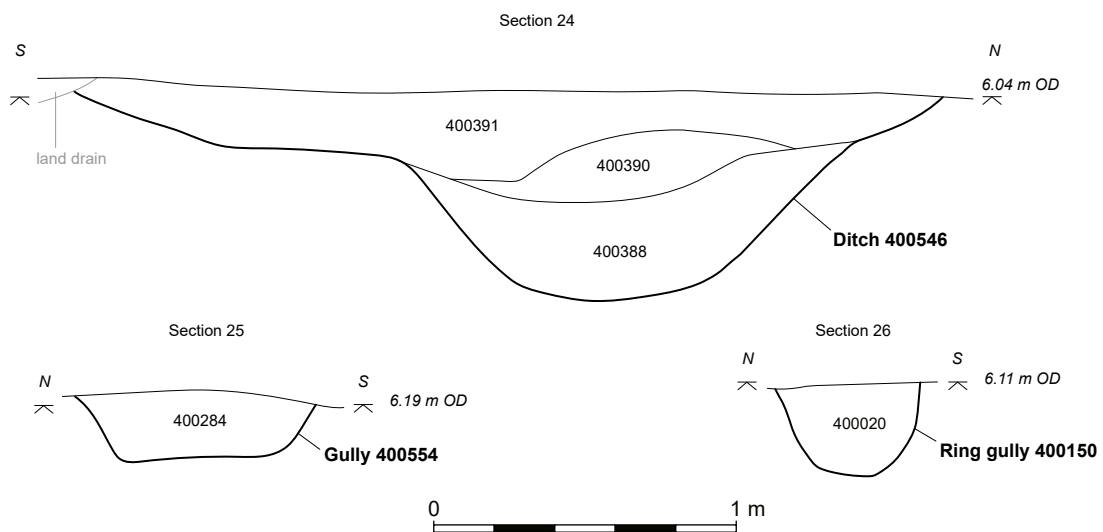


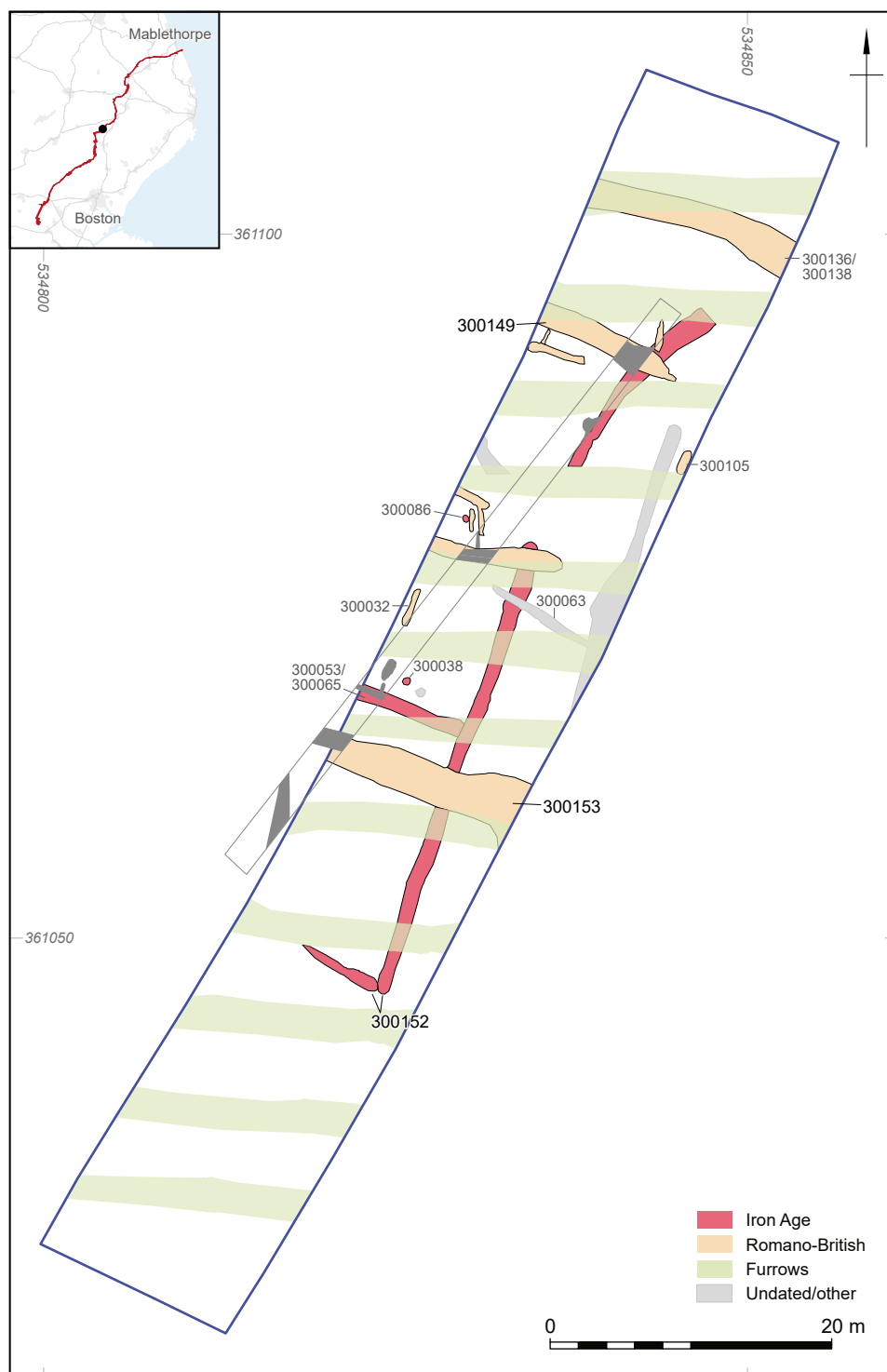
Figure 4.36 Sections from Hagnaby Grange

Gullies (e.g., 400011, 400378) and a pit (400009) south of the ring gully 400150 may have been related to its use, with some potentially dug to improve drainage conditions around the structure. A small amount of pottery of general prehistoric appearance was recovered from these features.

Magers Lane

The Magers Lane site lay 300 m to the south-west of Hagnaby Grange and revealed another fragment of field system (Figs 4.37–38). Although radiocarbon evidence suggests some Middle–Late Iron Age activity on the site (see above), most of the remains were Romano-British. Sherds from the 1st to 2nd centuries AD were most common, but some indicate the use of the site may have extended into the late part of

Figure 4.37 Magers Lane



the period. Activity here was fairly localised, the archaeology extending for just 60 m along the cable route. A set of ditches on a common WNW–ESE alignment provided the main framework of the site, with others perpendicular to these. The northern boundary of activity on the site was marked by ditch 300136/300138 (2.26 x 0.63 m), which contained late 1st to early 2nd-century AD pottery in both its original cut and recut. The southern limit of Roman activity appears to have been defined by long-lived ditch 300153 (2.85 x 0.91 m), which contained a middle or late Romano-British pottery component, alongside earlier material. This cut an Iron Age ditch set on a perpendicular alignment, signalling some reorganisation between the two periods of how the land was divided. To the north lay recut ditch 300149 (2.18 x 0.35 m), which ran from the western site limit towards the south-east, where it terminated. The fill of its recut was a notably dark grey clayey sand. Investigation of this ditch provided evidence for the probable nearby presence of oak, the cultivation of wheat and the use of dairy products on the site. Other Romano-British features at Magers Lane include short lengths of gully or ditch, such as 300032, 300105 and 30063, probably dug to demarcate and organise the area lying between ditches 300136/300138 and 300153.

Twelve furrows crossed the site on an east–west alignment and cut the earlier remains. Medieval pottery (late 13th–15th century) was found in one, others contained redeposited Romano-British sherds. The alignment of the furrows was slightly askew to that of the Romano-British features, marking a further change to the way in which the land was worked over time.

Figure 4.38 Excavation at Magers Lane, facing away from Hagnaby Grange and out towards the fen



Discussion

Nearby evidence that provides some context for activity at the Hagnaby Grange and Magers Lane sites primarily comprises scatters of Romano-British artefacts found in their vicinity during fieldwalking (Lane and Hayes 1993, fig. 59; Fig. 4.39). A lack of similar background evidence from the area to the west of the sites may well be because of the imposition of RAF East Keal on that part of the landscape.

Ditch-digging and associated activity at Hagnaby Grange, in particular, and at Magers Lane appears to have been underway in the Iron Age, confirming that utilisation of this part of the northern Fen-edge formed part of pre-Roman exploitation strategies. The continued use of Native-tradition wares following the Roman occupation makes it generally difficult to differentiate pre- and post-Conquest activity, but there is sufficient fully Romanised material from both sites to indicate they were also significant features of the Romano-British landscape. As an agricultural focus, the Hagnaby Grange site was presumably deemed sufficiently useful to be worth the investment of effort to bring

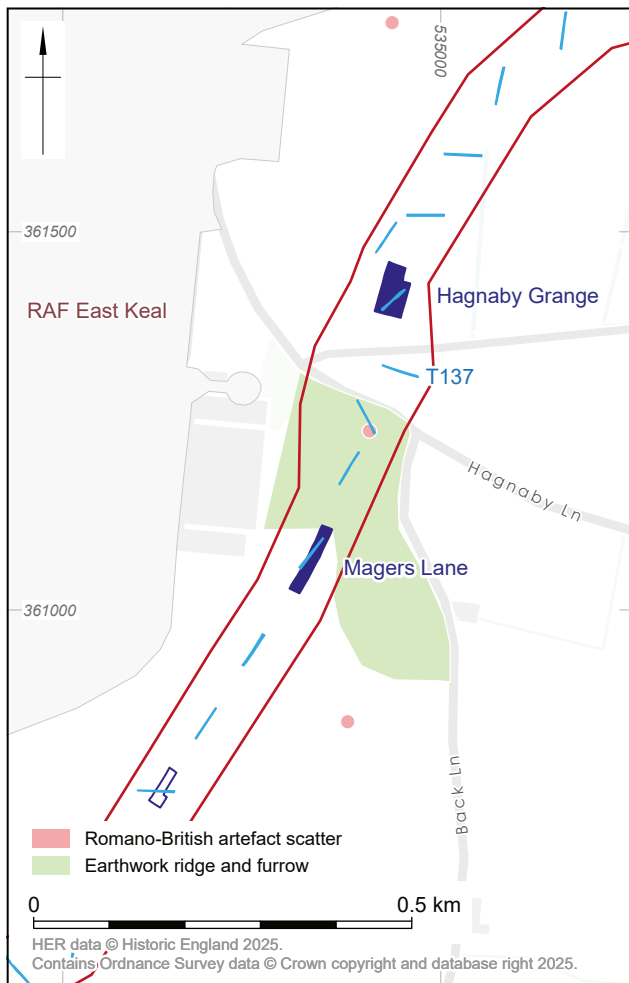


Figure 4.39 Sites at Hagnaby Grange and Magers Lane

it back into use following its inundation soon after the Roman Conquest. No comparable alluvium was recorded at Magers Lane, suggesting the alluvial deposition at Hagnaby Grange was fairly localised, or that Magers Lane benefited from its higher position in the landscape (7 m OD, compared to 6 m OD at Hagnaby Grange).

There is not much within the evidence from Hagnaby Grange to signify any great social status, and the site appears in keeping with Lane and Hayes' characterisation of Romano-British sites on the northern Fen-margin site as being relatively lowly, isolated and self-contained (1993, 57). By contrast, the pottery assemblage from Magers Lane contained a good range of imported fine 'table ware'-type vessels (see Rowlandson below). This suggests that people here had begun to dine in a more 'Roman' style and highlights the variability in the archaeological record even over short distances, but perhaps also reflects a chronological difference, Magers Lane having a stronger (and later) Romano-British focus.

Gibbet Hill

An unusual discovery at the Gibbet Hill site (NGR 520871 343357; 2 m OD; Fig. 4.40) displays how Romano-British ceremonial behaviour could combine both human remains and landscape setting. This site was situated on a roddon (a sinuous bank of sand/silt infilling a former watercourse and raised above the surrounding ground surface through the latter's compaction and shrinkage –

Fowler 1932; Hall and Coles 1994, 19). The archaeological features comprised a parallel pair of ditches, two similarly oriented gullies, a palaeochannel and an alignment of pits.

The northernmost of the two ditches, 560024/560034 (2.22 x 0.82 m; Fig. 4.41) contained a single disarticulated human bone in its basal fill (slot 560024). The bone is an almost complete left humerus in good condition, with clear evidence for deliberate human manipulation, including dismemberment and defleshing (see McKinley in Volume 2, Chapter 8, and O'Brien Butler and Madgwick in Volume 2, Appendix D). The bone has been radiocarbon dated to the late Romano-British period (SUERC-108720). With no artefacts recovered from the site, this is the only certain evidence of Romano-British activity at Gibbet Hill. The ditch was parallel to the roddon it was cut into (the course of which is followed by the modern A17 hereabouts) and lay on its southern edge. Beyond to the south lies lower, flatter ground, currently marked on Ordnance Survey mapping as Hale Fen.

The well-preserved remains of a calf were found in cut 560058 (1.30 x 0.72 x 0.30 m; Fig. 4.42), which formed part of the pit alignment close to the southern edge of the site. The size of the animal was not diagnostic of any particular period, so it was radiocarbon dated to establish whether there was any association with the human remains. This proved not to be the case, with the animal returning a medieval to post-medieval result (UBA-53370). None of the other features could be dated.

The site takes its name from that given to its surroundings on historical and modern Ordnance Survey mapping, the former also marking a 'Gibbethill House' on the outskirts of Swineshead Bridge. Whether this area once was used as place of execution cannot be confirmed here, but the boundary between the civil parishes of Swineshead and Great Hale lies just 150 m west of the site, and an association between

administrative boundaries and execution sites during the early medieval period has been identified (Reynolds 1997); this might boost the likelihood that one was once present, especially in light of the roddon's role as a long-established route across the local fenland. Even so, the use of the locale for deviant mortuary practices centuries apart might be purely coincidental. It remains, however, an intriguing coincidence.

Anglo-Saxon

The great majority of the remains from the Anglo-Saxon period recorded on the Interconnector route were found at the principal sites outlined in Chapter 3 above and are considered in more detail in Volume 2, Chapter 6. The dataset was dominated by the cemetery at Callow Carr, with slight settlement activity evident at Cheals Close in the Lymn Valley, and at Sea Bank Farm and Ailby Lane on or close to the Lincolnshire Marsh. A round-up of the other evidence dating from AD 410–1066 follows below, moving from north-east to south-west along the scheme (Fig. 4.43).

Zone 1

Trench 261

A small assemblage of sherds of late 9th to 10th-century type was recovered from three ditches exposed in evaluation trench 261 which lay at the north-eastern end of the scheme (NGR 553390 379745). These remains were found 600 m to the east of the similarly dated site at Sea Bank Farm, and suggest a wider area of contemporary activity in this most seaward part of the route.

Zone 2

Pitchmoor

The round-up of Iron Age remains presented above mentioned that Anglo-Saxon pottery was also recovered from the Pitchmoor site (Fig. 4.12). The small assemblage (21 sherds representing five vessels) spans the 5th to 8th century. This site lay in a contrasting locale to the coastal setting of trench 261, being high on the chalk Wolds. Most of the Anglo-Saxon pottery came from pit 350119 (1.90 × 1.77 × 0.44 m), while postholes 350047 (0.77 × 0.46 × 0.28 m) and 350145 (0.50 × 0.46 × 0.27 m) each contained a single sherd. The postholes were components of two different four-post structures (350177 and 350195) that lay some 20 m apart. Four-post structure 350177 measured around 2.70 m square; 350195 was more rectangular and larger, at 5 × 2.85 m. The only other finds from these features were animal bones from pit 350119 and a single sherd of prehistoric pottery from another of the features forming four-post structure 350177.

It is uncertain what these structures represent. Iron Age four-post structures of the type commonly interpreted as granaries were found at Walk Hill around 1 km to the south with another example recorded at Pitchmoor itself (see above). As previously mentioned, it is possible that four-post structures 350177 and 350195 represent further examples, but were 'contaminated' with intrusive pottery. But to take the Anglo-Saxon dating evidence at face value, some sort of craft or domestic structure from that period is possible. Their small size is reminiscent of the sunken-featured buildings known locally (that at Ailby Lane measured 3.4 m long by 2.3 m wide, with the sides of three examples at Halton Hologate near Spilsby ranging between 2.1 and 4.6 m: Ramsey 2004, 3–4), although the chalk bedrock may have discouraged the use of similar techniques at Pitchmoor, with earthfast posts used instead. The rectangular forms seen at Pitchmoor are comparable to other early medieval structures known in the region, for instance at Quarrington (Taylor *et al.* 2003), although structures 350177 and 350195 are smaller than those examples. A post-built 4.5 m square Saxo-Norman structure was recorded at Baston, Lincolnshire (Taylor 2003), and this probably represents a better comparator.



Figure 4.43 Sites with Anglo-Saxon material

Raithby Crossroads

A single sherd from a vessel of potential late 9th to early 11th-century date was recovered from the topsoil of the Raithby Crossroads site, close to the River Lymn.

Trench 322

A little under 700 m to the south-east of Raithby Crossroads, a glass bead with an opaque white body and red dots was found in the ploughsoil of trench 322 (NGR 536865 367358). It is of a type popular in the late 6th to mid-7th centuries AD, and is closely paralleled by a bead from Faversham (Sue Heaser, pers. comm.). The dates match that of the use of the Callow Carr cemetery, which lay 5 km to the north-east.

Area 34

Area 34 appears in the gazetteer of minor sites (see Volume 2, Appendix A). It lay 5.5 km south of Raithby Crossroads, towards the Fen-edge. Two sherds from a handmade jar of 5th to 6th-century date with incised vertical and diagonal line decoration were recovered from a ditch there. No other material of apparent Anglo-Saxon date was recovered from this location, however.

Back Lane

The remains of three undecorated but burnished pottery vessels were recovered from a ditch (410124) post-dating the Bronze Age and Iron Age activity at Back Lane (Fig. 4.6). These are of 5th–7th-century AD date. Some of the sherds show evidence of salt-bleaching, raising the possibility that salting or some other process involving the boiling of brine was practised at this site, which lay at 4.2 m OD on the Stickney Moraine, close to the northern Fen-edge. Further evidence of Anglo-Saxon activity exists nearby beyond the Interconnector, in the form of over 300 sherds of Early–Middle Anglo-Saxon pottery recovered from the ‘SKD 10’ surface findspot detected just west of Stickford House by the Fenland Management Project (Lane and Hayes 1993, 58–59; fig. 69). The Back Lane site lies around 700 m north of this findspot and would have enjoyed the same sort of strategic location as SKD 10, which was interpreted as ‘guarding access to, and along, the Stickney moraine’ (*ibid.*, 59).

Zone 3

North Ing

A small group of ceramics (10 sherds) was recovered from a site at the southern end of the Interconnector (Fig. 4.44). The features at North Ing represent the periphery of a mid–late Romano-British farmstead that was succeeded by an Anglo-Saxon field system exposed and excavated as part of investigations of the neighbouring Bicker Fen Substation site (Gaunt *et al.* 2024). The North Ing pottery was thinly spread (the ten sherds derived from seven ditches and gullies: 600244–600248, 610061 and 610138), and represents Maxey-type vessels and Ipswich ware. The parent features lay on a variety of alignments and typically contained mid-greyish-brown sandy clay or silt fills, although a wide range of shades and hues was recorded across the site. The cuts were similarly of a variety of sizes, ranging from 0.48 m wide by 0.17 m deep (600246) to 2.40 m wide by 0.8 m deep (600247). The overall arrangement is uncertain, but 600244, 600247 and 610061 may have together defined a north-west to south-east-aligned plot of land 73 m wide and at least 82 m long and which would have probably crossed the width of the roddon it was set upon. Gullies 600245 and 600246 to the east may have been ancillary features to this parcel of land. Ditch 600248 marked the disuse of this arrangement, which would have lain on the edge of the Anglo-Saxon focus recorded at the Bicker Fen Substation site. The only finds recovered from these features, other than the sparse amounts of Anglo-Saxon pottery, was a minor assemblage of animal bone (1624 g: cattle predominated, followed by horse, then sheep or goat) and, from ditch 600244, a handful of pieces of fired clay. The scarcity of artefactual material probably reflects the peripheral position of these features.

The stripped ground surface lay at around 2.5 m OD which, despite its low altitude, is something of a high point in the local landscape. The site was in fact located upon a roddon (Fig. 4.44) which had attracted settlement in the Romano-British period, and the evidence indicates the relatively favourable drainage conditions allowed renewed, or a possible continuation of, activity into the mid- to late 8th century AD (the date of the most diagnostic of the Anglo-Saxon pottery).

The remains at North Ing/Bicker Fen Substation are a relatively rare example of Middle Anglo-Saxon occupation within the siltlands around Boston. As expected, they utilise the sort of topographic high point known to have been favoured at that time (Palmer-Brown 1996), and previously. This site arguably demonstrates the lowest level at which

occupation was tenable in the Middle Anglo-Saxon period, and is a little lower than the approximately 3.2–3.5 m OD minimum that was posited in the 1990s on the then-available evidence (Giorgi and Rackham 1996, 18). The topographic advantages of the site were clearly utilised in other periods. Although most of the 15 sherds of Romano-British pottery recovered there were found in topsoil or residual in later features, their presence supplements the more informative data from the Bicker Fen Substation site. Other features at North Ing were much more recent – some contained post-medieval and modern finds or matched boundaries recorded on historical mapping (e.g., 600098).

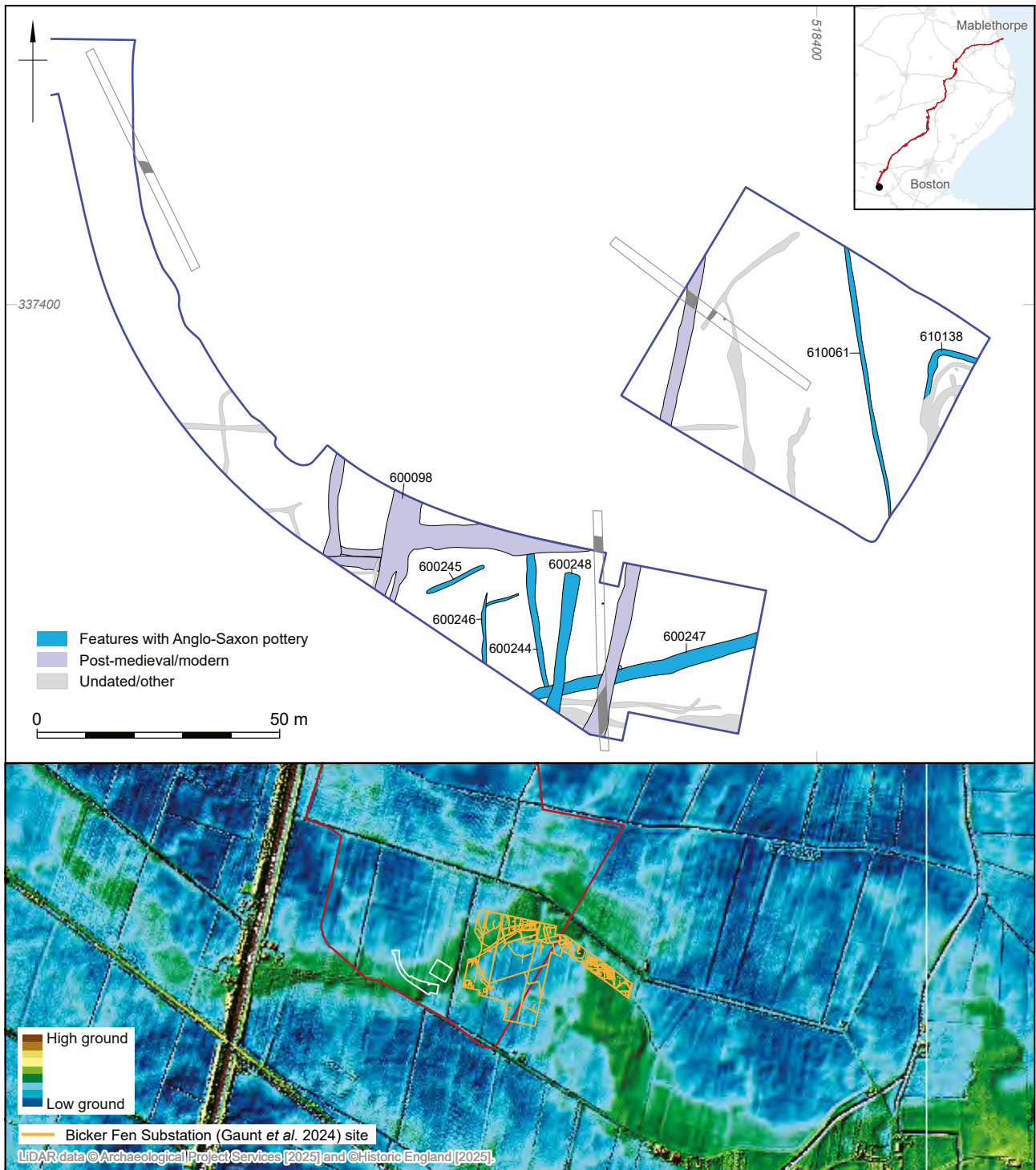


Figure 4.44 North Ing

CHAPTER 5

DISCUSSION

Introduction and Caveats

THE PRECEDING CHAPTERS HAVE PRESENTED AN OVERVIEW OF THE RESULTS of the archaeological investigations along the course of the Viking Link Interconnector. Fuller accounts of the principal sites and the artefactual and environmental assemblages recovered from the project as a whole can be found in Volume 2.

Much of the evidence has increased the knowledge of the archaeological character of parts of the landscape. At times, however, the clearest result is a better understanding of how much there is yet to learn. This publication has, by necessity, presented the information relating to the fieldwork in discrete units, by site or evidence type. It is hoped that this chapter can connect to different elements of the project results and consider them in relation to each other, and what was known before. By linking the combined findings to published research themes, the aim is to demonstrate how Viking Link has increased archaeological knowledge.

It is, however, never straightforward to extrapolate from the narrow transect offered by linear development schemes. Despite occasional clarification from the geophysical results, the full layout of individual sites remains largely unknown, so the functions of individual features often cannot be understood either. It is a particular challenge to appreciate the local setting of sites where – as in this case – the surrounding landscape has not been well-explored through earlier fieldwork. Preservation is also an issue: on almost all of the Viking Link sites, the archaeological horizon lay directly below the ploughsoil, so will have been truncated. In addition, many of the excavation sites were criss-crossed by later ditches, furrows or drains, with the overall effect being that the recorded archaeological resource was only a surviving subset of that originally in place. This is particularly the case for any organic components within the sites, which will have been diminished through drainage and dewatering, particularly in the formerly waterlogged sections of the Interconnector. Finally, as revealed through the geoarchaeological works (see D. Young above), across parts of Zone 1 and Zone 2 any earlier prehistoric horizons that may have been present would have lain below the depth of construction operations of the Interconnector, so their stories remain untold. These are the principal factors that have affected the character and value of the evidence recorded along the Interconnector.

Research Themes Revisited

The research themes that emerged during the fieldwork and post-excavation assessment and analysis were outlined in Chapter 1, and a consideration of the significance of the project results in relation to them follows below.

Research Theme 1: the Chronology of the Field Systems, Settlements and Other Sites Found Along the Cable Route

Contributions to this theme can be summarised by means of a chronological recap and review of the most significant sites and findings.

Mesolithic

Dispersed and infrequent finds of struck flint were the sole remains of the Mesolithic period, although only a minority of pieces can be certainly ascribed to this period. The Zone 2 Mardon Hill site, on the southern edge of the Lymn Valley, produced a relatively large concentration of struck flint, much of this material of probable Mesolithic date, though activity probably continued into the Early Neolithic period.

Neolithic

Radiocarbon dates confirm activity during the Early Neolithic at Walk Hill on the chalk Wolds, with evidence for the exploitation of barley as well as hazel. The remains were recovered from pits that also contained worked flint, with this site producing a relatively large proportion of the total project flint assemblage. Evidence of more-dispersed Neolithic activity was recovered from the Lymn Valley in the form of radiocarbon dates from pits at Fourteen Acres and Raithby Lane, a radiocarbon date from residual material at Raithby Crossroads, and the butt end of a polished axe near Cheals Close. This emphasis on the Lymn Valley during the Mesolithic and Neolithic chimes with the results of earlier surveys (Last and Willis 2023, 13). Although not associated with any particular 'site', the borehole survey identified periods of peat formation in the Fens to the west of the Stickney Moraine during the Neolithic, with contemporary evidence of widespread burning in the area.

Bronze Age

The slim collection of Bronze Age features was dominated by funerary remains, with a barrow discovered at Callow Carr to the east of the scheduled Ring Holt barrow on the southern brink of the Wolds. A second possible example, this with cremated human remains, was identified at Back Lane on the Fen-edge. The Callow Carr barrow ring ditch produced finds of Beaker pottery and a cereal grain radiocarbon dated to the Middle Bronze Age. Bronze Age pottery was also recovered from the Back Lane site, alongside the human remains. A fire pit/hearth radiocarbon dated to the Middle–Late Bronze Age at Ailby Lane on the western edge of the Lincolnshire Marsh may provide the best evidence of occupation during this period. A proportion of the worked flint assemblage from the route overall will reflect contemporary utilisation of the wider landscape, but no particular foci were identified, in contrast to the earlier periods.

Iron Age

It is during the Iron Age that widespread activity becomes archaeologically detectable. Ailby Lane, close to the Zone 1/Zone 2 boundary, produced a small amount of later Bronze Age or earlier Iron Age pottery, with limited quantities of similar ceramics from the Wolds (Sutterby Field and Walk Hill) and the Fen-edge (Hagnaby Grange). Further evidence from the Early Iron Age on the Wolds, at Walk Hill, is also indicated by the radiocarbon evidence. It is not, however, until the Middle Iron Age that finds and features occur together to any large degree. A combination of pottery and radiocarbon evidence points to activity between the Middle and Late Iron Age at up to eight sites, all located in Zone 2, from the chalk Wolds (Sutterby Field) to the Fen-edge (Staunth Farm). Iron Age activity within Zone 1 (White Crofts and Ailby Lane) appears a little later, as does that at Wood Hill (Zone 2), whereas the saltmaking within the Fens at Mown Rakes seems a peri-Conquest enterprise.

In keeping with regional norms (Willis 2022), the corpus of features excavated along the Interconnector largely comprises ditches defining field systems and rectangular enclosures (the two often difficult to distinguish within the narrow window afforded by the scheme's easement), four-post structures, roundhouse ring gullies (Fig. 5.1), and miscellaneous pits, postholes and short lengths of gully. The increase in visible evidence of activity in the landscape probably reflects new activities (e.g., enclosure and linear boundary construction) being undertaken by a growing population.

Romano-British

Field systems and small rural farmsteads of Romano-British date were the most common site type encountered in each landscape zone. At least 15 of the excavation

Site	Feature	Internal diam.	Ditch (W. x D.)	Dating	Entrance facing	Other
Sutterby Field	700299	11.5	0.96 x 0.22	Iron Age: 150–50 cal. BC & 40 cal. BC–cal. AD 55 (UBA-52904 & UBA-52905), worked flint, pottery of general prehistoric appearance	E	Not fully exposed
	Annular anomaly detected by geophysical survey	19 m	?	N/A	?	Not topsoiled: only seen in geophysical survey
Raithby Crossroads	220115, 220117	14	1.34 x 0.38	Middle Iron Age: 355–170 cal. BC (UBA-52910); Iron Age pottery, plus residual ¹⁴ C and EBA arrowhead	E	Not fully exposed
Hagnaby Grange	400150	5.6	0.5 x 0.27	Prehistoric pottery, Middle Iron Age–Romano-British ¹⁴ C date from ?internal feature (UBA-52876)	N/A	Continuous circuit
Back Lane	410120, 410121	5	0.54 x 0.22	Middle–Late Iron Age: 160 cal. BC–cal. AD 10 (UBA-52911); intrusive pottery and CBM	E & W ?	
Bottom Close	590097	4.5	0.9 x 0.27	N/A	N/A	Continuous circuit

Table 5.1 Iron Age roundhouses from Viking Link (dimensions in metres)

sites contained such remains, with occasional Romano-British finds made at many others, and additional material coming from evaluation trenches beyond the sites. As discussed further below, around two-thirds of these Romano-British sites appeared to be new enterprises rather than forming continuations of Iron Age occupation.

Activity from early in the Romano-British period was found in all zones, and within Zone 2 this occurred across its various ranges of altitudes and soil types, from high on the chalk Wolds (Walk Hill), in the Lymn Valley (Partney Leys, Cheals Close and Area 29), and down on the Fen-edge (Hagnaby Grange). The heyday of the low-lying Fenland sites of Mown Rakes and Six Hundreds Drove lay in the early–mid-Romano-British phase, with activity at Sea Bank Farm appearing to extend further towards the 4th century. The Lymn Valley, specifically the parish of Raithby, contains something of a focus of late Roman activity (Area 21, Raithby Lane). Three sites had evidence of sustained use across the centuries of Roman rule – one lay on a localised area of elevated ground on the Lincolnshire Marsh (White Crofts), another on the high Wolds (Walk Hill) and the third on the Fen-edge (Magers Lane). From this brief review it can be discerned that initial occupation was extensively spread; land-use in the Fenland part of the scheme was curtailed after the 3rd century AD (probably because of a deterioration of drainage: Hayes 1988, 324; Penn and Lane 2005, 10); Raithby parish saw some of the latest Romano-British activity; and the locations that were used across the whole period were not found in any particular type of landscape.

Overall, the chronology of the Romano-British sites conforms to regional trends, which show a peak in the second half of the 2nd century AD, a steady decline through to the 4th century, and a precipitous drop-off thereafter (Allen 2016, 247–9; Smith 2016 147–9). Only five of the Romano-British sites also contained early medieval remains, with persistence of Romano-British ways post-AD 410 only discernible at White Crofts (where the inhumation cemetery remained in use), and no clear evidence of unbroken activity at the rest. The issue of continuity from the Romano-British into the Anglo-Saxon period is considered further below in this chapter.

Most of the Romano-British sites comprised a co-axial grid of ditches and gullies, with much superimposition of elements, most notably at White Crofts, and there is little indication that the precise date of a site might be discerned through the appearance and layout of its features. Slightly curvilinear forms were evident at Hagnaby Grange and the early phase of Ailby Lane, which might – in this region – be related to their potential Late Iron Age origins (e.g., Jones 1998a, 75), although linearity generally

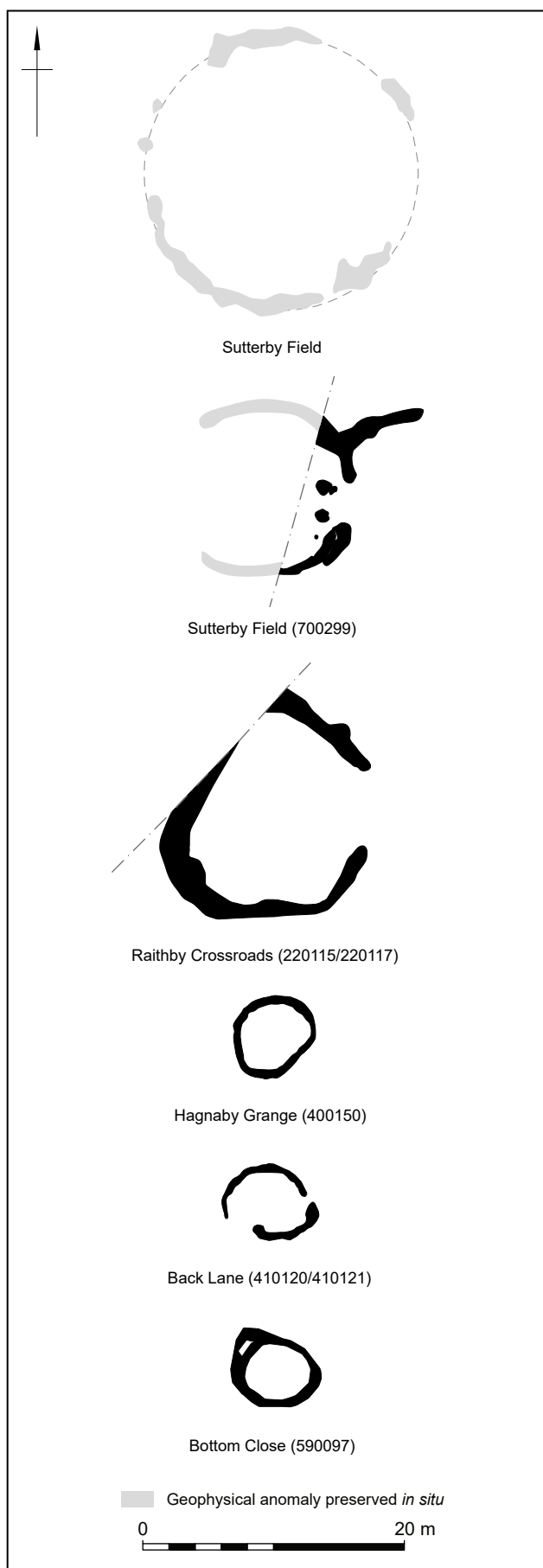


Figure 5.1 Iron Age roundhouses from Viking Link

prevailed at other sites with features of the same date, such as at Walk Hill and Partney Leys. Not all features were well dated, however, and none of the sites were revealed in their entirety, so the Interconnector was not a project to allow confident statements on the issue of relationships between date and settlement morphology. Similarly, a lack of clarity over the full extent of sites and the integration of settlements and field systems means it is generally difficult to be certain which were open and which were enclosed, although Walk Hill can be seen to have been enclosed thanks to the geophysical survey results from the wider area. Walk Hill would appear to be an example of the 'enclosure appended to linear feature' type of site identified by the National Mapping Programme on the chalk Wolds (Jones 1998a, 77), and the excavated evidence broadly supports the previously suggested Romano-British date for such features, although the early boundaries at Walk Hill may have had Late Iron Age origins.

As might be expected, water management seems to have been a concern at sites on the Lincolnshire Marsh (White Crofts), close to the Lymn (e.g., Partney Leys), on the Fen-edge (e.g., Hagnaby Grange) and in the Fens (e.g., Six Hundreds Drove), with repeated recutting and reorganisation of boundaries. However, the principal boundaries at more elevated and better-drained sites such as Ailby Lane and Walk Hill were also redrawn, highlighting the fact that a range of reasons would have been behind such works, and these would have applied in all landscape types.

In contrast to the earlier and later periods, no certain evidence of inhabited structures can be identified for the Romano-British period. This is not without precedent: only two dwellings uncovered on the 40 km-long Hornsea Project One cable route were dated to the Romano-British period (Tuck 2023, 340), and their absence has been noted elsewhere in the East Midlands (Daniel 2023, 159) and around the Humber (Daniel 2024, 58–9; Glover *et al.* 2016, 263). Romano-British dwellings were similarly rare within the National Mapping programme results from the Lincolnshire Wolds (Jones 1998a, 75); only a dozen roundhouses were recorded, and the results from the Viking Link excavations suggest that many or most of these would actually be of Iron Age date. The complete lack of Romano-British buildings within the Viking Link data may be sheer chance – the Interconnector's easement did not happen to intersect with any – but given the number of Romano-British sites found, it does seem that earthfast elements were less commonly used when constructing dwellings and other buildings in this part of the region. The most convincing candidates for Romano-British structural remains from Viking Link are two rectangular arrangements of gullies, one at Partney Leys in the Lymn Valley and the other at Mown Rakes in the Fens. The gullies at Partney Leys (170156 and 170033; Fig. 4.27) contained pottery of

the 1st–2nd century AD and defined a square area at least 4 m across (these gullies continued beyond the stripped area, so the original arrangement was not fully exposed). At Mown Rakes, a small (9.5 × 6.7 m) rectilinear enclosure had been appended to the northern side of ditch 530308; pottery dating to the 2nd or 3rd century was retrieved from this example.

Given the lack of structural remains, it is particularly challenging to determine exactly how many of the Romano-British sites from the scheme represent dwelling places as opposed to agricultural work sites or portions of field system situated at some remove from the home farmstead. From a total of 120 excavated sites with evidence for field systems recorded by the *Rural Settlement of Roman Britain* project within its ‘North-East’ area (within which Zones 1 and 2 of Viking Link lie), just over half were associated with farmsteads (Allen 2016, 272). Using this yardstick, around 8–10 Romano-British farmsteads were uncovered along the Interconnector. Exact figures are hard to arrive at, not least because of the debatable identification of some of the ‘sites’: to lump or split? For example, Mown Rakes was excavated as three discrete areas that have been grouped together into one overall ‘site’.

Mindful of such caveats, the frequency (and density) of Romano-British sites can be considered, but as the majority of the Fenland section would have been unavailable for occupation for much of the period in question, Zone 3 has been discounted from this exercise. A conservative estimate of five farmsteads along the 22 km Zone 2 section of the Interconnector gives a figure of one farmstead per 4.4 km of route. For Zone 1, the frequency is similar if a little higher: one farmstead per 4 km of route (despite Zone 1 also being affected by poor drainage conditions). These figures are higher than the one farmstead per 10 km of route that the Covenham to Boston pipeline (Oxford Archaeology East 2014) encountered when it traversed those parts of Lincolnshire equivalent to Zone 2. The Hornsea Project One Offshore Windfarm cable route (Tuck 2023) encountered one farmstead per 7 km of its course, and preliminary results along the proposed 55 km-long Viking Carbon Capture and Storage pipeline route, which crosses the Lincolnshire Marsh in the gap between Viking Link and the Hornsea Project One cable route, suggest a higher frequency, with one Romano-British farmstead per 2.9 km (John Powell/Wessex Archaeology, pers. comm.). However, as these two last projects largely traversed the coastal marsh, the caveats above about availability of land for settlement should be noted.

The results from Viking Link Zone 2 would translate to a settlement density of 1.5 Romano-British farmsteads per square km (five farmsteads found within a development footprint of 342 ha – although not all parts of the footprint received the same degree of archaeological scrutiny). This density appears realistic, and not markedly out of kilter with the proposed presence of one farmstead per square km suggested for Lincolnshire (Green 2020, 27), a figure which is supported by the results of surveys of the Upper Witham Valley (Jolliffe 2010, 2) and the Lincoln Cliff below Caenby Corner (Wessex Archaeology 2024), and recorded from other regions of Roman Britain (Aldred *et al.* 2023; Evans *et al.* 2023). This high figure presumably reflects the general suitability of the land for settlement and agriculture. In comparison, the general implication of these results is that the density of cropmarks of one settlement per 160.7 square kilometres of the chalk Wolds recorded by the National Mapping Programme (Jones 1998b, 69) was an underestimate of the actual total. Admittedly, the NMP figure described ‘major’ settlements, but the point still stands, and the overall impression is that the local countryside had the same sort of ‘densely settled and worked landscape’ (Green 2020, 27) envisaged for the region as a whole, and may even have been a little busier than average.

Such a density of sites indicates an agricultural landscape that was very much being put to work throughout the centuries of Roman rule, although there were few signs of the novel farming methods to maximise output that are often recorded for this period (Allen and Lodwick 2017; van der Veen and O’Connor 1998). The two crop-dryers at Walk Hill may be interpreted in this way, although no large, mechanically driven millstones – another typical ‘indicator species’ of Romano-British agricultural intensification – were recorded.

Similarly, within the animal bone assemblage, there is little evidence for the larger, improved breeds of livestock recorded elsewhere at this time. Much later, at the end of the 18th century, the Secretary of the Board of Agriculture described the farmers of Lincolnshire as 'alive to improvements and ready to adopt any new instruments which promise utility' (Young 1799, 76), but such tendencies can hardly be recognised in their Romano-British forebears. Perhaps the distance of this part of Lincolnshire from urban markets and the wider infrastructure of Imperial rule meant it was a little insulated from their demands for produce (as traded commodities or items of tax/tribute).

Other than the scarring of the landscape through the efforts required to extract food from it, the other main activities discernible along the route of the Interconnector comprise salting (in the early part of the period in the Fens and a little later at Sea Bank Farm), pottery production (around Six Hundreds Drove), and disposal of the dead (inhumation cemetery at White Crofts, disarticulated remains associated with the crop-dryers at Walk Hill, cremated remains at Mown Rakes, and the defleshed humerus at Gibbet Hill). Circumstantial evidence of textile production (in the form of a range of tools including pin beaters, a weaving comb and a bobbin) came from various sites between Sea Bank Farm and Six Hundreds Drove, but numbers were low overall.

Anglo-Saxon

The earliest dated evidence for this period appears to be more 'sub-Roman' in character than Anglo-Saxon and comprises the deposition of further human remains (some radiocarbon dated to the 5th–6th century: SUERC-126779) at the Romano-British inhumation cemetery at White Crofts. The occupation of the sunken-featured building at Ailby Lane occurred around the same time, where the type of feature and some of the finds appear more aligned with Anglo-Saxon norms. Overall, however, the cemetery that re-used the Bronze Age barrow at Callow Carr stands out among the Anglo-Saxon evidence from the Interconnector sites. The initial phase of the cemetery probably began in the second half of the 6th century AD and appears to have continued for three generations or so, until the end of the 7th century. An Anglo-Saxon settlement, comprising ditches, gullies and at least three post-built structures, was excavated close to the River Lymn at Cheals Close. This appears 8th–9th-century in date, and so post-dates the use of the Callow Carr cemetery.

The remainder of the Anglo-Saxon evidence comprises sparse signs of occupation, and was recovered from a variety of topographic settings and proved to be of varying dates: Pitchmoor on the Wolds and Back Lane on the Fen-edge saw a degree of settlement in the early–middle parts of the period. Localised high ground at both North Ing and White Crofts was exploited again in the middle–late parts of the period, and salt was made near the Sea Bank Farm site in the final century or so of the Anglo-Saxon era.

The corpus of Anglo-Saxon evidence from the Interconnector sites, therefore, is dominated by the funerary remains from Callow Carr, with only scant traces of any other activity, including settlement. In this, the evidence is typical of the nature of the record from the wider region (Albone 2000; Stafford 1985, 155; Vince 2006a).

Research Themes 2 and 3: Use of the Changing Environment

Inés López-Dóriga, Jessie Feito and Ed Treasure

The Interconnector passed through several different landscape zones across Lincolnshire, providing a valuable opportunity to gather large quantities of environmental data from a relatively understudied area. The scheme has been successful in obtaining a range of evidence, largely from macrofossils such as plant remains (mostly preserved by charring, but also by waterlogging and mineral replacement, often referred to as mineralised or calcium-phosphate replaced) and wood charcoal, occasionally complemented by molluscs, insects and pollen. Each of these proxies have different biases and potentials associated with their taphonomies and preservation characteristics, making multidisciplinary approaches essential for understanding the past.

The following sections will discuss how the new environmental evidence from Viking Link addresses the research aims and improves the understanding of the different periods represented in the assemblage. The ability to address some of the research aims will be inevitably compromised by the aforementioned preservation and taphonomic biases affecting the different proxies, which unfortunately have an uneven distribution across the scheme. For example, waterlogged conditions suitable for the preservation of uncharred plant remains and insects were only found in a very small proportion of the sites, while acidic waterlogged soils suitable for the preservation of pollen were also rare. Thus, most of the evidence originated in seasonally wet and freely draining soils and is largely composed of charred plant remains and wood charcoal, both of which may be eroded in alkaline environments (Braadbaart *et al.* 2009) and the alternating wet and dry conditions that accompany fluctuating water levels. In addition, charred plant assemblages are biased towards the overrepresentation of specific types of plant resources because of the taphonomic pathways that lead to their charring and deposition (e.g., Fuller *et al.* 2014; van der Veen 2007; see below).

Nevertheless, through examination of the multiproxy environmental evidence recovered from different areas of the Interconnector, it is possible to trace changes in the landscape and land-use practices that occurred between the Early Neolithic and the medieval period, with a particular focus on the Iron Age and Romano-British periods.

Environmental data from the Iron Age through to the post-medieval period was obtained for the Hornsea Project One cable route, with evidence for cereal, pulse and flax agriculture, exploitation of wild resources and turf-burning (López-Dóriga 2023), and the newly obtained evidence from Viking Link extends the information available for human activities in this region between the Early Neolithic and the Bronze Age (Table 5.2). This highlights the importance of the analysis of environmental samples, since assumptions about agricultural practices based on indirect evidence are likely to be flawed: for example, only six querns or possible fragments of querns were found on the whole scheme. Despite the factors that have skewed the dataset, the Interconnector has nevertheless been successful in providing quantitative data to improve understanding of the development of agriculture in the area (Fig. 5.2).

Figure 5.2 Proportions of the different types of crops (grain/seed MNI) in the charred assemblages across the periods for the sites in the scheme

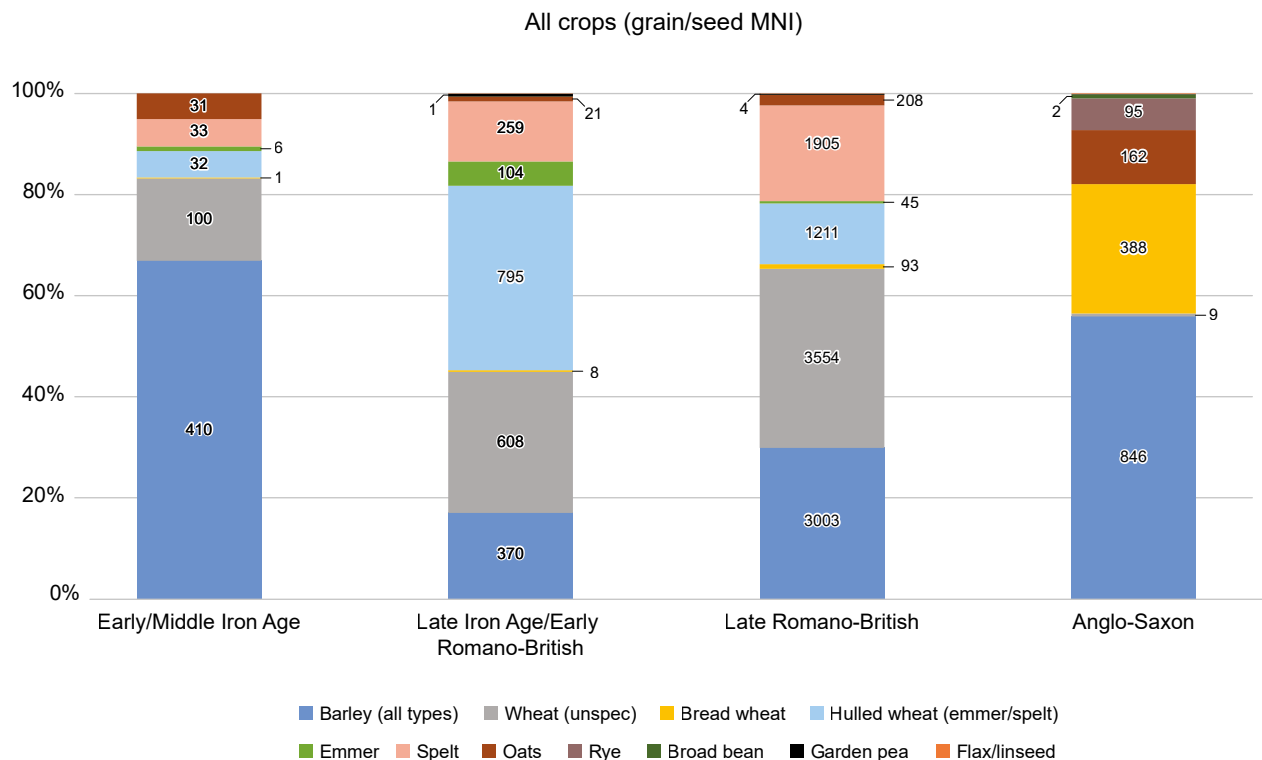


Table 5.2 Summary of agricultural changes identified from the environmental evidence

	Neolithic			Bronze Age			Early/Middle Iron Age			Late Iron Age/Early Romano-British			Late Romano-British			Anglo-Saxon			Medieval			Post-medieval		
	VL	LRA	BF	H	VL	LRA	BF	H	VL	LRA	BF	H	VL	LRA	BF	H	VL	LRA	BF	H	VL	LRA	BF	H
Cereal crops	✓		-		✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	-	✓	-	✓
<i>Hordeum vulgare</i> s.l.	✓		-		✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	✓	-	✓	
<i>Hordeum vulgare</i> var. <i>vulgare</i>	-	✓	-	-	-	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	-	✓	✓	-	-	
<i>Triticum</i> sp.	✓		-		✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	-	✓	-	✓
<i>Triticum aestivum</i>	-	-	-	-	-	✓	-	-	?	✓	-	-	✓	✓	-	✓	✓	✓	-	✓	✓	-	✓	
<i>Triticum dicoccum</i> /spelta	-	-	-	-	✓	✓	-	✓	✓	✓	-	-	✓	✓	-	✓	✓	✓	-	-	-	-	-	-
<i>Triticum dicoccum</i>	-	-	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓	-	✓	✓	✓	-	-	-	-	-	-
<i>Triticum spelta</i>	-	-	-	-	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	✓	✓	✓	-	-	-	-	-	-
<i>Avena sativa</i>	-	-	-	-	-	?	-	-	?	?	-	?	?	-	?	✓	✓	✓	-	?	-	-	-	?
<i>Secale cereale</i>	-	-	-	-	-	-	-	-	-	-	-	-	?	-	-	✓	✓	✓	-	✓	-	✓	-	-
<i>Lolium/Festuca</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓
Other crops	-	-	-	-	-	-	-	✓	✓	✓	-	✓	✓	-	✓	✓	✓	✓	-	✓	✓	-	-	-
<i>Vicia faba</i>	-	-	-	-	-	-	-	✓	✓	✓	-	✓	✓	-	✓	✓	✓	✓	-	✓	-	✓	-	-
<i>Pisum sativum</i>	-	-	-	-	-	-	-	-	-	-	-	✓	✓	-	✓	✓	✓	✓	-	✓	-	✓	-	-
<i>Linum usitatissimum</i>	-	-	-	-	-	-	-	-	✓	✓	-	✓	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-

Key: VL = Viking Link (this scheme) sites, LRA = Lincolnshire Research Assessment data (from Monckton 2006 and Carruthers and Hunter Dowse 2019), BF = Bicker Fen (Gaunt et al. 2024), H = Hornsea Project One Onshore Cable Route (López-Dóriga 2023).

The following sections discuss the contribution of the dataset to the understanding of the Neolithic, Bronze Age, Iron Age–Romano-British and Anglo-Saxon periods. This is condensed in a summary of the information provided by the different strands of evidence (Table 5.2). The environmental information from the scheme for the medieval and post-medieval periods is limited and is not discussed in detail.

Neolithic

Nature of the evidence

Only a small number of features dating to the Neolithic period were found along the length of the scheme. The sampled features lay relatively close to each other (2.5 km apart) at Walk Hill on the Wolds and Fourteen Acres in the Lymn Valley.

The earliest material derives from Walk Hill, where a group of five pits dating to the Early Neolithic period (c. 3600–3400 cal. BC) contained well-preserved wood charcoal and charred plant remains (hazel nutshell, apple/pear fruit and cereal grains). Further evidence for Neolithic activity was identified at Fourteen Acres, where a single pit dating to the Middle–Late Neolithic period was sampled. In comparison to Walk Hill, the assemblage of wood charcoal and charred plant remains from Fourteen Acres was relatively poorly preserved. It has been noted that Neolithic pits often contain accumulations of ‘midden-like’ material or settlement ‘refuse’, and as such it is likely that the wood charcoal and charred plant remains at both sites reflect fuel and food debris associated with cooking and heating (cf. Garrow 2007).

Residual Early Neolithic material was also recorded at Raithby Crossroads, also in the Lymn Valley. At this site, a hazel nutshell fragment from a later Iron Age roundhouse was radiocarbon dated to the Early Neolithic period.

Cereals and wild plant exploitation

The charred plant remains from Early Neolithic pits at the sites are dominated by wild resources (hazelnuts), in the case of Walk Hill also complemented with a few cereal grains (comprising both wheat and barley) and apple/pear. Obtaining direct radiocarbon dates on cereal grains is essential for a correct understanding of the rate of the spread of agricultural products and farming practices among Early Neolithic communities. This is particularly the case for small assemblages such as these, where the sparsely distributed and small charred items, such as cereal grains, are likely to become reworked through soil profiles by bioturbation (e.g., Pelling *et al.* 2015). In the absence of direct radiocarbon dating on cereal remains, intrusive remains from later activities can mislead interpretations about early farming practices (e.g., Hembury, see Dennell 1976 and Whittle *et al.* 2011).

A radiocarbon measurement obtained for a barley grain from Walk Hill (UBA-52873: 4730±32 BP, 3530–3375 cal. BC) provides the earliest date for a cereal in Lincolnshire. Unfortunately, the barley grains from this site are not preserved well enough to enable more specific identification; while all the evidence in the area points only to the cultivation of hulled barley, the presence of naked barley is a possibility (Carruthers and Hunter Dowse 2019).

Up to now, the picture on the adoption of cereals in Britain and Ireland has been skewed to the south and west of England, the east of Ireland and Scotland. There are still very few available direct radiocarbon dates on cereal grains for the east and north-east (Griffiths 2022), with just one date in Essex (Carruthers and Hunter Dowse 2019) and a few from Northumberland (ASDU 2023; Edwards *et al.* 2023) but none in Lincolnshire. Other Early Neolithic deposits with cereals exist, but these are sparse and are not directly dated, and therefore of limited value given the aforementioned considerations on intrusion. Beyond cereals, the evidence for the exploitation of plant resources in the earlier prehistoric periods is particularly scant for Lincolnshire (Monckton 2006) and elsewhere in the Midlands (Carruthers and Hunter Dowse 2019).

Two further similar radiocarbon dates were obtained for hazel nutshell fragments from Walk Hill (UBA-52872: 4742 ± 33 BP, $3620\text{--}3380$ cal. BC and UBA-52874: 4692 ± 37 BP, $3530\text{--}3375$ cal. BC). Taphonomical analysis of the breakage pattern in the hazelnut fragments (López-Dóriga 2015) from Walk Hill indicated pre-charring fracture, therefore the deposit is likely the result of the discard of broken shells after the consumption of the kernel (i.e., as opposed to a roasting pit, where shells were accidentally carbonised while being roasted and then broken). Discussions on the possible overrepresentation of hazel nutshell fragments over other types of remains (particularly cereals) in charred assemblages have been lengthy and long-lasting, based on the issue of quantification of fragmentary remains and differential preservation. However, the most recent experimental evidence suggests that previous assumptions on hazelnut shell surviving well in any firing conditions are incorrect (Holguin *et al.* 2022), and there are well-established methods for estimating accurate numbers of shells (Antolín and Jacomet 2015) which should overcome quantification issues in new studies.

Thus, the current evidence highlights the importance in early farming societies of wild plant resources, including hazelnuts, while fleshy fruits, such as apple and pears, have long been demonstrated to be comparatively underrepresented (e.g., Wilson 1984). Other resources that could have been exploited but are absent from Neolithic samples in the area include sloes and hawthorn berries, which occur at other similarly dated sites (Carruthers and Hunter Dowse 2019), as well as in later deposits across the scheme. This type of assemblage is characteristic of the exploitation of seasonally predictable wild plant resources with high nutritional value, which are often found in deposits from late hunter-gatherer and early agricultural societies (e.g., Stevens *et al.* 2022).

Although the assemblages are too small to be scrutinised in detail, it is interesting to note the presence of cereals at Early Neolithic Walk Hill, though they are absent in the smaller assemblage of Middle/Late Neolithic Fourteen Acres. This might support the hypothesised abandonment of agriculture after the first attempts in the Early Neolithic (Stevens *et al.* 2022). The evidence from the site is, however, not necessarily indicative of local agricultural practices, as there is no conclusive evidence of processing on-site. Thus, it is unknown whether the absence of chaff means that cereals were merely being brought to the site, rather than grown and processed there, or whether local cultivation and processing were occurring but the chaff has not survived because of taphonomic biases (e.g., Boardman and Jones 1990; Braadbaart *et al.* 2009). Sparse chaff evidence is generally observable in Early Neolithic sites across the Midlands and more widely in England, with a few exceptions such as Lismore Fields, in Derbyshire (Carruthers and Hunter Dowse 2019).

Woodlands and scrub

The small assemblage of wood charcoal recovered from the Early Neolithic pits at Walk Hill and the single Middle–Late Neolithic pit at Fourteen Acres provides some information on the character of woodlands in the Neolithic period. While this evidence is limited by the small number of features sampled, it nonetheless provides an important record of past vegetation for the Lincolnshire Wolds and adjacent areas given the absence of pollen records from this landscape (Research Frameworks 2024).

In the Early Neolithic period at Walk Hill, hazel was the main species exploited for fuelwood, and it is likely to have grown in areas of woodland or scrub around the site. Hazel can grow as an understorey shrub in dense woodlands, yet it benefits from a more open canopy structure; it may have thrived around woodland edges, in glades or in other clearings (Hicks 2022). In particular, hazel requires open conditions to produce hazelnuts, and its growth may have been deliberately managed through practices such as coppicing or branch lopping (Colledge and Conolly 2014). Other taxa recorded in the wood charcoal assemblage also suggest that areas of open ground existed around the site. For example, ash often becomes established in woodlands following disturbance or clearance, while shrubs such as blackthorn or apple/pear may have grown in open/scrubby areas (Peterken 2023). It is noteworthy

that elm and oak only occurred in trace quantities in the wood charcoal assemblage, suggesting that they were rare in the local environment. Lime (*Tilia* sp.) probably also grew in woodlands around the site (e.g., Greig 1982), although it was not recorded in the wood charcoal assemblage. It is debated whether chalklands, such as the Lincolnshire Wolds, were well wooded in the Mesolithic and Neolithic periods, or whether these landscapes were instead more open in character, supporting mosaics of grassland and scrub (Bush 1993; Waller and Hamilton 2000). The evidence from Walk Hill clearly indicates the presence of mixed deciduous woodland and scrub around the site, although it is not possible to examine the full extent of woodland cover from this evidence alone.

To the south-west of the site at Walk Hill, a small assemblage of wood charcoal was recovered from a Middle–Late Neolithic pit at Fourteen Acres, containing evidence for oak, ash, alder and alder/hazel. Because of the poor condition of the wood charcoal, it was not possible to establish whether hazel was also present. In contrast to the Early Neolithic evidence from Walk Hill, oak appears to have been an important component of local woodlands around the site at Fourteen Acres. It is likely that oak grew on wet or seasonally wet soils bordering the River Lymn, alongside ash and alder; both these species are often found together in wet woodland habitats (Peterken 2023). The ash charcoal had extremely narrow growth rings, indicating growth in dense woodland or poor conditions (e.g., waterlogged soils).

Bronze Age

Nature of the evidence

Environmental evidence for the Bronze Age was very sparse and limited to three sites: the Middle/Late Bronze Age pit at Ailby Lane, at the Lincolnshire Marsh/Wolds margin; the fills of a Bronze Age barrow ring ditch at Callow Carr, on the Wolds, and the cremation activity at Back Lane, on the Fen-edge. This sparsity is in agreement with previous observations (Carruthers and Hunter Dowse 2019).

Funerary activity

The barrow at Callow Carr

At Callow Carr, samples collected from the fills of a rock-cut ring ditch (900066) contained trace quantities of highly fragmented wood charcoal and charred plant remains (hazel nutshell fragments, cereal grains), as well as molluscs. Although sparse charred plant material deposited in ditch fills is, in general, highly likely to be reworked, the general rarity of cereal evidence for this period motivated the radiocarbon dating programme, revealing a Late Neolithic/Early Bronze Age date for the hazelnut shell (FTMC-ME96-2, 3770 ± 32 BP, 2290–2040 cal. BC) and a Middle Bronze Age date for the wheat remains (FTMC-ME96-1: 3189 ± 32 BP, 1510–1410 cal. BC).

Analysis of the molluscs suggests that the barrow was situated within open, dry grassland, although intrusion of recent shells in the assemblage was clearly evident, limiting further interpretation.

Extremely sparse Bronze Age anthropogenic plant remains evidence (Carruthers and Hunter Dowse 2019) has been recorded in the county. This includes comparable assemblages (none directly dated) of sparse charred plant remains from the fills of barrow ditches at Skendleby, just 2.5 km to the east of the Interconnector route, from Hagnaby Lock near where it passes the Fen-edge, and further south in the Fens from Deeping St James and Deeping St Nicholas.

Middle Bronze Age cremation activity at Back Lane

On the margins of the Fens at Back Lane, the environmental evidence provides an insight on the cremation process. A shallow ring ditch (410125) on the eastern edge of the excavation area contained a small quantity (65.9 g) of cremated human bone which has been radiocarbon dated to 1390–1130 cal. BC (3019 ± 27 BP; SUERC-126879). The cremated bone was recovered from a deposit which was rich in oak stemwood charcoal, and it also contained a few charred plant remains (mainly herbaceous stems and rhizomes/tubers). It is likely that most of the wood charcoal derives from

the cremation pyre, and the use in prehistory of mature stems or branches of oak to construct fuel pyres is well known (O'Donnell 2016). Oak burns for long periods at high temperatures, and it would therefore have provided an excellent fuel for the cremation process, although its selection may also have been for symbolic reasons. The small quantities of charred herbaceous stems and rhizomes/tubers recovered alongside the wood charcoal are likely to either reflect the use of uprooted grassy vegetation for kindling or they could derive from burnt soil below the pyre site (Campbell 2011). Overall, this range of evidence suggests that the ring ditch contains redeposited pyre debris, and it is likely that the cremation pyre was situated nearby, perhaps within the confines of the ring ditch (cf. McKinley 1997).

Subsistence/exploitation of plant resources

The only Bronze Age settlement activity identified across the route was at the boundary of the Lincolnshire Marsh and the Wolds, at Ailby Lane, where a possible Middle to Late Bronze Age firepit or hearth (401016) was recorded. This had an irregular shape in plan and was very shallow, having been heavily truncated. The sample contained a small quantity of charred plant remains, including hazel nutshell fragments and hawthorn fruit stones, some of which displayed evidence for rodent gnawing (possibly from a bank vole). There was also a moderate quantity of extremely poorly preserved oak charcoal in the sample, as well as a few unidentifiable charcoal fragments. Overall, the evidence does not necessarily indicate that the feature was a firepit or hearth, although the charred plant remains and wood charcoal may indicate that it was the location of a rubbish heap or bonfire. Rodents may have been attracted to an accumulation of food waste here, creating a cache of hazelnuts and hawthorn stones.

A possible midden with occasional cereal grains was identified in a nearby scheme but this remains unpublished and undated (Oxford Archaeology 2014). The rarity of Early to Middle Bronze Age settlement evidence generally observed for the East Midlands is tentatively attributed to the high occurrence of glacial till and consequently heavy clay soils, which would have been difficult to cultivate (Carruthers and Hunter Dowse 2019). The absence of evidence of settlement activities at Ailby Lane, such as cereal crop-processing remains, could support these authors' suggestion of a largely pastoral economy, although it is difficult to reach a definitive conclusion at this particular site based on such sparse evidence.

The Middle Bronze Age cereal remains (FTMC-ME96-1: 3189 ± 32 BP, 1510–1410 cal. BC) from the barrow ditch at Callow Carr suggest some kind of crop-processing activities involving the use of hulled wheat and barley in the area at that time, although again little more can be deduced from such limited evidence.

Iron Age–Romano-British

Nature of the evidence

Evidence for settlement activity in the Iron Age and Romano-British periods was identified across the entire route, and significant assemblages of charred plant remains and wood charcoal were recovered from several sites. At the northern end of the scheme, between the coastal marshes and the Wolds margin, these included Sea Bank Farm, White Crofts and Ailby Lane. Moving south through the Wolds across the Lymn Valley to the margins of the Fens, the most informative sites from an environmental perspective were Pitchmoor, Walk Hill, Raithby Lane, Raithby Crossroads, Wood Hill and Magers Lane. Finally, within the Fens, important evidence was recovered from Six Hundreds Drove. In addition, the evidence from several other sites also adds to the dataset (e.g., Mown Rakes, Staunch Farm and Sutterby Field).

At all of these sites, samples were primarily collected from the secondary or tertiary fills of pits, postholes and ditches (e.g., enclosures, field systems, etc.), so many are likely to contain settlement waste which accumulated over a period of days, weeks, months or even years (Fuller *et al.* 2014). Some of this was probably first discarded into ash-rich midden heaps, before then being dumped into open pits or ditches (see, for example,

Alonso *et al.* 2017 on the deposition of midden waste). However, low concentrations of settlement waste would also have become dispersed through wind, rain-wash, flooding, trampling, etc.

The composition of many of the samples was fairly consistent, with charred cereal grains, chaff, seeds of wild taxa, and wood charcoal commonly recorded, albeit in varying amounts. Much of this material reflects debris which would have been generated during daily activities, such as food preparation, crop-processing or the sweeping out of ashes from hearths. Within middens, domestic refuse may have become mixed with other types of waste such as stable manure, discarded turves from buildings, flooring materials, old thatch or even debris from craft or industrial activity (e.g., salt production, metalworking, pottery kilns, etc.). Consequently, many of the samples are likely to contain mixtures of charred plant remains and wood charcoal which could have originated from a wide range of different activities. Because of this mixing, it is difficult to identify the precise origin for the charred plant remains and wood charcoal within individual samples (*cf.* van der Veen 2007). Taken together, much of the evidence recovered from the scheme probably reflects background settlement ‘noise’.

However, at several of the sites investigated, significantly larger quantities of cereal remains were recovered from the backfills of certain features, indicating that cereals were being handled and processed on a large scale at some of the settlements. This is particularly evident in the Late Iron Age–early Romano-British period at Raithby Crossroads, and in the Romano-British period at Sea Bank Farm, White Crofts, Walk Hill and Six Hundreds Drove. In comparison, few cereal-rich deposits were recorded for the Iron Age period, although cereals were common at Wood Hill and Walk Hill. Some of these cereal-rich deposits could derive from the disposal of insect-infested or spoilt grain in fires, or from the burning of crop-processing debris for fuel (e.g., Sea Bank Farm). More rarely, cereals may have been charred accidentally on a larger-scale during crop-processing, particularly where ovens or kilns were being used (as seen at Walk Hill). Accidents involving the use of crop-dryers appear to have been commonplace in the past since the crop being dried could be easily ignited by sparks from the fire (Rickett 2021).

The evidence from the Romano-British site at Six Hundreds Drove in the Fens warrants particular attention. A series of samples collected from a later Romano-British ditch (550508) and other nearby features (e.g., pit 550344) at this site contained exceptionally large quantities of wood charcoal and charred cereal remains, particularly culm nodes and wheat grains (mainly spelt wheat). The origin of this charred material is unclear, although some of the wood charcoal appears to reflect burnt structural timber, and the ditch could contain redeposited material from a nearby burnt-down building. Given the presence of significant quantities of charred cereal grain, it is possible that a granary on this site was destroyed in a major conflagration, with the resulting debris disposed of or accumulating in a nearby ditch. Certainly, no *in situ* evidence of this structure was identified during the excavation, and it was presumably located beyond the site boundary.

The Iron Age to Romano-British landscape

This section examines the nature and character of the Iron Age to Romano-British landscape along the scheme, from the Lincolnshire Marsh in the north to the Fens in the south. It brings together the evidence from the plant macrofossils (charred and waterlogged), wood charcoal, insects, molluscs and pollen. The primary aim is to place the various sites within their immediate environmental context, setting the scene for the subsequent sections on arable agriculture, salt production, fuel procurement and funerary activity. Key questions are: were landscapes largely open or wooded? Can the development of heathlands and grasslands be identified? Did hedgerows exist in farmland? What evidence is there for the exploitation of wetland habitats? What sources of fuel were exploited? Can specific land-use practices such as livestock grazing or arable cultivation be identified?

Regional studies of past landscape and vegetation change are generally based on the analysis of ‘off-site’ environmental records, notably pollen sequences obtained from wetlands such as bogs, fens, river valleys or lakes (Dark 2023). Within Lincolnshire, the distribution of sites with long and well-dated pollen sequences is strongly biased to the Fens in the south-east, and around the Coversands in the north of the county (Research Frameworks 2024). Consequently, there are major gaps in the coverage of pollen sequences, including many of the areas examined as part of the Viking Link Interconnector.

The large quantity of environmental data gathered from the Iron Age and Romano-British sites helps fill in gaps in the previously available evidence. Site-based studies will primarily provide information on local environments, as opposed to the regional picture provided by off-site records. However, by combining evidence from several sites within a single landscape it may be possible to identify wider regional changes in the local environment. For example, wood charcoal can be used to examine the types of woodland and scrub around sites, evidence (or not) for hedgerows, and the degree of landscape openness. Similarly, through the analysis of charred plant remains it is possible to examine the scale and intensity of past land-use practices (e.g., arable cultivation). The more limited evidence from the analysis of insects and molluscs also adds to our understanding of the local environment around individual sites.

Lincolnshire Marsh and Wolds margin

In the low-lying landscape of the coastal marshes, the limited wood charcoal evidence from Sea Bank Farm suggests that the local landscape contained areas of woodland composed of oak and ash (Fig. 5.3). The frequent occurrence of ash may indicate that the landscape had a relatively open character, perhaps with areas of scattered secondary woodland which had developed following clearance or disturbance (Peterken 2023). Both oak and ash are still common trees in the remaining areas of woodland in the Lincolnshire Marsh (Gibbons 1975). It is difficult to further examine the composition of local woodlands around the site as only a small number of samples were examined for wood charcoal. The recovery of charred seeds of probable sea-blite from the palaeochannels reflects the coastal setting of the site, with areas of saltmarsh or brackish wetland in the local area. Given the abundant presence of spelt wheat chaff in the palaeochannels, it is likely that crops were cultivated in the local landscape.

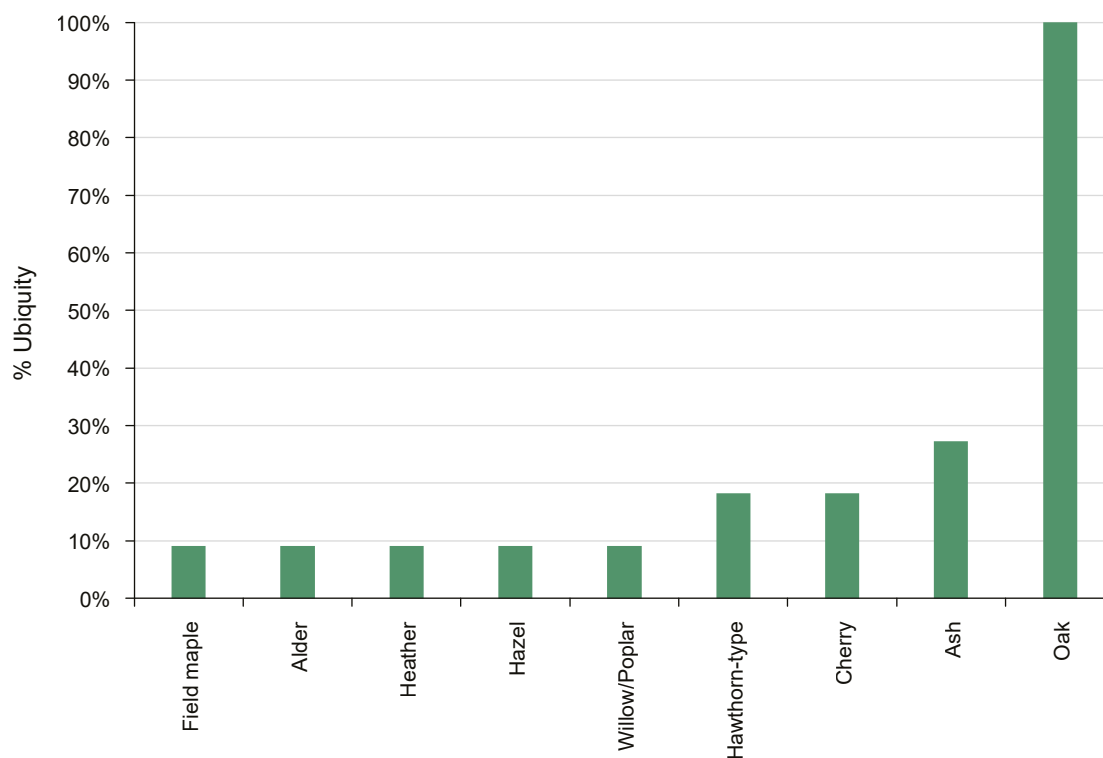


Figure 5.3 Wood charcoal from sites in the Lincolnshire Marsh/Wolds margin (ubiquity analysis)

Further inland at White Crofts, the investigations revealed a farmed landscape containing a possible driveway and an extensive series of intercutting ditches and gullies. The animal bone and plant remains assemblages indicate that this landscape was used for both pastoral and arable agriculture, although it was vulnerable to seasonal flooding. The molluscan assemblage recovered from two Romano-British ditches indicates the presence of open grassland around the site, probably with scattered areas of woodland containing oak and willow/poplar (Fig. 5.3). Because of the limited number of wood charcoal samples examined, it is difficult to further interpret this evidence.

On the margin of the Wolds at Ailby Lane, the wood charcoal assemblage indicates that the local landscape contained a range of trees and shrubs including oak, ash, blackthorn, alder, hawthorn-type and hazel (Fig. 5.3). These species may have grown in areas of mixed deciduous woodland and scrub, or possibly even within hedgerows. Notably, most of the oak charcoal derived from mature wood, perhaps hinting at the presence of mature farmland trees (e.g., pollarded oak). The existence of rough/wet grassy and heathy vegetation around the site is also suggested by the occasional presence of heather stems, together with frequent grassland species (e.g., heath-grass, sedges, blinks, buttercups). Many of these grassland species are likely to have been brought into the site as turves which could have been used in roofs or as animal fodder, animal bedding or fuel (Hall 2003). Notably, cereal remains were rare, perhaps indicating that the local landscape was predominantly used for livestock grazing.

Wolds

The wood charcoal assemblages from Sutterby Field, Pitchmoor and Walk Hill suggest that the local chalk Wolds supported areas of woodland and scrub which contained a wide range of species (Fig. 5.4). This included larger trees such as oak, ash, alder and possibly elm, as well as smaller trees and shrubs such as field maple, dogwood/viburnum, hazel, hawthorn-type and blackthorn. Such high species diversity is typical of a farmed landscape, and it is likely that the surrounding area was largely open in character (*cf.* Woodbridge *et al.* 2021). In addition, some of the species recorded are commonly associated with farmland. For example, elder often grows within hedgerows or around farmyards since it thrives on disturbed and nutrient-enriched soils, while species such as blackthorn have long been favoured as a hedging plant (Rackham 1986). At all these sites, there was evidence for pastoral and arable land-use in the Iron Age, and in the case of Walk Hill, the local landscape appears to have been used to cultivate crops on an increasingly large scale by the later Romano-British period. Consequently, any areas of woodland may have been subject to further clearance in the Romano-British period.

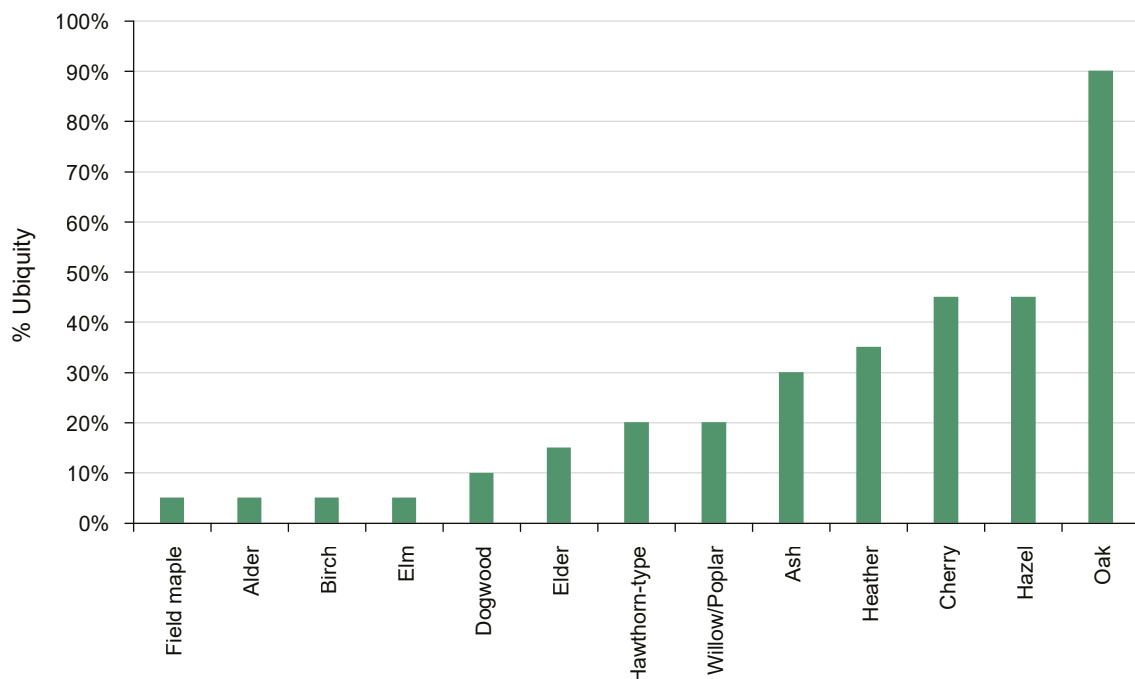


Figure 5.4 Wood charcoal from sites in the Wolds (ubiquity analysis)

Many of the tree and shrub taxa are often associated with chalklands, and the evidence suggests that ash–hazel–oak woodland grew within this landscape zone (cf. Peterken 2023). The common occurrence of ash is particularly striking; this species can form near-pure stands over chalk, and it is commonly associated with woodlands where there has been disturbance (Gibbons 1975; Thomas 2016). The recovery of small quantities of heather charcoal from Walk Hill suggests that heathland may have existed locally within the landscape, perhaps to the south of the site where the chalk gives way to sandstone (British Geological Survey 2024).

Notably, there was no evidence to indicate that beech (*Fagus sylvatica*) grew in this landscape in the Iron Age and Romano-British periods. Beech is thought to be native in central and northern Lincolnshire, possibly just outside the areas covered by the Viking Link scheme (Natural England 2015; Packham *et al.* 2012; Rackham 1997). Many present-day beechwoods in Lincolnshire reflect recent plantations, although the tree probably grew naturally on thin chalk soils on slopes alongside ash (Natural England 2015). Beech became a more common species across southern and central England from the later Iron Age onwards, although the more extensive development of beechwoods appears to be linked to the creation of woodland pastures around the early medieval period (Waller and Schofield 2007). It is possible that the wood charcoal assemblage from Viking Link does not accurately reflect the full range of tree and shrub species growing in the local environment; pollen analysis may be better at determining whether beech grew in this landscape.

Lymn Valley

In the Lymn Valley, the environmental evidence from the Romano-British ditches at Raithby Crossroads suggests that the local landscape contained a mosaic of different habitat types. This included grassland and heathland, interspersed with areas of scrub and woodland which contained species such as alder, hazel, ash, hawthorn, cherry (including blackthorn), oak, willow/poplar and elder (Fig. 5.5). Some of the tree and shrub species may have grown within hedgerows at the site, and the high species diversity is again typical of a farmed and largely open landscape. As with other sites within this landscape zone, the local area was used for both arable and pastoral agriculture.

Heather stems were particularly abundant at Raithby Lane, and the samples also contained evidence for herbaceous species often associated with acidic grassland areas, such as sheep's sorrel, blinks, cinquefoils, sedges, lesser spearwort and heath-grass. Up until the 18th and 19th centuries, heathland and associated rough grasslands were widely valued by rural communities across Britain since these landscapes provided minerals (e.g., gravel and sand), fuel, thatch, animal bedding, fodder and areas to graze livestock (Webb 1998). Heathlands were often synonymous with common land in the medieval period, and it is likely that comparable systems of common land-use were already

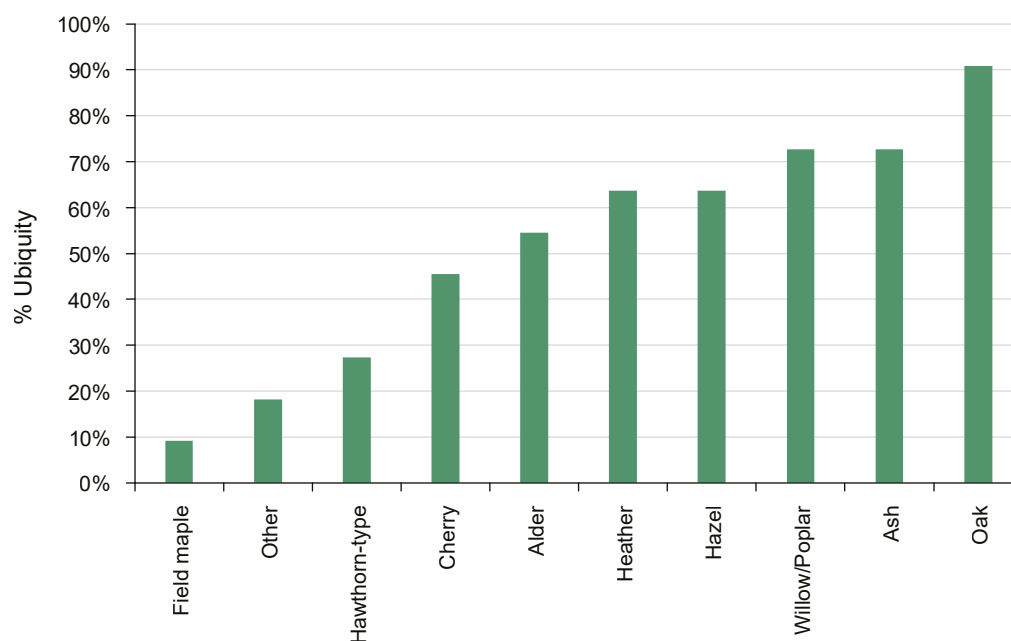


Figure 5.5 Wood charcoal from sites in the Lymn Valley (ubiquity analysis)

in place in earlier periods (cf. Winchester 2022). Heather has been recorded at other nearby Romano-British sites (Fryer 2005), and evidence from central and northern England suggests that heathlands developed across these regions between the later Iron Age and Romano-British periods (Carruthers and Hunter Dowse 2019; Hall and Huntley 2007).

To the south of the site at Raithby Lane, there was no clear evidence for the existence of heathland at Raithby Crossroads and Wood Hill in the Iron Age and Romano-British periods. However, at both sites, the assemblages of charred plant remains suggest that areas of rough, acidic grassland containing species such as heath-grass, sedges and blinks existed within the local landscape. Areas of woodland and scrub contained species such as oak, ash, alder, hawthorn-type, willow/poplar, field maple, hazel and cherry (Fig. 5.5). Alder was particularly common at Wood Hill, suggesting wet woodland around the site, probably with oak and ash growing in the slightly drier areas. The extent of woodland cover is difficult to determine, although the recovery of substantial quantities of cereal remains from both sites suggests that the area had been used for arable agriculture for centuries.

Fen-edge

The evidence from Hagnaby Grange, Magers Lane and Staunch Farm suggests that areas of woodland, scrub or hedgerows around these Fen-edge sites contained taxa such as oak, ash, alder, birch, cherry, willow/poplar and field maple (Fig. 5.6). The main trees were probably oak and ash, although others may have been common in wetter areas (alder, willow/poplar, birch). The wet nature of this landscape is also highlighted by a molluscan assemblage from Magers Lane, which suggests that any fields would have been susceptible to flooding. At all sites, the assemblages of charred plant remains indicate that there were areas of rough, wet, acidic grassland in the local landscape, containing species such as heath-grass, sedges, blinks, fairy flax, buttercups and others. Heathland probably also existed locally, although heather stems were only rarely recorded. Evidence from the nearby Fen-edge site at Tattershall Thorpe, around 10 km to the west, also indicated the presence of open, wet grassland with some areas of heathland and woodland or scrub (Chowne *et al.* 1986). Notably, hedgerows were also recorded at Tattershall Thorpe (*ibid.*).

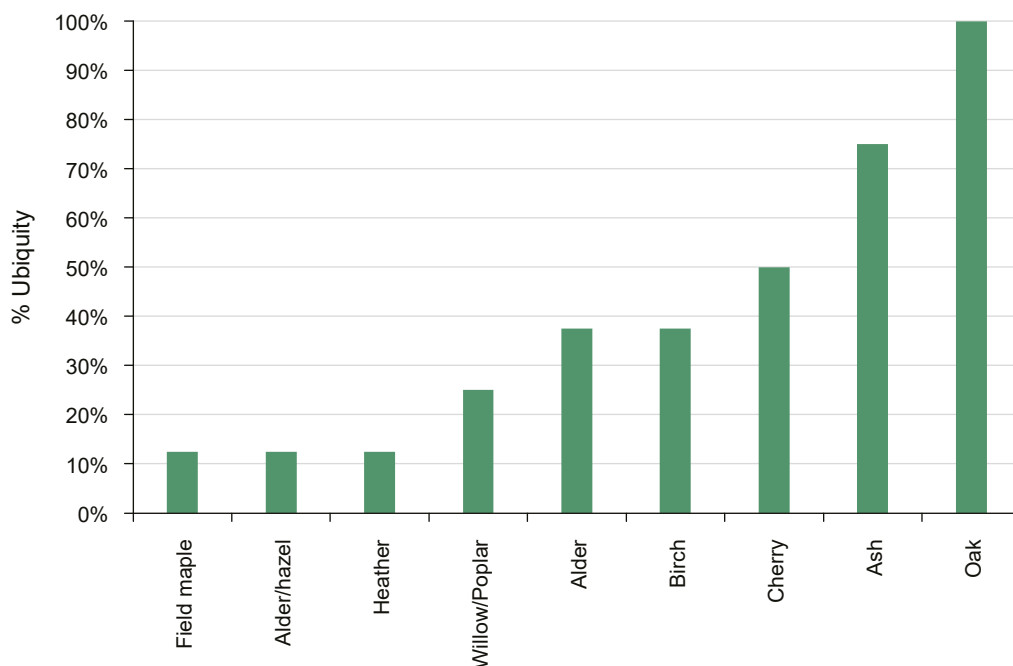


Figure 5.6 Wood charcoal from sites in the Fen margins (ubiquity analysis)

The Fens

Assemblages of wood charcoal and charred plant remains from Mown Rakes and Six Hundreds Drove provide valuable information on the nature of the local Fenland environment and land-use practices (Fig. 5.7). Mown Rakes was situated within a particularly low-lying area where the ground surface lay at around 0.8 to 1.8 m OD, while the site at Six Hundreds Drove (230 m to the south) was located on an area of slightly higher ground between 1.7 and 3.3 m OD. The differing topographic position of these sites within the landscape can be clearly seen in the range of species recorded in the wood charcoal assemblages.

Woodland around Mown Rakes was largely composed of alder and willow/poplar, probably with the local presence of ash. The co-occurrence of alder and willow/poplar is typical of a wet woodland habitat such as fen carr, although willows can also grow in more open freshwater/brackish habitats such as reed swamps or sedge fens where the water table is often above the ground surface for significant periods (Peterken 2023). The pond at Mown Rakes, possibly dating to the Romano-British period, produced a pollen sequence which points to an open landscape surrounding the feature, with some evidence of aquatic plants such as milfoils and bur-reed. Ash is likely to have grown within drier areas of the landscape, probably within fen woodland alongside oak.

To the south at Six Hundreds Drove, the positioning of the site on an area of slightly higher dry ground is indicated by the more diverse nature of the wood charcoal assemblage. Wet woodland or swamp containing alder and willow/poplar still existed around the site, although many of the taxa recorded probably grew within areas of fen woodland (e.g., oak, ash, hazel) or perhaps even in dry woodland (e.g., field maple, hawthorn-type, elder). In particular, it is likely that oak and ash were important species in woodland around the site, while some of the other taxa recorded may have grown within hedgerows. Further interpretation of the wood charcoal evidence from Six Hundreds Drove is complicated by the nature of the assemblage.

A significant proportion of the wood charcoal assemblage from Six Hundreds Drove appears to derive from burnt structural timbers, and there was evidently access to substantial timber trees within the local area. Unusually, spruce also appears to be used for timber at this site. Spruce was grown as an ornamental species in gardens in the Romano-British period (Lodwick 2017b), although the charcoal could also reflect imported timber, re-used timber from a ship, or even driftwood (Gale and Cutler 2000). The site was situated close to the coastline in the Romano-British period (see D. Young above), and it is known from other coastal regions that driftwood was often collected for use in buildings (e.g., Dickson 1992).

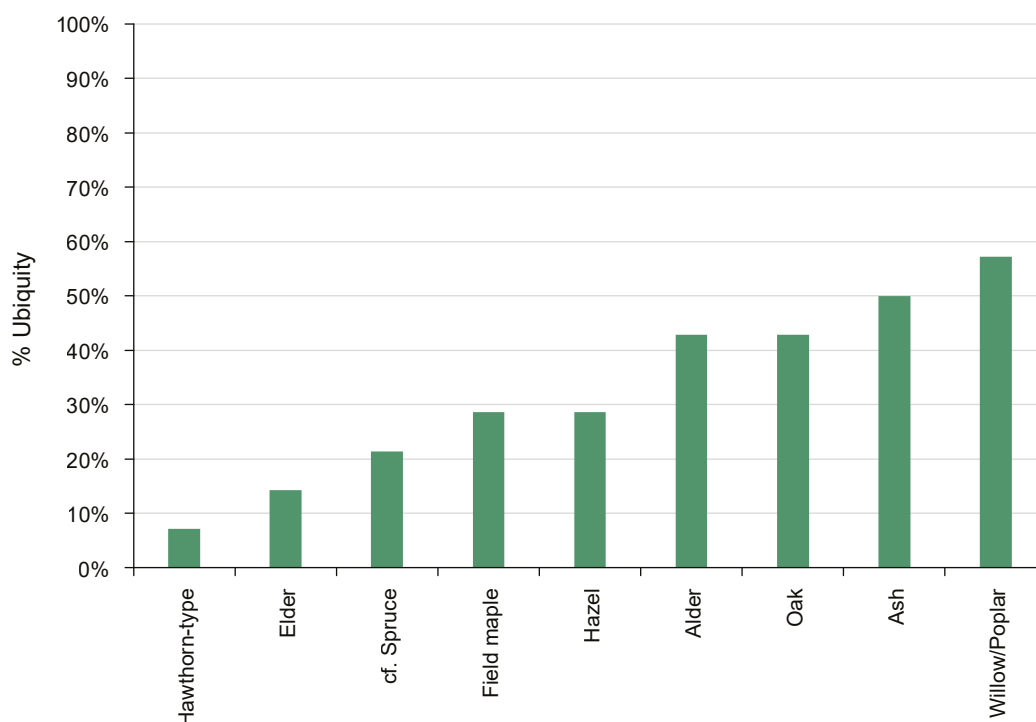


Figure 5.7 Wood charcoal from sites in the Fens (ubiquity analysis)

The range of tree and shrub species recorded in the wood charcoal assemblages from Mown Rakes and Six Hundreds Drove compares well with a pollen sequence obtained from Swineshead, around 5 km to the east (Waller 1994). At Swineshead the limited pollen evidence suggests that the landscape was largely open in the mid- to late Romano-British period, and it contained areas of reed swamp and sedge fen. Woodland probably existed locally, with alder and birch growing in wetter areas while oak and hazel may have been present in the drier areas. There was very limited evidence for ash, although this species tends to be poorly represented in pollen records. This can

be contrasted with the evidence from Six Hundreds Drove, which suggests that ash was common in the drier parts of the landscape and grew alongside a wide range of tree and shrub species.

Overall, the evidence from Six Hundreds Drove indicates that a period of marine regression had, by the Romano-British period, created a landscape which may have been dry enough to support the development of mixed deciduous woodland. In addition, the abundant remains of cereals at Six Hundreds Drove suggests that arable agriculture flourished around the site, as also seen at the nearby site of Heckington Fen (Wessex Archaeology 2023d) and further south at Bicker Fen (Gaunt *et al.* 2024). The evidence from Mown Rakes, in contrast, suggests that this lower-lying site was more vulnerable to flooding, and cereal cultivation may have been more of a challenge here.

Fuels used in settlements

The supply of fuel to settlements is an important topic, and types of fuel used would have varied depending on the location of the site (e.g., access to woodland, heathland, etc.). At many of the sites, the samples are likely to contain fuel debris associated with a range of different activities, including cooking, heating, crop-processing and craft or industrial activity. It is, however, very difficult to link deposits of fuel to specific activities since the samples were generally collected from the mixed backfills of pits, postholes and ditches (e.g., enclosures, field systems, etc.). Within these sorts of features, sweepings from domestic hearths may have become mixed with waste generated by other activities; for example, at Six Hundreds Drove, pottery production and salting were being undertaken in the local area. Because of this limitation, the types of fuels used within settlements is considered at a broad level.

For the Romano-British period in particular, there has often been a focus on the supply of fuel from managed woodlands such as coppices (e.g., Smith 2017; Veal and Leitch 2019). However, access to woodlands for fuel may often have been limited as many landscapes are likely to have been largely cleared by the Iron Age and Romano-British periods (*cf.* Woodbridge *et al.* 2021). For example, the Iron Age site at Tattershall Thorpe on the Fen margins was situated within an open landscape, probably with only scattered areas of woodland in the wider landscape (Chowne *et al.* 1986). The evidence from the Viking Link scheme suggests that most fuels could have been largely sourced from scrub, hedgerows and farmland trees (e.g., pollards), as well as heathlands and rough grasslands (e.g., turves). There was also limited evidence for the use of other fuels, notably crop-processing debris.

Turves and peat

At many of the sites examined, turves were one of the most important fuels. A 'turf' is defined here as a surface-cut sod of earth containing the matted roots of grasses, heather or other ericaceous dwarf shrubs (Hall 2003). Traditionally, turves were often cut from areas of rough grassland, although the term also could also refer to the cutting of root-bound clumps of heather from heathlands (Warde and Williamson 2014). In contrast, the above-ground stems of heather and other shrubs (e.g., gorse, broom) tended to be harvested separately for fodder, thatch or fuel, particularly for use in ovens and kilns (Galloway *et al.* 1996). Depending on where the turves were cut from (Rotherham 2009), they could have had a high mineral content (e.g., sand) or they could have been largely organic (e.g., peat). Within historical sources, there can be overlap in the usage of the terms 'turf' and 'peat', although the latter tended to be cut in blocks at greater depths from bogs and fens in lowland areas (Hall 2003). Within Lincolnshire, both turves and peat have historically been a fuel of major importance, although it is not always possible to distinguish precisely what is meant by these terms (Winchester 2022).

The burning of turves for fuel can be recognised in archaeobotanical samples by the presence of a highly distinctive range of charred remains (Church *et al.* 2007; Dickson 1998; Hall 2003). This often includes grass stems, rhizomes/tubers, heather stems (particularly roots/basal twigs) and 'seeds' of various grassland species such as heath-grass, sedges, blinks, sheep's sorrel, cinquefoils, lesser spearwort, fairy flax and ribwort plantain. In addition, tubers (or swollen culm basal internodes) of onion couch grass are likely to be associated with burning turves. In comparison, it is more difficult to identify the burning of well-humified peat (i.e., peat cut from bogs) in the

archaeological record since this process produces very few diagnostic remains (Church *et al.* 2007; Dekoninck *et al.* 2024).

Evidence for burning turves was identified at sites in the Lincolnshire Marsh/Wolds margin (White Crofts, Ailby Lane), in the Lymn Valley (Raithby Lane, Wood Hill) and on the Fen-edge (Hagnaby Grange, Magers Lane, Back Lane, Staunch Farm). At many of these sites, the samples contained substantial quantities of charred rhizomes/tubers, as well as heather stems and 'seeds' of plants such as heath-grass, sedges and blinks. The turves generally appear to have been cut from areas of rough grassland (probably growing on shallow peat in some cases), although at Raithby Lane they were clearly cut from an adjacent heathland. In some cases, it is possible that turves were mixed with animal dung or dried plant stems (e.g., straw). This practice of mixing dung with turf was undertaken in some areas of Scotland in the recent past, where the overcutting of turves from grazing areas or rough ground resulted in fuel shortages (Fenton 1978). To prevent overexploitation, rights to turbarry (turf/peat cutting) could have been managed through systems of common land-use, as was once commonplace across Lincolnshire (*cf.* Winchester 2022).

Within the Wolds, there was very little evidence to indicate that turves were burnt for fuel. Charred rhizomes/tubers were very rarely recorded at the sites in this landscape zone, although a few heather stems were present in the assemblage from Walk Hill. In the latter case, the heather could have been brought into the site from the surrounding landscape for fuel, fodder or thatch (Webb 1998). The lack of evidence for turf-burning in the Wolds reflects the location of these sites in a chalkland landscape. Instead, most fuel within the Wolds appears to have been sourced from areas of woodland, scrub or hedgerows (see below).

The use of turves for fuel has been recorded at other Iron Age and Romano-British sites in Lincolnshire, notably in the north of the county along the Hornsea Project One cable route (López-Dóriga 2023) and at Dragonby (van der Veen 1992; see Hall 2003 for a re-interpretation of the assemblage from this site). More widely, evidence from other sites across central and northern England indicates that turves cut from rough grasslands and heathlands were a common type of fuel (Carruthers and Hunter Dowse 2019; Hall and Huntley 2007). Turves may have been used as fuel where access to woodland or scrub was limited around sites, although they were also valued as a fuel in their own right. In comparison to some wood fuels, turves could smoulder very slowly, and they produce few sparks; this latter property also made them well-suited to drying crops in ovens and kilns (Hillman 1982). In addition, large quantities of smoke are generated by burning turves and, within wetland areas, they could have helped to keep biting flies and mosquitos away from settlements and livestock (Limbert 2011).

There was no clear evidence that peat (*sensu stricto*) was used as fuel at any of the sites, although this could be due to the difficulty of identifying this practice. At some of the sites in the Lincolnshire Marsh (Sea Bank Farm, White Crofts), the Fen-edge (Staunch Farm) and the Fens (Mown Rakes), it is possible that the charred remains of wetland plants such as rushes or branched bur-reed derive from burning peat for fuel, but they could instead be associated with harvesting of dried stems for fuel, thatching, flooring or weaving. Evidence for the use of peat as a fuel has been identified at a small number of other sites such as Bicker Fen (Gaunt *et al.* 2024), and elsewhere around the Fens (Carruthers and Hunter Dowse 2019). However, peat does not appear to have been a commonly used fuel type across the Fens in the later Iron Age and Romano-British periods; this may indicate that some wild resources within this vast wetland habitat were not being intensively exploited in this period (*cf.* Evans 2018). Instead, the harvesting of peat and wetland plants for fuel (e.g., sedges) appears to have been more common in later periods (Ballantyne 2004; Darby 1974).

Wood

Evidence for the sourcing of fuel from areas of woodland, scrub and probably also hedgerows and farmland trees was recorded at all of the sites. Traditionally, trimmings from hedgerows have been a major source of fuel in rural communities, since it was possible to gather significant quantities of large stems, branches and twigs through pruning or laying (Rackham 1986; Warde and Williamson 2014). It is very likely that hedgerows existed around fields in the Iron Age and Romano-British periods at many of the sites investigated, although this is difficult to confirm from the wood charcoal evidence alone. The presence of hedgerows around sites such as Walk Hill or Raithby Crossroads is hinted at by the diverse nature of the wood charcoal assemblages and the occurrence

of typical hedgerow species (e.g., hawthorn, blackthorn, elder). More secure evidence for the existence of hedgerows in this period in Lincolnshire has been recorded at Tattershall Thorpe (Chowne *et al.* 1986) and other sites (Monckton 2006). Other potential sources of wood fuel include lopped branches from pollarded trees growing within farmland, such as mature oaks or ash (Warde and Williamson 2014). Notably, there was no evidence to indicate that fuel was sourced from managed woodlands (e.g., coppices).

Other fuels

Written sources for the post-medieval period indicate that a wide range of fuels was used in rural areas depending on local availability, including gorse, broom, bracken, straw, reeds, sedges, rushes, dung and coal (Warde and Williamson 2014). Several of these fuels are difficult to identify archaeologically, but it is clear that fuels such as coal were not burnt at any of the sites examined. This is in contrast to growing evidence for the use of coal in the Romano-British period at sites in the south-west and north of England (e.g., Smith 2017). One fuel which was probably used at some of the sites was cereal chaff (van der Veen 1999). In particular, chaff was used in the crop-dryers at Walk Hill, and it is likely that other chaff-rich samples could reflect the burning of crop-processing debris (e.g., Sea Bank Farm).

Farming the land: arable agriculture in the Iron Age and Romano-British periods

The presence of cereal grains, chaff, and arable weed seeds in many of the samples suggests that considerable agricultural activity was taking place in the region throughout the Iron Age and Romano-British periods. However, detailed comparison of the plant remains data between different periods is hampered by the small size of the dataset for the Iron Age, and the patchiness of the overall evidence (Fig. 5.8).

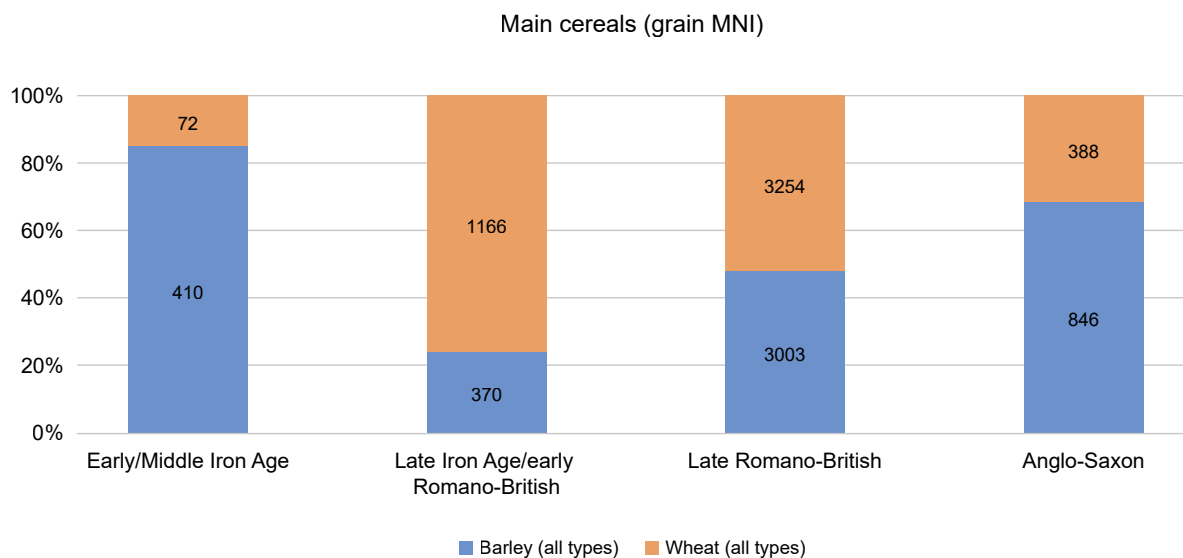


Figure 5.8 Proportions of the different types of cereal crops (based on grain MNI) across time

Crops

The array of charred plant remains is generally consistent with what is known about Iron Age and Romano-British crop husbandry patterns in the region. Spelt wheat and hulled barley were the primary crops during these periods (e.g., Campbell 2017; Carruthers and Hunter Dowse 2019), and this is reflected in the cereal assemblages.

In general, the overall consistency between the Iron Age and Romano-British assemblages, as well as between the deposits from different excavation areas, suggests that the agricultural economy (and crop repertoire) was already well-established by these periods. The high densities of cereal remains in some of the samples (e.g., the two crop-dryers at Walk Hill) confirm the large-scale arable production suggested by the remains of crop-dryers and the field systems themselves.

Barley

Barley is a versatile cereal and it was commonly used for fodder as well as a food source, especially when wheats were scarce, such as following failed harvests. However, barley – particularly its

chaff – is often underrepresented in samples, as the fragile rachis internodes are less likely to survive than the more robust chaff from hulled wheat (i.e., glume bases) (Boardman and Jones 1990; Hillman 1981).

Still, a number of sites did produce relatively large deposits, which likely consist of six-row barley, as evidence of two-row barley is scarce during the Iron Age and Romano-British periods (see, e.g., Moffett 2006 on two-row barley in the medieval period). In both Iron Age and Romano-British contexts, most of these deposits also contain abundant wheat grains (e.g., Middle Iron Age pit 800004 at Walk Hill; Romano-British ditch 550508 at Six Hundreds Drove). In general, the abundance and ubiquity of barley in the samples attest to the continued importance of barley as a crop, and suggest it was cultivated alongside wheat throughout the Iron Age and Romano-British periods. Furthermore, the cultivation of mixed crops, or maslins, of spelt wheat and hulled barley in the Iron Age and Romano-British period has been previously suggested (e.g., Hillman 1998; Lodwick 2023). Such a practice would aid in mitigating risk of crop failure, as one cultivar may outperform the other (Jones and Halstead 1995).

Spelt and emmer wheat

Hulled wheats, spelt and emmer in particular, were highly important crops in the Iron Age and Romano-British periods. Hulled wheats, also referred to as glume wheats, require additional processing prior to consumption, which their free-threshing counterparts do not: as hulled wheats break up into spikelet forks (as opposed to semi-clean grains) when threshed, the grains must then be removed from the chaff that encases them, or ‘dehusked’ (e.g., Hillman 1984). However, despite the additional labour required, the advantages of hulled wheats include their storability and ability to withstand harsher environments. As hulled wheats are commonly stored in spikelet fork form, and processed later prior to consumption, the husks also offer some measure of protection against pests (Hillman 1981).

When identifiable to the species level, spelt wheat is the most common type of wheat, often the most common cereal overall, as is typical of Late Iron Age–Romano-British period assemblages in the region (Carruthers and Hunter Dowse 2019; and see López-Dóriga 2023 for the nearby Hornsea One scheme). The small quantities of emmer wheat recovered from the samples are commonly observed in Late Iron Age–Romano-British deposits, as after the introduction of spelt wheat, spelt gradually replaced emmer as the primary crop in the region (Lodwick 2017a). This transition towards a focus on higher-yielding spelt wheat is commonly thought to be associated with the implementation of more extensive cultivation practices, as surplus production and market exchange increased in prominence (Allen and Lodwick 2017; van der Veen 2014).

Free-threshing wheat

Free-threshing wheat is absent from the Iron Age samples and is relatively scarce among the Romano-British deposits. However, given the absence of free-threshing wheat rachis internodes in many samples, the grain identifications are necessarily tentative (see Hillman *et al.* 1996). Despite an earlier introduction in the south of Britain, it has previously been suggested that free-threshing wheat was introduced in the Midlands in the Iron Age (Carruthers and Hunter Dowse 2019, though note uncertainty due to possible misidentifications). As such, the presence of securely identified free-threshing wheat remains in Romano-British deposits may reflect the rise of the cereal in the region or, else, crop contaminants (i.e., acting as weeds). However, free-threshing wheat is also commonly interpreted as representing later intrusive material, and this possibility must be recognised where the remains are not directly radiocarbon dated (*cf.* Pelling *et al.* 2015). Radiocarbon dating of free-threshing wheat grains from Walk Hill and Six Hundreds Drove confirmed their Romano-British date (UBA-52889: 1848 ± 25 BP, *cal.* AD 175–240; UBA-52896 1846 ± 31 BP *cal.* AD 120–235), albeit no chaff was present to securely confirm the identification; while at Magers Lane and Mown Rakes, the free-threshing wheat remains proved to be intrusive, modern material (UBA-52893: 1.1318 ± 0.0041 FPM and UBA-52894: 1.1928 ± 0.0042 FPM).

Free-threshing wheats are not commonly identifiable to the species level unless rachis internodes have been preserved. Thus, the free-threshing wheat grains have been recorded as bread/rivet wheat more generally. However, two rachis internodes tentatively identified as tetraploid-type (rivet/durum wheat) were retrieved from a Romano-British ditch at Six Hundreds Drove (UBA-

52897: 1896 ± 32 BP, cal. AD 70–230). This is unusual, given the proposed introduction of rivet wheat as a crop in the early medieval period (Moffett 2011, though see Carruthers and Hunter Dowse 2019 on the rivet/durum wheat rachis from the Neolithic), and the dominance of bread wheat in most archaeological deposits (e.g., Moffett 2006). Thus, the tentative nature of the identification should be borne in mind.

Other cereals

Rye, which is a common cereal crop in later periods, is scarce in the Iron Age and Romano-British deposits, with only one grain recovered from a late Romano-British crop-dryer (800465) at Walk Hill. This suggests that rye was not yet an important part of the crop spectrum in the region, and, in this instance, is likely to represent a weed of cereal crops (see Jones and Halstead 1995 on cultivars as crop contaminants). Many of the samples produced oats, but because of the lack of diagnostic florets it was not possible to determine whether they are of the wild or cultivated variety. Like rye, oat was not yet a common crop in the Iron Age or Romano-British periods (see below; Carruthers and Hunter Dowse 2019). While it is possible that the cereal was being cultivated as fodder, the grains may also be contaminants of cereal crops.

Other taxa

Bromes also occur in considerable quantities in this period and are considered to be a common weed of cereal crops (Campbell 2000; Carruthers and Hunter Dowse 2019). Given their similarity in size to cultivated cereals, their grains would have been difficult to remove from the crop during processing. Bromes are so pervasive in the archaeobotanical record of some regions that there has been speculation regarding their intentional cultivation and consumption, or whether they may have been at least tolerated (Zech-Matterne *et al.* 2021). In the case of Viking Link, numerous sites (e.g., Iron Age Wood Hill, Late Iron Age–early Romano-British Raithby Crossroads, Romano-British Six Hundreds Drove, late Romano-British Walk Hill) produced samples containing some bromes together with larger quantities of cultivated cereals, likely reflecting their contamination of cereal crops. However, the particularly large quantities of bromes in a sample from ditch 550508 at Six Hundreds Drove should be noted.

Pulses were likely important crops and could have been used as sources of food for both humans and animals. Pulses may have been cultivated at both a small scale (e.g., gardens) and in rotation with cereal crops. Crop rotations that incorporate nitrogen-fixing pulses could have improved soil quality and been highly beneficial to arable regimes. The samples often contain vetches, which, when small-seeded, likely represent wild species, while larger specimens could correspond to economic species that were subject to cultivation – unfortunately, morphological determination is rarely possible. Pulses are less commonly preserved and so tend to be underrepresented in archaeobotanical assemblages in comparison with cereals (Treasure and Church 2017). Thus, despite their sparse distribution, the presence of pulses such as pea and broad bean suggests that they were consumed, and – in all likelihood – represent common dietary components.

Wild plants

Many of the wild taxa recorded are likely to have been arable weeds, especially considering their occurrence alongside cereal remains. These include black bindweed, cleavers, small-seeded trefoils/medicks/clovers and vetches, all of which are common in Iron Age and Romano-British assemblages (Carruthers and Hunter Dowse 2019). Goosefoots, red bartsia, ribwort plantain and sedges are also among the more frequently occurring wild taxa, as are buttercups, blinks, docks and wild radish. Stinking chamomile and scentless mayweed are common in the Romano-British period, though were not recovered from the analysed samples dating to the Iron Age. Stinking chamomile became a more common weed of arable fields in the later Romano-British period, probably because of the increasing use of iron coulter on ploughs, and the expansion of arable cultivation onto heavier, clay soils (Stevens and Fuller 2018).

However, seeds of wild plants could also originate from other sources, notably through the burning of peat, animal dung or turves for fuel, and interpretation is hampered by the mixed nature of the deposits. A good example of this is the wild grass species heath-grass, which is thought to have been a common arable weed in the past (Hillman 1991), for example considered associated with spelt wheat and barley crops in the Iron Age–Romano-British settlement at Dragonby in

north Lincolnshire (van der Veen 1992). However, others have suggested that heath-grass and other species (e.g., ribwort plantain, blinks, spike-rushes, rhizomes/tubers) could instead originate from burning turves cut from heathlands or acid grasslands (Hall 2003; Hall and Huntley 2007), a practice proposed for several of the Interconnector sites (see above). In many cases, it is difficult to distinguish whether a wild plant was a weed of arable fields or brought onto a site through other processes. An example of this is hazelnut, which is fairly common but present in small quantities (e.g., in the crop-dryer and related debris pit at Walk Hill). This suggests that – if not residual from earlier activity – the remains may be derived from occasional consumption or the burning of scrub as fuel.

Crop-processing and storage

Storage

Four-post structures resembling features commonly interpreted as granaries (Gent 1983) were encountered at Iron Age sites, principally Pitchmoor and Walk Hill. In both instances, samples from the features (e.g., posthole group 350100 at Pitchmoor, posthole groups 800081 and 800233 at Walk Hill) produced relatively large amounts of cereal remains, which could be consistent with their interpretation as granaries. The deposition of remains in the postholes may derive from large-scale conflagration, or may, at times, represent intentionally placed ceremonial deposits, or the gradual accumulation of debris during the use of the structures.

The samples contain a combination of barley and wheat, the latter dominated by spelt wheat when identifiable to the species level. Chaff remains are not particularly abundant in the samples, which could mean that the cereals had already been subject to early-stage crop-processing at the time of the conflagration, or else that the less durable chaff was simply not preserved (Boardman and Jones 1990).

Crop-dryers

Crop-dryers are common features of Romano-British period sites (e.g., Campbell 2017; Lodwick 2017a; van der Veen 1989; see Wessex Archaeology 2023d for a probable example just off the Interconnector route). The structures could be used for parching hulled cereals during cereal processing or for producing malt. In the case of the former, once cereal grains were thoroughly dried, they were then ready to be milled or else stored for future processing. Crop-dryers are commonly associated with the processing of spelt wheat in particular (see crop-dryers 800089 and 800465 at Walk Hill). It is very likely small ovens were used for processing crops in the Iron Age, although there was no direct evidence for this at the sites investigated (see Poole 2002 on earlier ovens).

The detached cereal embryos and coleoptiles in the samples from crop-dryers 800089 and 800465, as well as large pit 800382, point to the presence of germinated cereal grains in the deposits. While germination can occur during storage, germinated spelt wheat grains found in association with crop-dryers are often attributed to malt production for the making of ale (Daniel 2024; Lodwick 2017a; van der Veen 1989). The combination of spelt wheat and smaller quantities of barley has been observed in crop-dryers from the region and suggests that the two cereals were sometimes combined for malt production (see Katz and Voigt 1986 on higher yields of barley in malt production). However, given that the numbers of detached embryos and coleoptiles are relatively low, the evidence is not strongly supportive of deliberate germination for malting at crop-dryers 800465 and 800089; parching grain for storage is a more likely explanation for these assemblages, in which a small proportion of the grain was sprouted, presumably unintentionally.

Generally speaking, deposits associated with crop-dryers tend to be rich, with high densities of charred environmental materials representative of fuel debris or the accidental charring of crops during processing (Lodwick 2017a). Chaff remains, glume bases in particular, are commonly recovered from the flue, while high proportions of germinated grains are often found in association with the drying chamber. The stoke pit commonly produces a combination of the two. The composition of the samples from large pit 800382 indicates they primarily derived from the raking out of fuel debris from the stoke pit 3 m to its east (see van der Veen 1999 on the use of chaff as fuel).

Salt production

The environmental evidence from Mown Rakes provides data on a number of aspects associated with the production of salt in the period, such as the fuel available, and the deliberate or incidental addition of plant material during the manufacture of briquetage objects. The evidence comprises charred plant remains, wood charcoal and plant impressions in briquetage. Such remains are commonly encountered in parts of Lincolnshire; the earliest date to the Bronze Age, and much is Middle/Late Iron Age in date (Willis 2022). However, the large number of excavations on salt production sites has provided surprisingly sparse information about plant resources (Monckton 2006), while the plant impression evidence is more abundant but rarely considered in a systematic way. Other salt production sites have recently been identified in the marshland in the north of the county (López-Dóriga 2023) and at Heckington Fen (Wessex Archaeology 2023d) immediately to the west of Six Hundreds Drove, which contribute further information on these types of activities.

Settlement activities?

The charred plant remains assemblage from Mown Rakes is quite restricted but is similar to those from other rural settlements across the scheme. Studies of other salterns have suggested that crops and other harvested plant resources were imported to the sites, as it is unlikely the surrounding area was cultivated (Hunter 2012). Here, the limited plant remains evidence could indicate that the site was only in use for short periods of intensive activity (Ellis *et al.* 2001), or it might reveal that the resources exploited at the site or the types of activities undertaken differed from other rural settlements where there are rich charred deposits, usually associated with repetitive domestic activities. For example, barley, which is often underrepresented in comparison to hulled wheat, is the most abundant cereal in the briquetage (see below) and could have been cultivated in the local saline soils, as has been suggested for Morton Fen – a rare example in Lincolnshire for the expansion of Roman agriculture (focused on barley rather than spelt wheat) onto saline soils (Monckton 2006).

Fuels used in salt production

At the investigated sites, it is difficult to determine which fuels were used in salting. For example, at Six Hundreds Drove, salting was being undertaken near to the site, yet there was no evidence for a saltern (or salterns). In comparison, at Mown Rakes, the recovery of substantial quantities of briquetage provides a more direct link to salt production, and it is likely that the wood charcoal recovered from this site reflects fuel debris associated with this activity. Some of the charred plant remains recovered from Mown Rakes could also be associated with salt production (e.g., rhizomes/tubers may indicate the burning of turves or peat). At Sea Bank Farm, at the northern end of the scheme, it is again difficult to directly associate specific samples with salt production. However, it is possible cereal chaff was used as a fuel in salt production.

The choice of fuel would have been influenced by the grade of salt (coarse or fine), as well as the nature of the surrounding environment (e.g., access to woodland, peat, etc.). Fast-burning fuels such as herbaceous plant stems (e.g., rushes, sedges) provide an intense/rapid heat which produces finer salt crystals, while slow-burning fuels (e.g., peat) generate a smouldering heat which cause evaporation to take place more slowly, thereby producing a 'broad salt' better suited to curing meat or fish (Gale 2001; Lane 2001). Wood or wood charcoal could also have been used, with the latter being easier to both store and transport (Gale 2001). Alder and willow/poplar were recorded at Mown Rakes, and it is likely that both wood types were used as fuel in salt production. Alder is often regarded as poor fuel since it produces little heat and copious amounts of smoke (due to its high moisture content), although when converted into charcoal it can be a high-quality fuel (Gale and Cutler 2000). Similarly, willow and poplar can be good fuels, provided that any logs or branches used are well-seasoned prior to use. Willow is also known to produce a high-quality charcoal, and the trees can be managed through coppicing or pollarding (*ibid.*).

In Essex salterns, the rarity of rhizomes coupled with the presence of seeds heads of a number of plants (e.g., grasses, plantains) at different stages of maturity has been used to suggest harvest of the above-ground material (as opposed to turf-cutting), taking place during the growing season (summer to early autumn), coinciding with the optimum time to produce salt (Hunter 2012).

Briquetage manufacture

The bulk of the briquetage plant impression evidence originates from Mown Rakes, while at Sea Bank Farm and Six Hundreds Drove briquetage was sparse. The type and taxonomic composition of the plant remains present in briquetage objects from Mown Rakes, with brome and barley being dominant, are suggestive of crop-processing by-products and bear similarity to assemblages from other Iron Age and Romano-British salterns in Lincolnshire and the southern Fens (Table 5.3). The small proportion of wheat remains in the impression evidence could indicate the briquetage was locally produced, as barley would be the only crop to tolerate the surrounding saline soils.

Table 5.3 Common plant impression evidence in briquetage from other salterns in Lincolnshire and further south

	Lincolnshire						Lincolnshire/ Norfolk	Norfolk			Essex						
	Viking Link (Mown Rakes)	South Fens	Cowbit	Bourne-Morton Canal	Morton Saltern and Middleton	Ingoldmells	The Wash, Fenland	Denver	Nordelph	Fen-edge	Heybridge	Blackwater 11	Osea Road	Burham on Crouch	Peldon	Tollesbury	Leigh Beck
Cereal grain	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	-	-	✓	✓	✓	-	✓
Chaff	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Seeds/'weeds'	✓	✓	-	✓	✓	✓	-	-	-	✓	✓	-	✓	-	-	✓	-
<i>Avena</i> sp.	-	✓	-	✓	✓	✓	-	-	-	✓	-	-	✓	-	-	✓	-
<i>Bromus</i> sp.	✓	✓	✓	-	-	-	-	-	-	✓	-	-	-	-	✓	✓	-
<i>Hordeum vulgare</i>	✓	✓	-	-	✓	✓	-	-	-	✓	-	-	✓	✓	-	-	✓
<i>Triticum</i> sp.	-	-	✓	✓	-	✓	-	-	-	-	-	-	✓	-	-	-	-
<i>Triticum dicoccum</i>	-	✓	✓	-	-	✓	-	-	-	-	-	-	-	✓	-	-	-
<i>Triticum spelta</i>	✓	✓	-	-	✓	✓	✓	-	-	✓	-	-	✓	✓	✓	✓	✓

Sources: de Brisay 1978, Hallam 1970, Hayes and Lane 1992, Murphy 1986, Murphy 2001, Tyrrell 2015.

Whether the presence of such inclusions in pottery is deliberate or accidental is the subject of debate, and different explanations might fit different scenarios. Where plant remains are occasionally present, it is proposed they were accidentally incorporated into the fabric as a result of the close proximity of crop-processing and potting areas (Arobba *et al.* 2017). Where they are more abundant, their inclusion was more likely to be deliberate, and reflect technological, stylistic, symbolic or social choices (Fuller *et al.* 2014).

The high incidence of voids from plant inclusions in briquetage in comparison to other clay objects suggests that the deliberate use of plant remains as temper is a likely explanation for materials associated with this type of industry. It would contribute to the production of highly porous ceramics (with the inevitable and foreseen destruction of most plant remains upon firing of the clay), a desired technological characteristic which would facilitate the evaporation of moisture from the salt (Gregory *et al.* 2016). The plant material is considered to have been 'chopped' and deliberately added (Tyrrell 2015).

However, other formation processes may have played a role. If plant remains were added to the clay once carbonised (i.e., within hearth sweepings), the general prevalence of crop-processing by-products within such material could lead to other plant parts, especially those insufficiently robust to survive exposure to fire, or those not processed using fire, being underrepresented (Fuller *et al.* 2014, van der Veen 2007).

Whether the plant impressions may be comparable to the evidence of charred plant remains or used as an indicator of seasonality is also debatable. Regardless of whether briquetage was manufactured near or close to the salt production sites, where both types of proxies were available, it is argued the seasonal production of pottery (climate-biased) leads to an overrepresentation of crops that were harvested during the pottery production season and an underrepresentation or absence of other resources used outside the production period (Fuller *et al.* 2014).

Funerary activity

At Mown Rakes, a cremation grave (540003) and a pit (530132) containing a cremation-related deposit were investigated. Both features contained alder and willow/poplar charcoal, suggesting that these were the main trees used in the construction of the cremation pyre(s). Alder is a large tree and its stems would have provided a rigid framework to support a body (or bodies) during the cremation process. However, evidence for insect degradation in the alder charcoal suggests that either dead or rotten wood was used, and it would have been difficult to achieve the high temperatures required to fully cremate the body with this fuel source. This is clearly indicated by the grey and blue/black colour of the human bone, which indicates incomplete oxidation (see McKinley in Volume 2, Chapter 8). There are striking similarities in the composition of the wood charcoal from both features (e.g., presence of willow/poplar sapwood, alder charcoal with insect degradation). This may indicate that the burial and the cremation-related deposit are associated in some way. For example, the wood used in the cremations may have come from the same stockpile, or it could reflect the re-use of a pyre site within a short timeframe (i.e., the individuals were cremated within a day or week of one another). The selection of alder and willow/poplar for fuel in the cremation process is likely to have largely related to their local availability in the surrounding wetlands. Examination of the wood charcoal from other features at Mown Rakes indicated that both alder and willow/poplar were common within the surrounding wetland.

Anglo-Saxon

Nature of the evidence

Charred plant remains from Sea Bank Farm, White Crofts, Ailby Lane and Cheals Close are consistent with settlement and agricultural activities, including crop-processing, dating to the Anglo-Saxon period. As in the preceding period, the majority of the deposits of charred plant remains are of a tertiary type, i.e., the result of the admixture of by-products from different activities (Fuller *et al.* 2014), and therefore it is difficult to identify particular actions.

The number of Anglo-Saxon sites in Lincolnshire with assemblages of plant remains is rather small (van der Veen *et al.* 2013), and although recent infrastructure development has produced new complementary evidence, this is largely restricted to the marshes in the north of the county (e.g., López-Dóriga 2023).

The Anglo-Saxon landscape

Information on the nature and character of the landscape in this period is limited by the relatively small quantity of environmental data collected. However, given that settlement sites of this date are relatively rare within Lincolnshire, the environmental evidence from Ailby Lane in the Wolds margin and Cheals Close in the Lymn Valley is valuable. In comparison, the evidence from other sites (e.g., White Crofts) is too limited to interpret further.

Wolds margin

At Ailby Lane, a large and well-preserved assemblage of wood charcoal was recovered from the sunken-featured building. This diverse assemblage included field maple, hazel, ash, hawthorn-type, oak, willow/poplar, elder and blackthorn. Most of the wood charcoal derived from field maple (24%), ash (23%), blackthorn (18%) and hazel (17%), while other taxa were only present in minor quantities. Notably, oak was only represented by a single fragment of stemwood. Overall, it seems that ash–field maple–hazel woodland was growing at the site, probably with the common occurrence of blackthorn as an understorey shrub. Peterken (2023) notes that a wide range of species may occur within this type of woodland, depending on local soil conditions, including common hawthorn, midland hawthorn, elder, blackthorn, dogwood, goat willow and crab apple. However, it is equally possible that many of the taxa recorded were growing within hedgerows around the site.

There are some notable differences in the composition of the wood charcoal assemblages for the Late Iron Age to Romano-British and Anglo-Saxon phases at Ailby Lane. Oak was more prevalent in the Late Iron Age to Romano-British samples, yet field maple was very rare. In addition, small

quantities of heather stems were recorded in the Late Iron Age to Romano-British samples but were absent in the later ones, perhaps indicating that any areas of heathland had become overgrown and colonised by woodland and scrub in the Anglo-Saxon period because of a reduction in management (e.g., cutting, grazing, burning). Many of the taxa recorded in the Anglo-Saxon assemblage are light-demanding (e.g., ash, blackthorn) and they could have quickly colonised areas of open ground such as cleared woodland or unused farmland. For example, thorny shrubs such as blackthorn can rapidly become established on abandoned or ungrazed ground.

Lymn Valley

At Cheals Close, wood charcoal was recovered from a range of features associated with two structures and various pits and ditches or gullies. In general, the wood charcoal was poorly preserved, with heavy mineral-coating on the fragments. Even so, a relatively wide range of taxa were identified, such as oak, ash, cherry (including blackthorn), hawthorn-type, hazel, alder/hazel and birch. In some cases, oak heartwood formed a significant component of the identified material (e.g., structure 3), suggesting that mature trees were being exploited for timber, and presumably also for fuel.

The frequent presence of oak and hazel charcoal in the wood charcoal assemblage would be consistent with the growth of mixed deciduous woodland on the freely draining and slightly acid, sandy soils which exist around the site. Similarly, birch often grows in these soil conditions, although there was no evidence for other tree or shrub species typical of these soils (e.g., heather). Again, it is notable that there was no evidence for heathland around the site, contrasting with the evidence from Iron Age and Romano-British sites in this landscape. Could this indicate that areas of heathland had become overgrown because of a lack of management? Or does it instead reflect a shift in land-use practices? Further environmental data from Anglo-Saxon settlements in this landscape area would help to resolve these questions. For example, in later periods there is clearer evidence for the use of heather for fodder, thatch or fuel (Carruthers and Hunter Dowse 2019).

Fens

Little evidence of Anglo-Saxon settlement or anthropogenic activities exists across the sites in this part of the scheme. However, there is environmental evidence for brackish or marine water in former Romano-British features at Mown Rakes and Six Hundreds Drove, particularly foraminifera (BioChron 2025; Wessex Archaeology 2023b), that indicate events of marine transgression that must have occurred afterwards, supporting previous suggestions of a post-Roman inundation in the area sometime between the late 4th and late 6th centuries AD (Green 2023; Simmons 2022; Waller 1994). This is also probably the case at Bicker Fen, where proposals for pastoralism have been made (Gaunt *et al.* 2024), while in other areas of the Fens there is evidence for the expansion of arable agriculture, particularly focused on barley, into marshland (Crowson *et al.* 2005) or higher ground (Giorgi and Rackham 1996).

Settlement activities

The majority of the samples in the Anglo-Saxon assemblage are associated with settlement activities focused on crop-processing, where cereals took a major role, and bear strong similarities to those of a similar phase from the northern Lincolnshire marshlands (López-Dóriga 2023) and elsewhere (e.g., Carruthers and Hunter Dowse 2019): all are broadly dominated by cereal grains and wild plant seeds. In general, this charred plant assemblage is notably different from the Iron Age and Romano-British one in its rarity of cereal chaff (Fig. 5.2). While in previous periods (i.e., from the Neolithic to the Romano-British period) the presence/absence of chaff may be used as a proxy for ascertaining the existence of local cereal cultivation (with the caveat of differential preservation, e.g., Boardman and Jones 1990), from the Anglo-Saxon period onwards this becomes less significant. This pattern is a result of the changes in plant processing activities undertaken in a domestic setting, associated with the transition from a focus on agricultural activities based on hulled cereals to those based on naked cereals. In the case of naked wheats, the removal of the chaff normally occurs in threshing areas close to the fields and therefore little chaff arrives at settlements (Hillman 1981).

Most of the deposits contain a large proportion of cereal grains and a smaller but relatively large proportion of wild plant seeds, while the remains of fruits, other crops and small amounts of cereal chaff are present in some of the samples. Some of the cereal grains and the pulse seeds are likely to have been charred in cooking accidents, while others could have been accidentally burnt while in storage. The remains of fruits are likely the result of the discard of the shells or stones into fires after consumption of the kernel/flesh. The other wild plant seeds include remains from plants that could have grown as weeds in arable fields, and are therefore discarded after sieving the cereal crop, while others could be present in turves used as fuel. Some of the plant remains may reflect vegetation growing around the settlement, or could have been intentionally gathered for a range of uses difficult to ascertain, such as food, medicine or beverages. Such mixed assemblages are present in the majority of the samples from Cheals Close.

A number of deposits, where more specific activities can be identified, merit special attention and are discussed next in more detail.

Fuels

Peat, turves or dung?

Evidence for turf-burning dating to the Late Anglo-Saxon period may be present at Sea Bank Farm (pit 200063). The exceptionally well-preserved material in one of the samples from White Crofts (pit 5202), which includes a complete seedhead of a stinking chamomile plant, contains a large proportion of seeds of heath and wetland plants (e.g., sea-blite, hairy buttercup, rushes, bog bean and sedges). This evidence is suggestive of turf or peat cutting (Hall 2003), where these turves could have been used as fuel (after drying) for domestic activities, which is also supported by the high proportion of more typical domestic debris remains in the sample, such as cereal grain, pulse seeds and nutshell fragments. However, the presence of vivianite staining (see Karkanias and Goldberg 2010 and below) suggests that burnt animal dung, containing seeds from grazed pasture and food preparation by-products (including spoilt grain and threshing floor waste), is the origin of this material. The probable presence of sea-blite and branched bur-reed in a sample from Cheals Close (posthole 180313) is notable, since these are plants associated with both coastal saltmarsh and freshwater wetlands, suggesting the arrival of material with animals grazing in different environments. This sample is also relatively rich in rye and barley chaff and grass seeds, and small ergot sclerotia, possibly from wild grasses, are also present. Burning turves and dung is not mutually exclusive: turves may be used in animal byres and then re-used for fuel, together with dung (Hall 2003).

Wood

The recovery of wood charcoal from the settlement sites at Cheals Close and Ailby Lane indicates that a wide range of tree and shrub taxa were exploited for fuel. By the Anglo-Saxon period, most woodlands are thought to have been in some form of ownership, and they probably began to be managed more intensively through practices such as coppicing, pollarding or branch shredding (Rackham 1986). There was no clear evidence for woodland management at the sites examined, although an Anglo-Saxon (or medieval) ditch at Cheals Close possibly contained coppiced hazel stems. It is likely that many woodlands were largely managed to provide timber and other construction products (e.g., roundwood for wattle), while fuel could have been sourced from hedgerows or farmland trees (Rackham 1986; Warde and Williamson 2014). The high species diversity in the assemblage from Ailby Lane perhaps indicates that fuel was obtained from hedgerows; it is notable that blackthorn – a typical hedgerow species – was very common in the assemblage. In addition, some the blackthorn charcoal had clearly been lopped, perhaps reflecting the process of trimming or laying a hedge.

Middens

The sampled Anglo-Saxon deposits from White Crofts have provided some evidence of middening: the presence of vivianite staining in pit 5202 and mineralised (mineral/phosphate replaced) material in pit 3211, with a relatively high number of mineralised nodules, suggest midden deposition processes, where organic matter decomposes in a wet environment (e.g., Carruthers and Smith 2020; Karkanias and Goldberg 2010). Mineralised plant deposits can provide a wealth of complementary information to

that provided by charred assemblages and are therefore extremely valuable for gaining a comprehensive picture of the plants used by past societies; unfortunately, the mineralised evidence from the site is sparse and is merely indicative of middening activities. Although middens with mineralised material are more frequent in the Anglo-Saxon period because of the absence of organised waste disposal, they are rare in Lincolnshire (Carruthers and Hunter Dowse 2019; Monckton 2006), with just one example, at Flixborough, with waterlogged and charred preservation.

Storage

The presence of a small proportion of shrivelled grains at White Crofts (pit 5202) may point to the discard of by-products from storage, although it could also indicate a spoilt crop after a particularly wet season. This is compatible with it having been fed to domestic animals as well as its disposal in a midden (see above).

Another form of possible evidence for storage is the insect holes (weevil-type) observed in a small proportion of the barley grains from the large Anglo-Saxon deposit at Ailby Lane, albeit this is not a primary deposit (i.e., not a store burnt out *in situ*) but one that has since become redeposited and mixed with other remains. This is an interesting observation since little evidence for pest attack has been obtained so far in the Midlands (Carruthers and Hunter Dowse 2019).

The assemblage from Cheals Close, in the Lymn Valley, is fairly consistent but small differences can be appreciated in the material. Unfortunately, there is no clear difference in the composition of the samples between those from ditches and pits and those from postholes, all of them reflecting a mix of typical domestic waste, probably accumulated over time.

Very few samples are available for structures 1 and 2 at Cheals Close and no detailed observations can be made about them based on the environmental data, but abundant samples were obtained from structure 3. The sparsity of other domestic remains (i.e., animal bone, pottery) from this structure perhaps suggests it was not used for general settlement activities. If this structure had a specific storage function, such as a granary, there is no clear evidence for it in the charred plant remains or wood charcoal assemblage. There is also no clear pattern in the spatial distribution of the cereal, pulse and wild fruit remains in the postholes to indicate separate storage areas, although if these products were stored in the building, perhaps in perishable containers, they could have become mixed after its collapse and abandonment. However, the seeds from docks/sorrel, which are very abundant in some of the samples, are present only in those from the south-east of the structure. Two possible explanations are that either the sorrel/docks were stored in that part of the structure (the seeds are fiddly but edible and can be ground into flour or roasted and brewed into a drink; see Fern 1995–2024), or that the plants, which favour disturbed ground, were growing in that part of the structure. In either case, a fire must have occurred, with accidentally carbonised seeds/plants ending up in the postholes after the abandonment of the structure.

There is, however, one sample composed of mostly grains which could reflect a clean crop product accidentally carbonised while in storage or being cooked, and later discarded into a boundary ditch (180141) at Cheals Close. In addition, the remains of a possible weevil in ditch 180619 suggests the presence of grain pests. These were common in the Romano-British period, and infestation rates are thought to have been high (Smith and Kenward 2011), but had sharply declined by the early medieval period (see Chowne *et al.* 1986 for a nearby exception at Iron Age Tattershall Thorpe).

Arable agriculture

In general, the assemblage of charred plant material from the Anglo-Saxon period is notably different from the Iron Age and Romano-British assemblage. This is largely because of shifts in agricultural practices and domestic plant processing activities following the Romano-British period.

Free-threshing wheat

One of the most significant changes is the full adoption of free-threshing or naked wheat, and in particular bread wheat, as a crop. Although this cereal was possibly present in the area in the Iron Age and during the Romano-British period (see above, also Carruthers and Hunter Dowse 2019), the extent of its local cultivation is uncertain because of a lack of chaff evidence. This cereal is often associated with the movements of the Roman army, and in those scenarios, it may have been transported as a semi-finished product. Plentiful chaff evidence supports its local cultivation and processing in the Early Anglo-Saxon period at Ailby Lane and Middle to Late Anglo-Saxon periods at Cheals Close and White Crofts. A different species of naked wheat, rivet wheat, started to make an appearance in other Anglo-Saxon deposits in the Midlands (Carruthers and Hunter Dowse 2019) but, beyond two tentatively identified fragments from a Romano-British deposit that failed to provide a successful radiocarbon date, no secure evidence has been found in any of the current sites, nor elsewhere in Lincolnshire yet.

Hulled wheats

Hulled wheats may not have been completely abandoned in the Anglo-Saxon period, however, as suggested by some sparse remains: a single glume base at Sea Bank Farm, two glume bases at Cheals Close, and six glume bases or spikelet fork fragments at Ailby Lane. It is likely that some of these were residual in the Anglo-Saxon deposits, with the presence of older material within the sunken-featured building at Ailby Lane confirmed by the radiocarbon results (FTMC-MB96-6: 1962±29 BP, 30 cal. BC–cal. AD 85). However, it is also possible that some remains represent the continued cultivation of the crop, perhaps because of its higher tolerance of wet weather (Carruthers and Hunter Dowse 2019). The ongoing use of hulled wheats into the Early Anglo-Saxon period was also observed in the marshlands in the north of the county (López-Dóriga 2023) and although none of those remains were radiocarbon dated, no prior cultivation activities were observed in those areas and therefore contamination was considered unlikely. An Anglo-Saxon site near Cheals Close also produced hulled wheat glume bases (Ciaraldi 2004).

Barley

Another important difference compared with the preceding period is the larger proportion of barley in the charred assemblages in relation to wheat (Fig. 5.8): for example, the crops were in similar proportions at White Crofts and some deposits from Cheals Close, but barley was found in greater proportions to wheat at Ailby Lane and other deposits from Cheals Close. The predominance of barley over wheat was also observed in the marshland in the north of the county (López-Dóriga 2023) and may be explained there by its higher tolerance to sea spray and saline soils (Carruthers and Hunter Dowse 2019). Barley was identified as hulled barley (on the basis of seed morphology) in White Crofts, Cheals Close and Ailby Lane. Barley chaff is sparse, only present in small quantities at White Crofts and Cheals Close, thus preventing identification to variety; however, added to the evidence of twisted grains, it suggests the cultivation of dense-eared varieties of six-row barley at Cheals Close and White Crofts.

Oats

Oats were found in abundance in some deposits (particularly in Early Anglo-Saxon Ailby Lane, second only to barley and more abundant than wheat) but no oat chaff was found, therefore rendering it impossible to ascertain whether the remains belong to the wild or the domesticated species. Oats and rye were an established crop in other Midlands regions by the Early Anglo-Saxon period, reflecting the influx of people from north-west Europe, where both crops were commonly cultivated (Carruthers and Hunter Dowse 2019). In Lincolnshire the evidence is not yet conclusive for oats, which were also possibly cultivated near the coastal marshes in the north in the Anglo-Saxon period (again with the caveat of no chaff evidence, see López-Dóriga 2023). Evidence from elsewhere in the Midlands points to the cultivation of dredge (barley and oats) as a mixed crop or maslin, as an insurance against crop failure or for malting (Carruthers and Hunter Dowse 2019); this could be the case at Ailby Lane, where both are the most abundant remains.

Rye

In the northern marshes, there is no evidence for rye until the medieval period (López-Dóriga 2023), but abundant evidence (both grains and chaff) has now been obtained for the Anglo-Saxon period at White Crofts, in the coastal marsh, and at Cheals Close, in the Lymn Valley. Ergot (fungi that parasitise some grasses and cereals and produce ergotism, also known as 'Saint Anthony's

fire', when accidentally consumed in large amounts) was present in a sample with abundant rye; however, the size of the sclerotia is suggestive of wild grasses rather than cultivated cereals. Ergot seems to have been rarely found in the Midlands (Carruthers and Hunter Dowse 2019) but it is not an unusual find in the Lincolnshire coastal areas, having been recorded in the north of the county relatively commonly (e.g., López-Dóriga 2023).

Other crops

In addition to cereals, the cultivation of other crops already grown in the area in preceding periods, including pulses (broad bean and garden pea) and flax/linseed, continued in this period. The evidence for these crops is often sparse across the charred record because of underrepresentation in comparison to cereals, which were more commonly associated with preparation techniques involving fire, meaning that they were more likely to become charred and so enter the archaeological record. Cultivated vetch is present on other sites in the Midlands (Carruthers and Hunter Dowse 2019), but no positive identifications have been made on the Interconnector, with other vetch remains only being identified at tribe level because of poor preservation. The sparsity of flax/linseed remains means it is difficult to speculate on the potential use of the crop, as a source of either fibre or oil, although it should be noted that no capsule fragments have been identified, so there is no strong evidence of fibre exploitation.

Wild plants

Exploitation of wild fruits and nuts focused on native species, with no exotic or traded species being observed, in keeping with the rural character of the sites. The increase in the use of native fruits and nuts, in comparison with the Romano-British period, is observed in other areas in the Midlands (Carruthers and Hunter Dowse 2019), and could be associated with the development of orchards. Although it is not possible to know exactly where the fruit-/nut-bearing plants grew, a range of the identified taxa would have been suitable for garden cultivation close to dwellings; this is the case for flax, broad bean, garden pea, elder, sloe and hazel, in addition to other native herbaceous plants (e.g., mustard family, goosefoots, docks/sorrel) which could be consumed as greens or dried for medicinal uses (Fern 1995–2024).

A number of wild plants present in the assemblage are noteworthy because of the information they can provide on the local environment, which in the case of arable weeds involves the nature of the crop fields. One of these species is stinking chamomile, an archaeophyte (i.e., a non-native plant introduced in the distant past; Preston *et al.* 2004), found at White Crofts and Cheals Close. This species was reportedly found in a Lincolnshire Mesolithic/Neolithic treethrow (Oxford Archaeology East 2014) and possibly in three other Late Iron Age/Romano-British deposits in the north of the county and elsewhere in the Midlands (Carruthers and Hunter Dowse 2019; López-Dóriga 2023). However, its spread is considered a generally late Romano-British phenomenon associated with arable expansion onto heavy soils, often in tandem with the spread of bread wheat cultivation in the post-Roman period.

Shepherd's needle (an archaeophyte) and possibly cornflower/knapweed (both natives and archaeophytes are present in the genus) may be associated with arable fields near Ailby Lane; shepherd's needle is also associated with the cultivation of calcareous clay soils, while the different species in the cornflower/knapweed genus may be found on a range of heavy and light soils.

Summary

The Interconnector scheme has obtained a range of evidence, largely from plant remains and wood charcoal, that sheds light on a number of research areas:

- in the Early Neolithic, cereals were being used at Walk Hill, alongside wild plant resources, constituting the oldest securely dated evidence of agricultural products in the region (3530–3375 *cal. BC*);
- little evidence for the Bronze Age, with hints of arable cultivation at Callow Carr and wild plant use at Ailby Lane;
- increased evidence for the use of free-threshing wheat in the Romano-British and possibly the Iron Age period, with tentative grain identifications (no chaff) supported by radiocarbon dating;

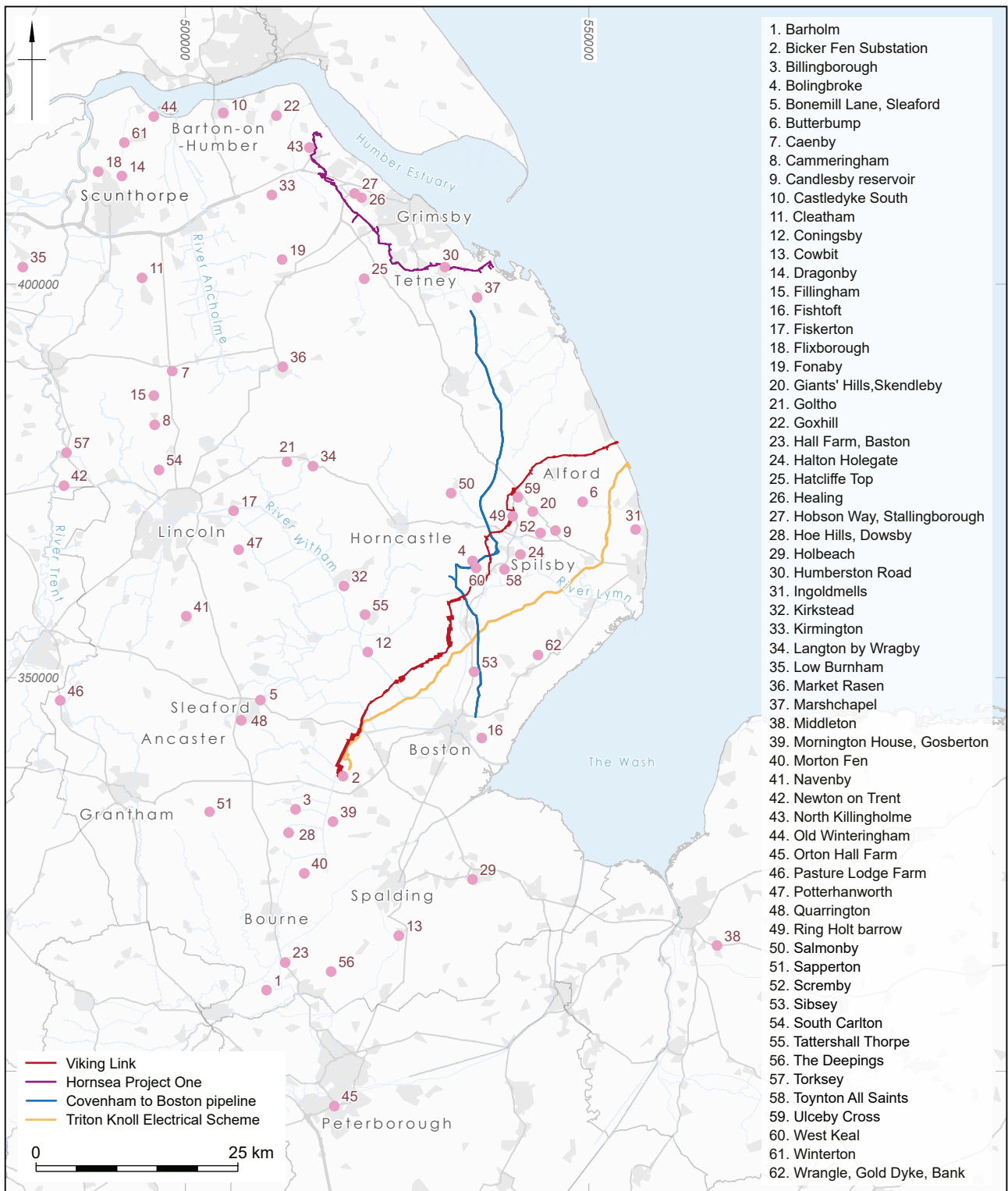


Figure 5.9 Selected other Lincolnshire/East Midlands sites

- no strong evidence for malting, with crop-dryers at Walk Hill in the Romano-British period more probably used for parching;
- securely dated rye in the Romano-British period at Walk Hill (*cal. AD 210–310*), probably a weed rather than a crop;
- abandonment of emmer wheat before the Anglo-Saxon period, with all dated evidence constituting residual remains from earlier activities;
- possible intensified arable cultivation (including onto saline soils) at Mown Rakes in the Iron Age/Romano-British period, based on the dominance of barley impressions in briquetage;
- no evidence for exotic edible products indicative of trade at any of the sites during the Romano-British or Anglo-Saxon periods.

Research Theme 4: the Supply, Production and Use of Pottery in this Part of the Country in the Past

Iron Age and Romano-British pottery

Ian M. Rowlandson

Iron Age: Zone 1

A small quantity of pottery dating to the later Bronze Age or earlier Iron Age was recorded from the Ailby Lane site but the majority of the assemblage dates to the later Iron Age, and notably includes a fragment of Terra Rubra. A small group including Late Iron Age pottery was also recorded from the Ailby Lane site. This Iron Age material is an interesting addition to the sites known from Tetney (Knight 1994), the Hornsea One cable route (Rowlandson and Fiske 2023a), and saltmaking sites in the area such as Ingoldmells (Lane 2018; Rowlandson and Fiske 2023b).

Iron Age: Zone 2

A small number of groups at Sutterby Field, Walk Hill and Hagnaby Grange show evidence of later Bronze Age to earlier Iron Age activity. Middle Iron Age Scored ware was recorded from Sutterby Field, where Late Iron Age activity was also recorded, as it was at Walk Hill, Magers Lane and Hagnaby Grange. The Terra Rubra and Gallo-Belgic white ware from Hagnaby Grange and Area 28 (a minor site in the Fen-edge parish of East Keal see Volume 2, Appendix A) are rare examples of traded fine wares reaching basic rural sites in the region. These small groups include a similar range of fabrics and forms to that seen from sites at Salmonby, Tattershall Thorpe and Horncastle (Cleary *et al.* 2020; Elsdon 1981; 1996).

Iron Age: Zone 3

Evidence for prehistoric and Iron Age pottery from the Zone 3 sites Mown Rakes and Six Hundreds Drove was negligible. The few vessels in a Late Iron Age tradition that were present probably reached the site in the Flavian period or later. There were no examples found of either the fine late La Tène II/III wares or Scored ware types that might provide evidence for activity on the sites prior to the Roman Conquest (Elsdon 1996; 1997; Knight 2002; 2010).

Roman: Zone 1

The assemblages of mid- to late Roman pottery from Sea Bank Farm and White Crofts, along with the smaller group from Ailby Lane, offer an insight into how Roman pottery was used in the Lincolnshire Marsh area. These groups are a good addition to those from the investigations on the Hornsea One and Triton Knoll schemes and excavations at Stallingborough (Rowlandson 2011; 2019; Rowlandson and Fiske 2023a). The very late Roman activity dating to the later 4th to early 5th century AD from the White Crofts site is important as it shows that these sites continued to be exploited until the very end of the Roman period, in a similar fashion to the coastal Able UK site near North Killingholme (Rowlandson *et al.* 2017). The growing number of recently excavated local sites has expanded our knowledge of the Lincolnshire Marsh, and it is now possible to sketch a more detailed picture of how Roman pottery was produced and used in this area than was possible at the time of earlier surveys, such as that carried out under the Humber Wetlands Project (Ellis *et al.* 2001).

Roman: Zone 2

The assemblages of Roman pottery from the Zone 2 sites are smaller and more scattered and contrast with the more significant assemblages from Zone 1 and Zone 3. In part this is the result of the route of the project avoiding major Roman settlements but it may also reflect taphonomic processes, with deeper ditches from the Zone 1 and Zone 3 sites receiving greater quantities of fresh pottery that survived for excavation. The gravels in the Lymn and Witham valleys often result in exoriated pottery assemblages and the groups from Zone 2 are typically in worse condition, perhaps because the assemblages include a higher proportion of material that had been

deposited into ditches after spending a longer period becoming abraded on the surface. The key groups are from Walk Hill, which had groups of pottery from throughout the Roman period. Groups of later 4th-century pottery from Walk Hill, Area 21 and notably Raithby Lane have added good small assemblages of the latest Roman pottery from this part of Lincolnshire.

Roman: Zone 3

Pottery use at Mown Rakes and Six Hundreds Drove began in the Flavian period and continued into the 3rd century AD. This is similar to a number of sites in the area, including the Bicker Fen Substation site (Gaunt *et al.* 2024) and the Triton Knoll Fen-edge sites located to the north of Bicker Haven, where activity appears to have had a Flavian to 3rd-century AD date range (Rowlandson and Fiske 2018; 2020a; 2020b; 2023b and 2023c).

The Bicker Fen Substation site is of interest as there is some late Roman activity, supported by some of the fabric types mentioned in the pottery report, although there is little overt mention of types likely to confirm a date beyond the early 4th century AD. Some mention is made of dating on the basis of a Dales ware lid using evidence from the 'Plotdate' data from Lincoln (Darling 1994; Darling and Precious 2014, 7–8), but this may be misleading. The residuality inherent with the pottery groups from Lincoln's often reworked urban strata means that many of the types discussed in the Lincoln Roman pottery corpus were redeposited in deposits considerably later than the initial manufacture date of the pottery in question (Bryant 2011; Vince 1987).

The Bicker Fen Substation pottery report does not make it clear whether a number of the key forms indicative of a 4th-century AD date were present, such as straight-sided bead and flanged bowls (BFB), double lid-seated jars (JDLS), bowls with inturned bead and flanged rims (BIBF), colour-coated beakers with pectice moulding, slit folding or painted decoration, or South Midlands-type shell-gritted jars with undercut rims, all of which are prevalent in the latest groups from Lincoln, Orton Hall Farm and Baston (Darling 1977; Darling *et al.* 2020; Perrin 1996). As such, as described, the Roman pottery from the Bicker Fen Substation site need not extend beyond the early 4th century AD. Given that the single radiocarbon date mentioned that may be used to suggest a 5th-century AD date spans AD 420–580 (SUERC-110286), the majority of the Anglo-Saxon radiocarbon dates could fit in the 6th century AD or later and this would conform with the prevailing evidence from other sites investigated as part of the Fenland Management Project in the area. At Swineshead peat deposits were sealed by coarse silts dated to '315–425 cal. AD and 315–425 cal. AD' as part of 'a series of shorter lived tidal floods around the fourth-to-sixth centuries [that] revisited waterlogged conditions upon Marshland and largely buried the sites of Roman occupation under layers of pale silt', with the settlements of the middle Saxon period re-establishing upon sites that had not been wholly engulfed (Crowson *et al.* 2005, 10). The absence of many of the pottery types diagnostic of the 4th century AD, and particularly the later 4th century AD, from the Mown Rakes and Six Hundreds Drove sites would fit with the prevailing pattern seen on a number of sites in the immediate area, where occupation became viable in the early Roman period but by the later 3rd to 4th century AD renewed flooding had reversed the situation.

The pottery assemblages from Mown Rakes and Six Hundreds Drove have a more diverse range of production sources than the Zone 2 assemblages. Although the quantities of fine wares present are fairly low, the range of sources represented suggests that the sites were well integrated with coastal trade networks transporting goods from the Continent, probably via London. Excavations as part of the Triton Knoll scheme have located two similar settlement foci that commenced occupation in the later 1st century AD and were largely abandoned by the later 3rd century AD (Christie and Hogue 2025; Rowlandson and Fiske 2020a; 2020b). Both sites also had small but notable quantities of imported fine wares and regionally imported coarse wares, suggesting that the sites were linked to coastal exchange and trading routes.

The presence of ceramic waste suggesting small-scale pottery production at Six Hundreds Drove highlights the localised nature of grey ware pottery production in Lincolnshire. Larger areas of pottery production are known from the immediate vicinity of Lincoln, the Market Rasen area, the 'Trentside' potteries and the Dragonby/Roxby kilns, which all served sites in the historic district of Lindsey (cf. Samuels 1983), but it is possible that they were not major suppliers to the Swineshead/Bicker area. There is a growing number of new kiln sites such as the small-scale production from Six Hundreds Drove, as well as at Great Casterton (cf. Cooper 2011; Peachey 2012), Tattershall Thorpe (Cleary *et al.* 2020), Grantham (Rowlandson and Fiske 2022), Sleaford (Rowlandson 2024), Ancaster (Swan 1984) and Bourne, where shell-gritted and perhaps other wares were produced (Darling 1997; Precious 2001; Rowlandson 2017; Samuels 1983), along with an additional source of shell-gritted Dales ware somewhere in eastern Lincolnshire (Vince 2006b). With a broader, funded scheme of fabric research it may be possible to map the distribution of the products of a number of the grey ware kilns from Lincolnshire in more detail and confirm the visual groups that the author has established for some of the kiln sites (cf. Rowlandson and Fiske 2018; 2020a; 2020b). At present we must still retreat to the firm ground of Darling's assertion 'most pottery is of relatively local manufacture' (1989, 98–9), mindful of the growing number of new kiln sites being found, with the existence of further, yet undiscovered Roman pottery kilns remaining a 'known unknown'. A detailed picture of the distribution of grey ware types within the county of Lincolnshire awaits more extensive scientific research (cf. Darling 1989, 99).

Vessel usage

The recent organic residue analysis (ORA) research in Lincolnshire, Yorkshire and further afield offers a picture of how some of the key vessel types were used for cooking and food preparation. During the present project, a total of 47 sherds were selected for ORA to investigate vessel use. The results are summarised in Volume 2 (Chapter 8), and presented in full in the online data supplement: <https://doi.org/10.5284/1136099>. This work has added key information from areas of southern Lincolnshire that have had few samples studied so far.

Iron Age jars from Lincolnshire that have been sampled appear to have been used for both dairy and carcass fat processing. For much of the Iron Age, jars were mostly of simple form, with only limited numbers of fine ware or specialist vessels (Knight 2002). As such it is unsurprising that the sample of Iron Age coarse-gritted jars that has been studied so far includes a fairly even split between ruminant carcass and dairy fats, as they were the predominant vessel type. It has been noted that the Iron Age vessels with broader necks and without carbonised cooking residues are often those associated with dairy processing (Rowlandson and Fiske 2023a).

In the Roman period there was a broader range of specialist forms in use. Evidence from cheese press-type vessels appears to show that they were used for processing dairy or carcass fats, depending upon the site, as were strainer-type vessels. The grey ware wide-mouthed bowl or wide-mouthed jars typically have no evidence of carbonised cooking residues and the examples that have been sampled appear to have commonly been used for dairying processes (e.g., Dunne 2023; Dunne *et al.* 2021).

Of the material sampled recently from the East Midlands, Roman coarse-gritted jars, commonly shell-gritted jar types, appear to be more commonly linked with processing ruminant carcass fats (Dunne 2023; Dunne and Evershed 2018a; 2018b; Dunne *et al.* 2023). These jars were selected in many of the initial studies on vessels with carbonised residues. The results may reflect the fact these samples came from sites focused on meat production but, more probably, it reflects the greater specialisation of vessels in the Roman period. Future studies with larger numbers of samples may be able to address potential issues of sample bias among the vessels studied to offer a more nuanced picture about how certain types of vessels may have been used for cooking and carcass processing. At present it seems that the coarser-

gritted jars were suitable for high-temperature stewing or rendering when vessels were placed directly on or into fires, but a number of the larger grey ware wide-mouthed bowl/jar types may have been suitable for processes such as cheese-making, when the raw milk may have been subjected to lower temperatures than needed for stewing meat or rendering carcass fats for tallow (Dunne and Evershed 2018a; 2018b). The study of some of the carinated grey ware bowls suggests that they may have been bedded into embers for cooking stews and the high level of dairy fat within some of the dishes studied may represent baking breads enriched with dairy product or greased with dairy fat (Dunne *et al.* 2023). For future samples it may be interesting to look at Iron Age 'wide-mouthed' jar types with a wide opening (30–40 cm) but perhaps no deeper than 40 cm to see whether they may have been favoured for dairy processing by Iron Age households (Rowlandson and Fiske 2023d, no. 15) in the East Midlands in the same way as Roman wide-mouthed bowl or wide-necked jar types. As a growing number of samples are taken from vessels, more nuanced analysis should become possible (Greenwood *et al.* 2023).

The analysis of the Bourne-type shell-gritted jars has shown that many of the sampled vessels with carbonised residues were used for processing ruminant carcass products either for cooking or rendering fats. It would appear that the shell-gritted jars of this type that were sampled fulfilled a similar role to the shell-gritted Dales ware jars that were ubiquitous in the 3rd and earlier 4th centuries AD in the Lindsey area (see Zone 1 sites, Dunne 2023; Dunne and Evershed 2018a; 2018b; Rowlandson and Fiske 2023a; 2024). The Bourne-type shell-gritted bowls appear to have evidence of ruminant carcass fats.

Examples of Huntcliff jars and double lid-seated jars representing the final phase of Roman cooking were sampled for this scheme, with double lid-seated jars from the White Crofts and Raithby Lane sites having evidence of both ruminant and non-ruminant carcass fats; a further example from Raithby Lane had ruminant carcass fat, as did an example of a Huntcliff jar from Area 21, and a Huntcliff type jar in a coarse grey ware fabric and a bowl with an inturned rim from the Raithby Lane site. Although this is a small sample size, the presence of two vessels that had evidence for non-ruminant animal fat was unusual. The absence of dairy fats from later Roman jar forms was not surprising as a similar pattern has been seen when samples have been taken from shell-gritted Dales ware jars dating to the 3rd to mid-4th century AD (Dunne *et al.* 2023; Dunne and Evershed 2018a; 2018b).

At present the low levels of non-ruminant animal fats from chicken or pigs from the rural sites from this scheme appears to fit the prevailing trends from rural sites in the East Midlands and further afield. In future, samples from forts, towns and roadside settlements in the East Midlands may allow a comparison between the rural and 'urban' inhabitants of the region (Greenwood *et al.* 2023).

Post-Roman pottery

Jane Young with Johanna Gray

The post-Roman assemblages recovered from the Viking Link Interconnector, although mostly quite small, have provided an opportunity to reassess and expand current knowledge of post-Roman pottery use and distribution in the county. A number of parishes investigated during the scheme had previously provided no, or little, post-Roman material prior to the Viking Link investigations. Large linear schemes in East Lindsey have given us the ability to propose outline ceramic sequences for several areas within the district. Our understanding, however, especially of the coastal area and hinterland, has only just begun as new types are classified (Christie and Hogue 2025). The ceramic profile in South Holland relies heavily on a number of excavations in Boston, where the complex ceramic sequence is influenced by the town's status as a major medieval port, and is chronologically incomplete. More rural sites within the district, however, often provide important additional evidence for ceramic use no matter how small the assemblage.

The post-Roman pottery recovered from the scheme is largely of medieval date and typical of that found on other sites in the region. Several new key pre-Conquest assemblages that challenge previous assumptions were however recovered, the most important being of 5th–7th-century date (Ailby Lane), 8th-century date (Cheals Close and North Ing) and 10th-century date (Sea Bank Farm). Further investigation of the previously ungrouped local medieval fabrics from the scheme has also led to a better understanding of the distribution of several 13th- to 14th-century types in East Lindsey, suggesting local production and marketing zones.

A small group of pottery recovered from the Ailby Lane site comprises previously unknown handmade and mainly quartz-tempered Anglo-Saxon fabrics. It is a salutary lesson as both visual appearance and visible fabric tempering have more in common with Iron Age pottery in the region than previously encountered Saxon material, and the group was not identified until radiocarbon dates were returned for the deposit it was found in (cal. AD 430–560 and cal. AD 480–640; *cal. AD 440–575* when combined; UBA-52881 and UBA-52883). Stylistically, the three narrow flat-topped rims recovered are most easily paralleled by Northern Maxey-type rims in Fabric A dating to the first part of the 8th century and potentially back into the late 7th century. The radiocarbon dates from the Ailby Lane sunken-featured building, however, are too early to support such a late date for the group, although at Maxey flat-topped rims were found on quartz-tempered vessels in Phases I and II (Addyman 1964, fig. 12, no. 1 and fig. 13, no. 18). The discrete nature of this group initially suggested local production of an unknown date; however, thin-section analysis has highlighted several unusual aspects of the assemblage, such as the potential for wheel-finishing and the fact that the three unusual narrow flat-topped rims are each in different geological fabrics (Wood 2025). A small number of handmade vessels recovered from other sites fall into an expected pattern and include two decorated vessels of probable mid-5th to mid-6th-century date.

For the middle Saxon period two groups provided new Maxey-type fabrics. The larger group found at Cheals Close in the Sausthorpe parish comprised 21 vessels in a newly defined East Lindsey Maxey-type (MAXEL). Manufacture strongly suggests a date for the type within the 8th century with two neatly cut flat-topped rims indicating pre-mid-8th-century production. The continuation of production until at least the mid-8th century is argued for by the mid-8th-century introduction of the Ipswich ware vessels in the site assemblage (Blinkhorn 2012). The nearest comparative site to Cheals Close producing even a small middle Saxon group of pottery is that at Fair Field, Partney (Young 2019). The material from this site was given a brief assessment in 2019 by the author in which eleven shell-tempered vessels were identified as being of Northern Maxey ware type and seven of Ipswich ware. As the shell-tempered vessels were heavily leached of their fossil shell temper, a tentative identification was made for seven of the vessels as being of early to mid-8th-century Fabric A based on manufacture and the size of inclusion voids. It may prove that these vessels are actually of the new East Lindsey type. Several of the vessels were in a condition suggestive of primary deposition but had been freshly broken in the recent past by post-war levelling on the site. It is possible that the vessels from Cheals Close and the Partney site represent a localised production of Maxey ware in the Partney area. Three of the Maxey-type vessels recovered from North Ing in the Donington parish are visually more similar to Northern Maxey ware than Southern Maxey ware as found on the nearby Bicker Fen site (Anderson 2024) but are in a previously unclassified fabric. Thin-section analysis has, however, confirmed the presence of punctate brachiopods, showing them to fall within the Southern Maxey ware tradition (Wood 2025). Two fairly large middle Saxon groups from sites in Quarrington (Young 1996; Taylor *et al.* 2003) and Fishtoft (Vince and Young 2012) with very different ceramic profiles fall within 25 km of these sites but did not produce this fabric. Sub-classification of the various Maxey ware types seems to suggest a number of localised production sites in the county that conform to an ideal but have differing processing, manufacturing and finishing details. Future identification of the types may lead to chronological or cultural zoning and the identification of local markets. It is already clear that Southern Maxey ware is extremely

rare north of the River Witham boundary but Northern Maxey ware fabrics penetrate far into southern Lincolnshire, into Nottinghamshire and northwards to Yorkshire.

Large linear schemes in East Lindsey have in recent years produced new late Saxon types, indicating a complex picture of ceramic production in the county, although the group from Sea Bank Farm is unique in diversity, only paralleled by the variety of different ceramic types being produced simultaneously in Lincoln between the late 9th and late 10th centuries. Some of the vessels recovered at Sea Bank Farm have obviously been subjected to high temperatures but are more likely to be associated with the saltmaking industry than to represent kiln waste material. Excavations over the last 10 years have greatly added to the distribution of late Saxon ceramic types in rural settings across the county. There is slight ceramic evidence that the presence of pre-Conquest saltmaking along the coastal edge may influence the character of local late Saxon occupation, with sites such as Holbeach Hall Gate (Young and Gray 2024) producing ceramic groups to rival those found in urban Lincoln and Stamford.

Lincolnshire has a complex pattern of ceramic use during the medieval period. Major industries are known at Bourne, Potterhanworth, Toynton All Saints and Lincoln. The pottery from each of these centres can now be considered as major medieval glazed ware, or in the case of Potterhanworth, shell-tempered traditions rather than the sole producers of the types. Pottery stylistically in each of these traditions but in different fabric ranges or including probable wasters has been recovered on a number of Lincolnshire sites away from these four main centres. Some of the waste found at Baston near Bourne is of Bourne-type and difficult to differentiate from actual pottery made in Bourne, while several glazed jugs in the assemblage bear no affinities with known productions at Bourne or elsewhere. A similar pattern was found in Toynton All Saints, where wasters of pre-medieval Toynton ware (dated late 12th to mid-13th century) are of Lincoln and Stamford or Scarborough types. Minor industries producing vessels less influenced by the four major centres have been identified across Lincolnshire, but it is only at Appleby near Scunthorpe (where production of four completely different North Lincolnshire types occurs), and Alford (producing glazed and unglazed wares) where kilns have been excavated. More recent excavations in East Lindsey especially suggest a multitude of minor, short-lived and possibly fairly localised industries that pre-date the dominance of medieval Toynton ware from the early 14th century. Analysis has resulted in many of the previously generic 'local' medieval vessels recovered from the Viking Link sites (especially those from the East and West Keal parishes) being sub-grouped into visually identifiable types based on manufacture firing colours and quartz inclusion type. The study of regional post-Conquest ceramics and their characterisation and distribution was one of the key aims set out within the initial East Midlands Research Agenda (Cooper 2006, 214–215), where it was argued that the systematic recording of types within a region can in the future (with a large enough sample) lead to a greater understanding of not only potential modes of distribution of the production centres themselves but also the wider questions of communication infrastructures and the role of local markets, fairs and ports within a region (see also Research Frameworks 2024). The pottery recovered from the Viking Link together with that from the Triton Knoll project (Young 2025) shows a preference along the coastal edge for higher-fired and well-executed vessels during the 13th and earlier part of the 14th century (CELMG), while further inland it is lower-fired, less competently manufactured vessels in dull oxidised fabrics (ELDOX) that dominate. This supposition needs to be tested on a wider distribution but it may lead to narrowing down potential production areas or areas of influence. Rim and handle types and decorative motifs of these two types, together with those of most of the ungrouped 'local' fabrics, suggest that production does not continue into the second half of the 14th century. The significance of this dating may be due to factors associated with the Black Death. The potters themselves could have died, there may have not been a sufficiently large local population to support small-scale industries, or with a general rise in wages it may have been more profitable for the potters to seek other lines of work. Documentary evidence and well-stratified and externally dated groups would be needed to support

this theory. However, it is clear that in East Lindsey it is the major centralised industries at Toynton All Saints and at Cowick in East Yorkshire that supply most of the pottery used in the district. Little medieval pottery from sites lying within the South Holland district was recovered from the Viking Link scheme. Here the pattern of usage differs from that to the north, with the production of medieval Bourne types probably spanning the whole period between the early 13th and late 14th centuries; although Toynton ware does make inroads into the area by the mid-14th century it does not seem on current evidence to totally replace the use of Bourne types.

Analysis of the post-Roman Viking Link pottery assemblage has enhanced our knowledge of the complex ceramic profile found in the county. It has expanded and altered previously established thoughts, especially for the Anglo-Saxon, middle Saxon, late Saxon and medieval periods, and particularly along the coastal edge of East Lindsey. Several potential new productions have been identified and characterised and this characterisation may lead to greater recognition of further occurrences elsewhere in the county and beyond. The definition of these new types and possible chronologies has the potential to feed into future distribution and consumption research over a wider region.

Research Theme 5: the Production Techniques and Exchange Networks Involved in the Manufacture of Salt

In comparison to the very large amount of data that allowed the research aims around site chronology, human–environment interactions, and the production and supply and use of pottery to be so productively addressed, relatively little evidence regarding saltmaking was recovered, and so less light has been shed on this topic. In brief, the excavated evidence comprises:

- a peri-Roman Conquest saltern at Mown Rakes in the Fens;
- a much more modest resumption of salt production near Mown Rakes around the mid-2nd–3rd century AD;
- 2nd–4th-century saltmaking near Sea Bank Farm, close to the modern coastline;
- reoccurrence of salt production near Sea Bank Farm in the Late Anglo-Saxon period;
- an assemblage of over 75 kg of fired clay, with the majority of the diagnostic pieces being briquetage, and overwhelmingly derived from Mown Rakes.

In Lincolnshire, Romano-British salterns tend to be 1st to 2nd-century AD in date (Lane 2005, 47), so the peak of saltmaking activity at Mown Rakes, which seems to have commenced in the Late Iron Age and not continued far, if at all, into the Romano-British period, seems broadly typical, if a little earlier than many comparable sites. By contrast, the activity at Sea Bank Farm appears somewhat later. The dwindling of Fenland salt production as the Romano-British period progressed would seem to run counter to expectations, as one might assume that as a commodity it provided its producers something to offer to meet tax demands or for trade within the more accelerated markets of the Roman province, when the range of available goods increased. In addition, with the Roman road network opening up opportunities for more distant trade, salt would have allowed formerly perishable goods to reach the new markets within the towns and military installations of the province. These factors may have been behind the success of the industry in the early part of the period, but with rural settlements in the region decreasing in number from the 2nd century AD onwards (Allen 2016, 247–9; Smith 2016, 147–9) it appears that the industry was caught up in the same overall trend. No post-Norman Conquest saltern sites were recorded along the Interconnector (in contrast to the results from the Hornsea Project One cable route in the northern Lincolnshire Marsh: Tuck 2023), and this is presumed to be because it was only at its landfall around Sea Bank Farm that Viking Link intersected the medieval coastline.

Both of the Interconnector salterns appear to be outliers when considered against the distribution of known sites (Lane 2005, fig. 1; Willis 2022, section 8.8). Within the southern Lincolnshire Marsh, a notable cluster of Late Iron Age or Romano-British saltmaking sites is known at Ingoldmells, and Sea Bank Farm is 12 km north along the coast from there. In terms of the northern Fens, two distinct clusters of saltmaking sites are recorded, one at Wrangle and the other at Billingborough, with Mown Rakes lying equidistant between them in a relatively 'quiet' area (Lane 2005, fig. 1). It is unlikely that both of the Interconnector saltern sites are genuine outliers, with their discovery serving as a minor corrective to uneven reconnaissance in the past.

The sites themselves do not offer much insight into salt production techniques, beyond the generalities already known regarding the presence of both discrete and linear features to store water and control its movement around the working area, and the application of heat in hearths or ovens to produce the salt. Poor preservation of saltern sites is described as 'a common aspect of the extant evidence' (Willis 2022, section 8.8) and this was a factor at Viking Link, with both sites found directly under topsoil and therefore plough-truncated. In addition, the restricted working area meant that the full extent of neither site could be seen in plan, further hindering attempts to interpret the arrangement. Still, at Mown Rakes, ditch 530298 may have been a feeder ditch, dug to 'encircle' pond 530220 which could have functioned as a settling tank: the encircling expedited quick filling of the pond as the tide came in. In contrast, at Sea Bank Farm, the Romano-British briquetage came from a cluster of 10 pits that did not show any signs of scorching, with no ditches or gullies recorded, so it is probable that at that site the true focus of saltmaking lay beyond the stripped area. Similarly, the Late Saxon evidence for saltmaking at that site (sooted and salt-bleached pottery and fired clay found together in a sealed context – pit 200063 – but with no identifiable hearth or oven) would fit more with that activity being carried out in the vicinity than an *in situ* saltern.

Lane (2005, 53) reported a lack of consensus on which fuels were used in Fenland saltmaking, and the Interconnector provided no strong evidence capable of resolving this question. Environmental remains found at Mown Rakes may be consistent with the use of turves or peat as fuel, with the use of alder and willow/poplar (either as firewood or as prepared charcoal) also a possibility. It is possible cereal chaff was used as a fuel in the saltmaking at Sea Bank Farm. Lane's suggestion that 'the fuel sources varied' (*ibid.*) seems to be supported by the evidence, and as has been pointed out by Treasure above, the use of different fuels probably reflects deliberate choices linked to the production of different grades of salt.

The identification of the saltmaking near Sea Bank Farm is a useful addition to the small corpus of such sites known to be of Anglo-Saxon date (Fenwick and Lillie 2001, 231; Green 2023, 119), and the salt-bleaching on some of the sherds at Back Lane may extend the range of this activity to the northern Fen-edge. Although the existence of salterns in the early medieval period is historically attested, with such sites recorded within the *Domesday* survey, few have been excavated (a Late Anglo-Saxon comparator is known at Marshchapel, but that lies 25 km north: Ellis *et al.* 2001, 137–158) and the chronology of Anglo-Saxon salt production was a research goal identified when the East Midlands Research Agenda was drawn up (Vince 2006a), with little progress since. The *Domesday* survey lists 20 'salthouses' in Mablethorpe (around 5 km north of Sea Bank Farm), revealing something of the scale of the saltmaking industry on part of the coast by the Late Anglo-Saxon period. Most salterns recorded in *Domesday* were under manorial control (Roffe 2005, 282), but the tenorial arrangements in operation during the final phase of saltmaking at Sea Bank Farm are unknown. The 10th–11th-century radiocarbon results recorded from Sea Bank Farm provide a likely *terminus post quem* date for the construction of the eponymous coastal defence, as once built it would presumably have interfered with the free flow of tidal waters that the saltmaking would have required. The sea bank was 'probably created or conceived in the Late Saxon period ... but perhaps not a continuous earthwork until rather later' (Penn 2005, 295), and is referred to after the 11th century at Mablethorpe (i.e., close to Sea

Bank Farm) and elsewhere (Stafford 1985, 6), and the findings from the landfall of the Interconnector are not at odds with this chronology.

That saltmaking formed an important part of the regional economy is widely stated, but as a fragile (soluble) product it is difficult to identify where it was traded to. The only briquetage containers found along the Interconnector route were at Mown Rakes and Six Hundreds Drove, and so coincided with the area of salt production. No containers were recovered from any of the inland Interconnector sites to suggest that salt may have been traded there. This aligns with regional norms: ‘there is not a single sherd of briquetage inland from this [Fenland] area which is rich with salt production sites’ (Lane and Morris 2001, 399), and the ongoing difficulty of identifying consumer sites and the reach and distribution network of the salt manufacturing sites was more recently commented on by Willis in his regional review (2022, section 8.8). The transect across potential saltmaking areas and the country inland of them offered by the Interconnector route has only recorded an absence of data that confirms this characteristic rather than finding evidence to shed any light on the matter. It is possible that the salt was transported inland in ‘perishable organic containers such as leather/skin or cloth bags’ (*ibid.*) which would leave little to no archaeological or trace. It might be useful to consider whether viewing the saltmaking as the production of a commodity destined for trade and exchange inland is a misstep – could the process and spectacle of saltmaking have been the primary reason it was carried out? Perhaps the salt was soon returned to the water as part of some symbolic rite? Superstitions exist to this day regarding the ‘wasting’ of good salt (throwing it over one’s shoulder). This is a merely a thought-experiment rather than a serious hypothesis, but it is seldom detrimental to question the preconceptions we bring to any archaeological evidence.

Research Theme 6: the Development of Funerary Monuments and Changing Burial and Memorial Practices

Human remains were recovered from six locations in all three landscape zones along the Interconnector route, and range in date from Middle Bronze Age to Middle Anglo-Saxon. Other than the two inhumation cemeteries, bone quantities were generally sparse and widely spread, so the results appear typical for a rural area such as this. The remains of a maximum of 43 former inhabitants of this landscape were encountered, a low number considering the length of the scheme and the timespans involved, but one which reflects the existence of funerary traditions, operational for long periods of time, that rendered the dead largely archaeologically invisible (Brownlee and Klevnäs 2024; Harding 2016; Lucy 2000, 139). In most cases, therefore, the people whose remains were recovered had been treated in an anomalous way upon their deaths.

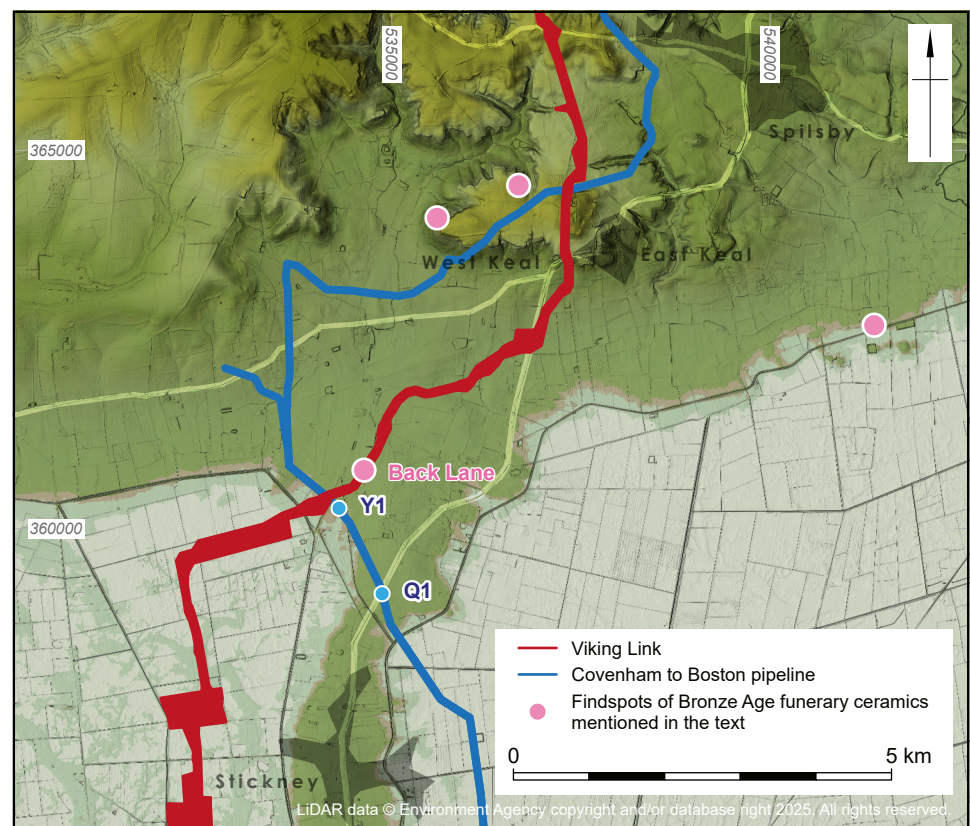
Table 5.4 Summary of human remains from Viking Link

Zone	Site	Period	Summary of remains
1	White Crofts	Middle Romano-British–Early Anglo-Saxon	Inhumation cemetery: 12 individuals
2	Walk Hill	Later Romano-British	Disarticulated bone: 2 individuals
	Callow Carr	Early–Middle Anglo-Saxon	Inhumation cemetery: 24 individuals
	Back Lane	Middle Bronze Age	Cremated bone: 1 individual
3	Mown Rakes	Early–mid-Romano-British	Cremated bone: 2–3 individuals
	Gibbet Hill	Late Romano-British	Disarticulated & manipulated bone: 1 individual

The earliest remains were found on the Fen-edge at Back Lane, where 65.9 g of cremated human bone deriving from an adult of unknown sex and aged over 30 years at death was recovered from the fill of a curvilinear ditch. Radiocarbon determination provided a Middle Bronze Age date (SUERC-126879). The nature of the deposit was not identified at the time of excavation, so further bone may have been recovered had more of the feature been sampled. The full extent of the ditch was not exposed within

the confines of the stripped area, but it may have originally formed a circle of around 12.5 m diameter. This has been tentatively identified as a barrow, and would represent an outlier within the regional distribution of Fen-edge barrows that appear more numerous further south (Hall and Coles 1994, fig. 39; Malone 2014, 13). The existence of other examples from the northern Fen-edge has been suggested by the slight evidence of contemporary funerary activity nearby (Fig. 5.10): four inhumations, as-yet undated, were recovered 1.8 km south at site 'Q1' of the Covenham to Boston pipeline (Oxford Archaeology East 2014, 54–55). Lane and Hayes mentioned Collared Urns and other pottery potentially linked with human remains from Toynton St Peter and West Keal following the Fenland Project survey of those parts, and also identified a potential barrow on the East Keal/Hundleby border (1993, 47). In addition, a Middle Bronze Age cinerary urn was found in the early 20th century on Hall Hill, West Keal (ML140899). These findspots are all around 5 km from Back Lane, where human bone radiocarbon dated to the Middle Bronze Age now provides the first direct evidence for funerary activity on the northern Fen-edge at that time. How the individuals buried at site Q1 of the Covenham to Boston pipeline contribute to this emerging picture is not yet known.

Figure 5.10 Back Lane and other prehistoric funerary remains



The Bronze Age barrow at Callow Carr is one of over 350 recorded in the Lincolnshire Wolds (Bennet 2009, 24), a 'striking' concentration of such monuments, and these also form a link with how the land was used in the Neolithic (May 1976, 73, fig. 39). No Bronze Age funerary remains were recovered from Callow Carr; body-less barrows and apparent 'cenotaph' burials are a feature of prehistory (Cooper *et al.* 2020), but as the monument was poorly preserved (and not fully revealed) it is impossible to know whether or not Callow Carr was an outcome of such practices, or whether human remains had originally been present but were subsequently destroyed. It is more certain that, given the Beaker pottery along with two radiocarbon dates (one Late Neolithic–Early Bronze Age and the other Middle Bronze Age) from the feature's ring ditch, that the monument was of genuine antiquity and remained a focus for activity over a long period within prehistory. The chronological sequence between the Callow Carr monument and the scheduled Ring Holt barrow (NHLE 1017466) situated 200 m to its south-west is not known, but the combined presence of these monuments suggests this point in the landscape was thought significant in prehistory. This might be linked to

the area it overlooks: Callow Carr is situated on the crest of a slope on the southern edge of the Wolds with a long view over the Lymn Valley. Modern Ordnance Survey mapping shows a stream rising in the woodland that lends its name to the site and which flows southwards to join the Lymn (an association between barrows – albeit long barrows – and streams and spring lines on the Lincolnshire Wolds has been previously noted: Drury and Allen 2020, 126; Phillips 1994, 33). The southward view from this point in the landscape has attracted comment at another point in the past:

One of the finest parts of Lincolnshire I have seen, and it would be reckoned fine in any county, is from the hill above Dalby to Spilsby; from that hill the view of rich inclosures, spreading over a varied vale, and the opposite hill, with Partney church and village, rising on a knoll amidst some wood, with the grounds about Mr. Bourne's, altogether form a very pleasing scenery (Young 1799, 4).

This excerpt gives a sense of the scope of the outlook, if not the landscape details, that might have drawn the Bronze Age monument builders to this location. A visibility analysis exercise was carried out for the barrow, and provides a different description of the view (Fig. 5.11), more data-driven and less effusive, but both are valuable. The visibility exercise illustrates how the position of the barrow gave it commanding views over the Lymn Valley, and this is presumed deliberate. Sightlines enable a sense of connection, and although many barrows were not positioned to command such views, it is generally believed that barrows were one of the ways in which territories could be marked, or communities could express and reinforce their links with the surrounding landscape, perhaps even 'harnessing the meaning of the hills' (Lewis 2007, 82). The strong sense of connection between the barrow's location and the Lymn Valley might support the notion that it had been sited specifically to overlook the home territory of those who had built it, in the same manner as that advanced for the Peak District (Barnatt and Smith 2004, 38).

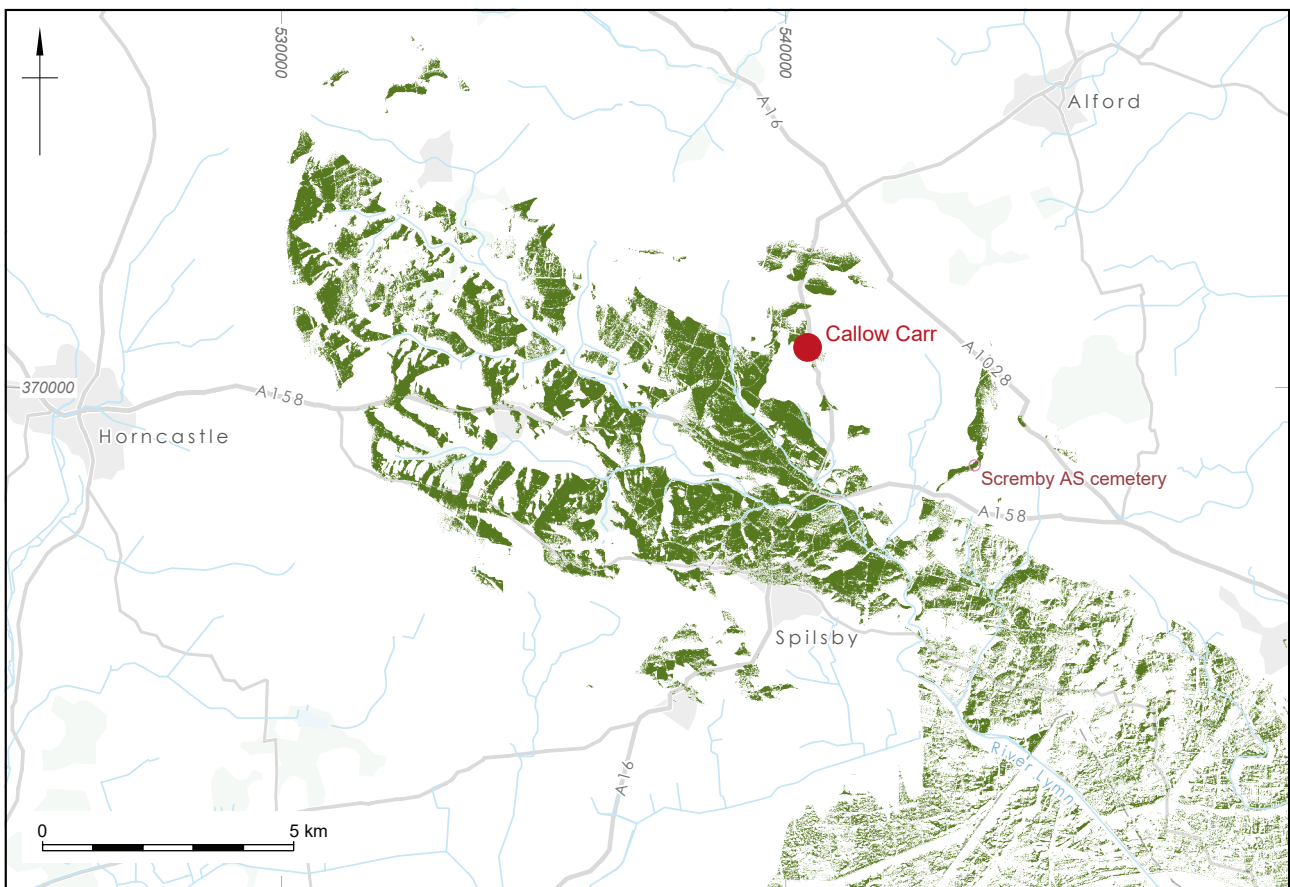


Figure 5.11 Area visible from Callow Carr barrow

With the barrow razed to the level of the chalk bedrock, there was no real sense from the monument's prehistoric phases of the lengthy sequence of construction, adaption and change often recorded at such sites (Last 2007, 10), although the cut feature recorded where the mound is presumed to have stood and the timespan of the material covered by the material found within the ditch do suggest this monument also developed over time. The (re)use of the monument for the deposition of the dead in the Early–Middle Anglo-Saxon period is very clear, however, and that topic is dealt with in the next section, which considers how well the project research theme relating to the Anglo-Saxon period has been addressed. One point can be made at this stage, however: a recent research summary for the Lincolnshire Wolds posed the question of whether early medieval communities 'avoided burying their dead near Neolithic and Bronze Age barrows or re-used and appropriated such monuments' (Last and Willis 2023, 22). Callow Carr allows us to state that it is the latter option that is most accurate. Its re-use forms part of a phenomenon identified at the national level, with around a quarter of all known Anglo-Saxon funerary sites focused on earlier monuments, mostly Bronze Age barrows (Williams 1997; 1998). The results from Callow Carr reveal that the practice extended to this part of the Lincolnshire Wolds also.

In their 2023 review of the archaeology of the Lincolnshire Wolds, Last and Willis identified a number of places that contain features from multiple periods and where there is 'a strong sense of age and time in the landscape ... This throws up a group of parishes which mainly lie on higher ground at the heads of valleys in the central and south-eastern Wolds' (*ibid.*, 29). Following the Interconnector investigations, it is now clear that the area around Callow Carr, in the parish of Dalby, merits inclusion within their number.

No human remains were recovered from the Iron Age deposits encountered along the Interconnector, with the next such evidence belonging to the Romano-British period – a gap in the record of some 1500 years. The deposition of the cremated remains at Mown Rakes and the first use of the inhumation cemetery at White Crofts appear, from the radiocarbon evidence, to have both occurred in the early–mid-Romano-British period. Both rites were practised across Roman Britain throughout the period, although inhumation came to be the dominant form as the period progressed (Smith 2018). A second deposit of cremated bone found at Mown Rakes represents the cremation of a different individual, although it appears broadly contemporary with the first, and perhaps even utilised the same woodpile (see *Treasure* above). No major Romano-British cemeteries have been found around the Fen-edge, with single or small numbers of burials found instead (Hall and Coles 1994, 114), and the evidence from Mown Rakes fits this pattern. Of the two features at Mown Rakes with human remains, one has been characterised as a grave, with the other containing pyre debris (see McKinley in Volume 2, Chapter 8). The bone within the grave represents around one-fifth of the amount expected from a modern adult cremation, so it is probable that the remains of this individual came to rest in various locations. The pyre debris contained bone from one or two other individuals, and the Mown Rakes assemblage overall serves as a reminder that the focus for much mortuary practice during the period was not the interment of the complete remains of a specific person. This suggests that less emphasis was placed on the individual at death in comparison with some other times and cultures, not least our own.

Given the narrow width of the stripped area, it is difficult to discern what, if anything, might have been considered sufficiently special about this location for the Mown Rakes grave to have been dug where it was. Although not lying near any obvious point of interest, such as an entranceway or trackway, it was situated at the southern end of the Mown Rakes site, on the edge of the activity there. Given the low-lying elevation of this water-margin site (here at 1.8 m OD), it may have been viewed as a location whose liminal setting, redolent of change, boundaries and submergence, matched indigenous conceptions of life and death. That such beliefs affected mortuary practice can also be detected at Gibbet Hill, where the left humerus from an adult male was

recovered from a ditch running along the edge of a roddon. The humerus shows clear evidence for deliberate human manipulation (principally defleshing and dismemberment), a practice not uncommon in the Iron Age (Harding 2016) but here dated to the late Romano-British period. Once again, it was a liminal location likely lying on the border of dry and wet land, inhabitable ground on the one hand and the 'wild' fen beyond on the other, that was chosen as the resting place for this presumably ritually charged body part, a metaphor-through-landscape that probably encompassed other foundational binaries, namely life and death.

Signs of polish on the Gibbet Hill humerus suggest prolonged handling following its obtainment and indicate no little complexity to the ways in which it was used subsequently, with many stages apparently separating the individual's death and the final deposition of their humerus. This finding is supported by the results of the histological analysis, which also determined that burial at death of the intact corpse followed by its exhumation probably did not occur, but with the corpse, or this element of it, instead seemingly afforded some degree of 'sheltered storage' before dismemberment (see O'Brien Butler and Madgwick in Volume 2, Appendix D). The evidence from Six Hundreds Drove suggests the cessation of that settlement at some point shortly before the mid-3rd century (with activity at Mown Rakes ending a little earlier), around the same time as this individual died, and it may be that the treatment of the Gibbet Hill humerus and its deposition, perhaps even the death of the person represented, occurred as a reaction to the anxieties that accompanied a time of change and displacement. Did the humerus of an adult male symbolise strength, and by extension, community resilience?

The use of disarticulated body parts within the spectrum of Romano-British funerary practice is further demonstrated at Walk Hill. This site was situated high on the chalk Wolds and so offers as different a topographic locale to Mown Rakes as the local landscape affords. Here, the remains of two individuals were recovered: a neonate represented by a fragment of (once again) left humerus and pieces of the skull of an adult ?male aged 35–55 years at death. The skull fragments came from a crop-dryer and the neonate humerus was found in a ditch, around 6 m south of the second crop-dryer recorded at Walk Hill. Both pieces appear later Romano-British in date, with the radiocarbon dates from the Gibbet Hill humerus and the Walk Hill skull fragments appearing very similar (SUERC-108720 and SUERC-126882). In contrast to the Fenland sites, the ceramic evidence from Walk Hill indicates some level of activity until the very end of the Romano-British period, although the date range encompassed by the radiocarbon result from the skull fragments from the crop-dryer does not rule out the possibility that they represent a discretionary deposition event undertaken as a reaction to the decline of that site also. The skull fragments came from the uppermost fill of the crop-dryer and may have been placed there to mark the closure of the feature and the cessation of the activity it represented.

Analysis of the dates of disarticulated body parts undertaken during the course of the *Rural Settlement of Roman Britain* project found an 'approximately even distribution between the Late Iron Age/early Roman and mid- to late Roman periods' (Smith 2018, 277). Just as the widespread occurrence of mortuary practices that rendered the dead largely archaeologically invisible seems to have continued from the Iron Age into the late Romano-British period and beyond (Brownlee and Klevnäs 2024), so too – occasionally – did practices associated with disarticulated human bone, with Walk Hill and Gibbet Hill revealing that local communities drew upon such practices into the later Romano-British period.

Further Romano-British funerary remains were recovered from White Crofts on the Lincolnshire Marsh, where a small inhumation cemetery was found set among the field boundaries of a farmstead. The majority of the burials appear to belong to the mid–late Romano-British period, so would have been made within a working agricultural landscape, as pottery of the same date was recovered from many of the surrounding ditches. White Crofts lies within the 'North-East' area as defined by the *Rural Settlement of Roman Britain* project (Smith 2018, table 6.2), where inhumation burials

became much more common as the period progressed, and this cemetery appears to be a local expression of this trend, as well as an important discovery, given the lack of nearby comparators (*ibid.*, fig. 6.7). With its clustering of individual whole-body burials, the White Crofts cemetery appears to be the product of a more 'normal' funeral rite, and again seems to represent a local manifestation of broader developments (*ibid.*, 209). However, as discussed below (see Boston in Volume 2, Chapter 8), such a sense of familiarity may be a little misleading, as the largely adult male composition of the cemetery suggests that only certain individuals were afforded burial here, an impression reinforced by the long duration of its use (modelled at 245–405 years). Furthermore, the recovery of the disarticulated femur and skull fragments from grave 301291 demonstrates that the use and deposition of body parts continued to have a role in local funerary practice in the 5th–6th centuries AD. With no recut recorded within the grave and the disarticulated pieces found directly overlying its original occupant, it would follow that the remains of both individuals were buried together, and (given the anticipated rate of decay of an unburied human corpse) that the articulated individual post-dates the radiocarbon result obtained from the disarticulated pieces – i.e., that the White Crofts cemetery remained in use, or at least was re-used on one occasion, following the end of the Romano-British period. Such examples of post-Roman continuity are generally very rare, especially within rural settings or from funerary sites, where 'searches for continuity between late Roman and Early Anglo-Saxon burial rites have been largely unproductive' (Lucy 2000, 150). But at White Crofts the persistence of the notion that this part of the landscape was an appropriate place to bury the dead and the sort of rites employed together suggest the continuation of some hold-out 'Roman' population into the uncertain political and social setting of the 5th–6th centuries. As Boston suggests in Volume 2, the survival of this social group may be bound up with the imbalanced age and sex profile recorded at the cemetery – might they represent members of a militia? Whatever the answer, the concentration of 'fighting-age males' at White Crofts could reveal the enhanced status of that cohort of the population around the time that the cemetery was in use.

The Interconnector investigations have identified hitherto unknown mortuary monuments and burial grounds in this part of Lincolnshire and revealed details about the ways in which some individuals were treated after death at various points in the past. The results largely conform to regional trends, but it is necessary to capture their local expression if geographic and temporal nuances are to be identified. In particular, the heterogeneity of mortuary rites in the Romano-British period has been highlighted. However, to restate the point made at the head of this section, for most of the pre-Christian past, the dead were subjected to treatment that rendered them invisible to the archaeologist and presumably similarly so to their living contemporaries after only a short period. Those individuals described above were afforded anomalous rites, but as it is impossible to compare them to 'the invisible majority', what marked them out for such different treatment cannot be known. How these behaviours found local expression in the early medieval period – the Anglo-Saxon ways of death, and also life – is considered in the next section.

Research Theme 7: Anglo-Saxon Sites, Burial Rites and Possible Cultural Boundaries and Trading Networks

Settlement

The Anglo-Saxon occupation of the area was organised out of 'small farmsteads and minor settlements' (Bennet 2009, 27), although the Interconnector results demonstrate traces of these are much less conspicuous in the archaeological record than their Romano-British or even Iron Age predecessors. Excavated settlement sites of Anglo-Saxon date are regionally rare (Albone 2000, 3; Green 2020, 41; Stafford 1985, 167) so the evidence from the Interconnector, despite its thinness, is of some importance. The structures from the period that were identified along the route are summarised below (and see Table 5.5 and Fig. 5.12).

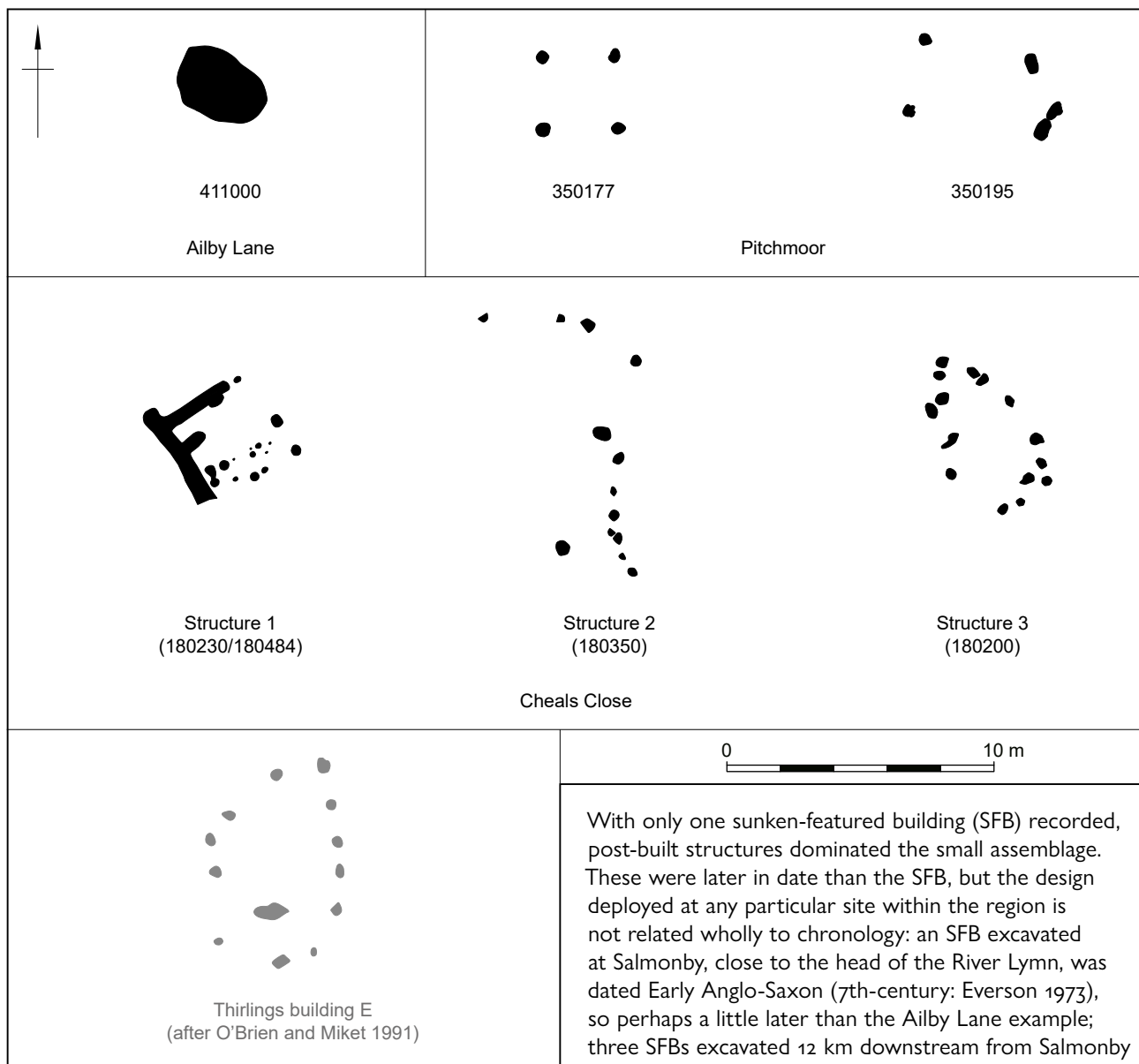


Figure 5.12 Anglo-Saxon structures from Viking Link

Anglo-Saxon finds (Ramsey 2004), and a further three SFBs have been excavated at Church Road, Boston (Palmer-Brown 1996) where they were found to be Middle Anglo-Saxon (8th century) in date. These local comparator SFBs were 2.80–4.60 m long, 1.20–3.25 m wide and 0.14–0.70 m deep (mean: 3.55 × 2.43 × 0.33 m), so the Ailby Lane example (3.4 × 2.3 × 0.5 m) sits comfortably within this range, suggesting such buildings tended to be dug with a fairly well-established and static notion of their necessary size in mind. A subrectangular feature (493: 5.9 m by 4.7 m and 0.4 m deep) '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' (Tuck 2023, 79) excavated on the Hornsea Project One cable route in north-east Lincolnshire was interpreted as a pit, but also resembles an SFB, albeit larger than these southern Lincolnshire examples quoted here. It was dated to the Early Anglo-Saxon period (mid-5th to early/mid-6th century) on ceramic evidence. As SFBs 'rarely occur in isolation' (Gates and O'Brien 1988, 8) and are commonly recorded alongside post-built structures (Hamerow 2002, 32; Tipper 2004, 10), it may be that further contemporary buildings are located beyond the stripped area at Ailby Lane.

The Anglo-Saxon post-built structures (PBSs) from the Interconnector route also appear similar to local examples, although these are less geographically close than the comparator SFBs: at Goltho, 30 km west of the Interconnector, two Middle Anglo-Saxon

Site	Feature	Type	Shape in plan	L. (m)	W. (m)	Dating	Orientation
Ailby Lane	411000	SFB	Oval	3.4	2.3	Early Anglo-Saxon: <i>cal</i> AD 440–575; UBA-52881 & UBA-52883, plus residual ¹⁴ C; Pot some 7th century AD	NW–SE
Pitchmoor	350177	Post-built	Square	2.7	2.7	5th–8th-century AD pot	E–W/N–S
	350195	Post-built	Rect.	5	2.85	5th–8th-century AD pot	WNW–ESE
	Structure 1 (180230/180484)	Beam slot with post-built	Square	4	4	N/A	NW–SE
Cheals Close	Structure 2 (180350)	Post-built	Rect.	10	6.2	Middle–Late Anglo-Saxon: <i>cal.</i> AD 780–880, UBA-52907 & UBA-52908	NNW–SSE
	Structure 3 (180200)	Post-built	Oval	6	3.2	Middle–Late Anglo-Saxon: <i>cal.</i> AD 775–895, UBA-52958	NNW–SSE

Table 5.5 Anglo-Saxon structures from Viking Link (dimensions in metres)

post-built houses of a comparable size to structure 2 at Cheals Close (the largest from Viking Link) have been excavated (Beresford 1987, 25). Generally speaking, however, the ‘local’ PBSs were found in the south of the county, especially its Fenland parts (where poorer drainage may have made sub-surface dwellings less favoured: Hamerow 2002, 32). A subrectangular PBS at Hoe Hills, Dowsby, measured at least 6.5 × 4.5 m and provided slight evidence of an Early Anglo-Saxon date (Crowson *et al.* 2005, 61); a horseshoe-shaped arrangement of postholes at the same site was undated, but brings to mind some of the ‘baggier’ structures at Cheals Close. Another siltland PBS, at Mornington House, Gosberton, measured 9.3 × 4.4 m and although formally undated was allocated a Middle Anglo-Saxon date on the basis of nearby remains (*ibid.* 107–9). A total of eight PBSs were identified at Quarrington near Sleaford (Taylor *et al.* 2003); these had a variety of ground-plans (circular, horseshoe, subrectangular, rectangular) and the date of the settlement overall was Early–Middle Anglo-Saxon, with circular designs giving way to more orthogonal arrangements over time (*ibid.*, 273). Structure 2 at Cheals Close measured 10 × 6.2 m, so was bigger than the largest at Quarrington: that site’s ‘structure 1’ measured 9.5 × 4.5 m. A national review of Anglo-Saxon PBSs found an average dimension of approximately 10 × 5 m (Marshall and Marshall 1991, 34), so Cheals Close structure 2 is within accepted bounds albeit a little broader than the mean. The range of widths was generally more constricted, ‘a fact that can be explained by the lengths of timber available for use as a single beam to span a building, and by the strength of timber when used for this purpose’ (*ibid.*, 35). The above-average width of Cheals Close structure 2 might be because of its later date: Marshall and Marshall identified a correlation between size and date (*ibid.*, 42), and the radiocarbon dates from the structure are 8th–9th-century *cal.* AD. Alternatively, the possibility that its width reflects the fact it was not a building but a fenceline instead (the structure described a right-angle rather than a complete rectangle) should be borne in mind, however.

The Pitchmoor examples are situated very much at the lower end of the range of Anglo-Saxon PBSs, and it may be that they were actually Iron Age four-post structures with intrusive Anglo-Saxon pottery. The ceramic evidence may be reliable, however, and their scale is on a par with the SFBs known nearby. As ‘*Grubenhäuser* are rare on settlements where the underlying geology is chalk bedrock’ (Tipper 2004, 65), this may be the reason for the cutting of postholes into the chalk at Pitchmoor as opposed to relatively large pits.

It is less easy to identify close local comparators for the oval structure 3 at Cheals Close. Some of the earlier, circular arrangements at Quarrington (structures 3, 5 and 6: Taylor *et al.* 2003, fig. 7) are reminiscent of its form, although the best parallel that could be identified during the preparation of this volume was from 300 km north, at Thirlings in Northumberland. Around 12 buildings were recorded at Thirlings, where radiocarbon dating put the settlement in the mid–late 6th century AD (O’Brien and Miket 1991). Of these, ‘building E’ formed an oval arrangement of 12 postholes that defined an area

6.3 m north–south by a maximum 4.2 m east–west, with something of a gap in its south-west corner, and in its size and other details bears strong similarities to Cheals Close structure 3. A fragment of animal bone and a piece of lead alloy metalworking waste formed the sum total of the finds from Cheals Close structure 3, and with seemingly no artefactual material or dating evidence recovered from Thirlings building E, any link between the form of these buildings and their use for any particular activity remains unknown.

'F'-shaped footings trench 180230, which formed part of Cheals Close structure 1, also lacks close local parallels. A potential beam slot was recorded at Quarrington, where it was described as 'representing a structural style hitherto unrecognised' at that site (Archaeological Project Services 1996, 15). Six 'continuous trench buildings' were recorded at Thirlings (O'Brien and Miket 1991, 61), and although this is not thought especially significant given the geographic distance between that site and Cheals Close, and their differing dates, the presence at both locations of buildings using earthfast posts and sill beams, and the similarity of Cheals Close structure 3 and Thirlings building E, is worth bearing in mind.

Finally, the welcome discovery of the six Anglo-Saxon structures on the Interconnector route should not mean the less conspicuous signs of settlement elsewhere are overlooked. Two Anglo-Saxon pits (3211 and 5202) at White Crofts contained a range of finds and environmental evidence strongly suggestive of middening. These features therefore signal a degree of (re)occupation somewhere on or around the site, despite the absence of any accompanying structural focus.

Evidence for subsistence and other settlement activities was on the whole rather sparse from the Interconnector's Anglo-Saxon sites. Cattle bones dominate the faunal assemblage from the period, although sheep were also raised – and of some special value, to judge by the joints of lamb and mutton placed in the graves at Callow Carr. The presence of pig and horse is also confirmed by the faunal remains, but little more can be said. Processing of cereal crops is well-evidenced in the environmental samples, and reveals that during the period the region conformed to the broader trend of a transition from the cultivation of hulled cereals to the full adoption of free-threshing or naked wheat, and in particular bread wheat, alongside the cultivation of barley, oats and rye. Occupation of the site at Ailby Lane seems to have taken place against a backdrop of hedged field boundaries. Isotope analysis of some of the individuals from Callow Carr (see Volume 2, Appendix C) indicates they ate a consistent and typical diet for the period predominantly based on terrestrial C₃ protein from plants and animals, some animal protein (e.g., milk, cheese, meat), but with little to no input from marine resources, a picture not markedly different from the results from the earlier cemetery at White Crofts.

The best evidence for other activities undertaken within the Anglo-Saxon settlements comes from Callow Carr and Cheals Close. Two loomweights of probable Anglo-Saxon date were recovered from ditches at Cheals Close, such finds being fairly common elsewhere: 'Few excavated domestic sites have not produced loom weights or even remnants of woollen textiles to testify to the weaving of cloth from local wool' (Stafford 1985, 27; see also Penn 2005, 293). Such activity is also evidenced at Callow Carr, where nine spindlewhorls were recovered, alongside spindle hooks and fragments of mineral preserved textiles on some of the metal objects. More broadly, the grave goods from Callow Carr and other cemeteries provide something of a counterbalance to the rather austere picture presented by the settlement sites (Stafford 1985, 155); indeed, some people in early medieval Lindsey had access to elephant ivory from East Africa (Drinkall and Foreman 1998, 285–6; Hemer *et al.* 2023) and garnet from the Indian subcontinent (Pearce 2024). Encountering the novel textures and rich colours of such objects may have sparked stories and been a long-remembered event for many. The ways in which such prestige objects were used means that they were unlikely to be recovered from the ditches of Cheals Close or the other settlement sites along the Interconnector route, however.

Burial rites

In his analysis of its grave finds, Schuster has considered various aspects of the burial rites carried out at the small Early–Middle Anglo-Saxon inhumation cemetery at Callow Carr (see Volume 2, Chapter 8), so this section is restricted to a more general overview of the character of that cemetery. But, by way of brief summary, Schuster has been able to broadly identify how the cemetery developed over time, and picked out something of the attitudes and practices that appear to have influenced the selection and arrangement of grave goods that accompanied the deceased. For instance, while some grave goods that are generally considered to be indicative of feminine gender did indeed correspond with the graves containing osteologically sexed females, knife-and-buckle combinations (typically interpreted as reflecting masculine gender: Stoodley 1999) were recorded in graves of both sexes. In addition, the provision of vessels, which is typically influenced by the biological sex of the deceased, is also a little different from national trends, with metal-bound buckets found accompanying more males than might be expected. Other findings follow norms more closely (such as the rarity of weapons given the date of the burials, and the variety within grave/body orientations/positions). Interestingly, several adjacent burials were either furnished with a conspicuously similar group of objects and/or the objects were placed on or around the body in a similar manner, with such mirroring presumed to mark kinship or other interpersonal relationships. Overall, the picture from Callow Carr is of a small but not isolated community selecting from – and at times adapting to meet their own needs, concerns and beliefs – a widely but not rigidly held suite of depositional practices. Lucy has commented on the ‘rich variation in burial rites that we reveal through excavation’ (2000, 65) and Schuster’s work, presented in Volume 2, records how this found local expression at Callow Carr. A necessary caveat is that ‘a fifty-grave cemetery is generally agreed to be the absolute minimum from which valid generalisations about burial practices can be made’ (Hirst 1985, xvii), but it is nevertheless reasonable enough to comment on the general character of the assemblage, and highlight certain details of interest within and between graves.

The site adds important detail to the understanding of funerary practices within Lincolnshire, where many of the published early medieval cemeteries pre-date Callow Carr, were larger, or dominated by cremation burials (e.g., Quarrington: Dickinson 2004; Castledyke: Drinkall and Foreman 1998; Cleatham: Leahy 2007). In particular, while there are various Anglo-Saxon funerary sites known within and around the southern Lincolnshire Wolds, this is the first to have been excavated to modern standards and for which a comprehensive publication is available. The use of the cemetery appears to date to a c. 80–100-year period between the middle or later 6th century and the later 7th century AD. Its founding therefore occurred around the same time as the ‘emergence of a pre-eminent Anglian group in the Lincoln region’ and the consequent formation of the kingdom of Lindsey (Green 2020, xxxiii–iv). Lindsey changed hands between the Anglo-Saxon kingdoms of Mercia and Northumbria a number of times, and Callow Carr would have fallen out of use around the time that Lindsey came under ‘permanent Mercian lordship’ (*ibid.*, 39). Whereas cemeteries in the region from the 5th century tend to be large, dominated by cremation burials and have locations that are often interpreted as relating to territories of larger political groupings (Albone 2000, 6; Green 2020, xxxiv), the burial grounds of Lindsey were smaller and more numerous, presumably reflecting a smaller catchment area (and perhaps therefore a more ‘settled’ and established population) where inhumation was the dominant rite, with this involving a wide variety of grave/body orientations, and the heterogeneous use of a range of grave goods (Albone 2000, 6; Bennet 2009, 27–8). This is a picture to which Callow Carr comfortably conforms.

Funerals would have been ‘co-operative actions ... [that] created or recreated bonds and reinforced existing relationships’ (Sayer 2020, 239). This would probably have involved a degree of reciprocity: simply put, ‘the community creates ceremony and the ceremony creates communities’ (Wall Kimmerer 2020, 250). The similarities between burials, in terms of body positions and choice and arrangement of grave goods, reflect

various influences on the burying community, including: the wish to acknowledge the solemnity of the occasion by abiding by tradition; performative allegiance to a socially dominant group; or simply a desire to be seen to be 'doing the right thing' and so earn or maintain respect and status in the eyes of onlookers and the wider community. At Callow Carr, with its largely orderly rows of graves, there is a sense of propriety: each in their proper place (although some were not). Where Schuster has identified adjacent burials furnished with a conspicuously similar group of objects and/or the objects were arranged in the grave in a similar manner, this may have been done to demonstrate kinship relationships, perhaps to underscore (or rebuild) family or household bonds and so send a message regarding the status or even pre-eminence of the groups involved (Sayer 2020, 271). A similarly diverse range of factors would have been responsible for the variety evident within Anglo-Saxon funerary practice: the desire to reinforce the local group by acting in variance to one's neighbours; differences in attitudes to gender, age and status within and between communities; the character and standing of the deceased; changes in the availability of imported materials; and the inevitable passage of time. After a short period (relative to the age of the barrow when the Anglo-Saxon burials started) the use of Callow Carr as a cemetery halted. Anglo-Saxon Christian writing records 'superstitious wariness' towards barrows (Semple 1998, 123), and it may be that the growing influence of Christianity over the wider population in general, and the new power represented by the monastic house at Partney in particular, brought about the end of burial at Callow Carr. Within this scenario, the end of the cemetery could reflect simple prohibition, or the fact that social status could now be better gained from donating to and interacting with the Church than by disposing of material wealth in the ground with the dead (Geake 1992, 92; Lucy 2000, 184).

Figure 5.13 Chalk rubble covering the individual in grave 900131, view from south-west (1 m scale)



Study of the human bone from the cemetery (see Boston Volume 2, Chapter 8) has revealed something of the physical stresses suffered by the local population, although findings were generally limited by poor bone preservation. Fractures and soft trauma speak of a physically strenuous agrarian lifestyle engaged in by both sexes, although this does not appear notably more arduous than that evidenced by other comparable assemblages. Evidence of ankle joint trauma was detected in one individual; in an intriguing possible convergence of the artefactual and osteological data, a ferrule in the same grave may have been part of a crutch or walking stick (see Schuster Volume 2, Chapter 8). Dental health in the cemetery population was good, presumably through the lack of sugars and simple, locally sourced diet. However, evidence for long-term exposure to damp/smoky air in some individuals challenges any notion of some bucolic idyll, as does the presence of bodies of the very young and the remains of a man who had died following a sword or seax blow to the back of his neck. Interestingly, this

body had been covered with a layer of chalk rubble before the grave was backfilled (Fig. 5.13). This probably reflects the stony ground the grave had been cut into, but could also reveal a desire to 'confine' this particular individual to their grave, a practice that is recorded in some Romano-British burials (Black 1986). It also brings to mind the 'spread of chalk lumps and blocks' found sealing the deviant burial (a double burial with one individual interpreted as having been buried alive) recorded at the Anglo-Saxon cemetery at Sewerby, East Yorkshire (Hirst 1985, 35ff). It is uncertain whether the fate and subsequent treatment after death of the Callow Carr individual was linked to the fact that isotope analysis (see Volume 2, Appendix C) reveals that he had spent his early years outside the local area, possibly in north-eastern Britain, northern France or Germany. Nevertheless, at death he was afforded a place at the cemetery (and as part of an orderly row of burials) and was laid to rest with a knife and buckle in the same manner as other members of his community. The apparent contradictions bound up within this burial underscore the general point that grave goods and funerary rites show the dead mattered to the living, although it is not always straightforward to determine exactly how.

The Callow Carr barrow would have been a recognisable feature in the landscape for hundreds of years, and its (re)use as a cemetery shows that it would have been a place of significance in the mental geography of those living nearby in the 6th and 7th centuries AD. Results from the isotope study of some of the individuals buried at the cemetery (see Volume 2, Appendix C) suggests that the population did not live on the chalk Wolds (or near the coast), but probably had a home range in a region south of the Wolds with more mixed geology and who grazed their animals on the Fens. The implication would be, therefore, that the community removed their dead from their home settlements and chose to bring them to this elevated location for burial. The cemetery site at Scremby (4.1 km to the south-east of Callow Carr) might have been nearer to these people, but burials ceased there around AD 540 (Willmott *et al.* 2024, 508). To what extent Callow Carr represents a replacement for Scremby will hopefully be informed by the results of the forthcoming *aGB 1000 Ancient Genomes from Great Britain* project: were the two burial places used by two different and unrelated social groups, or does the pattern reveal different choices and shifting priorities within the same community as the 6th century progressed? Scremby is set at a slightly lower altitude than Callow Carr (60 m as opposed to 88 m), so the overall development appears to mirror the trend noted by Lucy (2000, 152–3) of cemeteries moving higher up through the period. A sense of overlook or skyline visibility may have been more important by the time the Bronze Age barrow at Callow was utilised for Anglo-Saxon burials. Interestingly, the viewshed analysis exercise reveals that while Scremby was technically visible from Callow Carr (Fig. 5.11), the view would have been somewhat restricted, and a clear view of Scremby was unlikely to have been thought of as the primary advantage of the new location, perhaps indicating how people had 'moved on' from earlier practices. Callow Carr forms another example of an Anglo-Saxon funerary site that focused on a Bronze Age barrow (around one-quarter did: Williams 1997; 1998). The burials at Scremby were also focused on a barrow, although as its date is unknown it cannot be argued the presence of the barrow at Callow Carr made it a better location for burial than Scremby in the minds of the people inhabiting the Lymn Valley in the 6th century AD.

Whatever the degree of interrelatedness between the two communities, a comparison of the two cemeteries once Scremby is published will reveal something of the evolution of burial rites within the Lymn Valley between the 5th and 7th centuries. Both cemeteries were similar in having very few unfurnished graves (in contrast to Castledyke South, where a third lacked grave goods: Leahy 1998, 361), and the range of grave goods present will of course be influenced by the different periods within which each cemetery was in use, but it will be interesting to note what commonalities can be charted in how grave finds were deposited. Can antecedents of the 'mirrored' burials identified by Schuster at Callow Carr be discerned at Scremby? One clear difference between the two sites that can be identified at this preliminary stage is that at Scremby

sex influenced how males and females were positioned in the graves (males: supine; females: flexed – Willmott, pers. comm. April 2023), but this distinction was not seen at Callow Carr, where the majority of burials were flexed, regardless of sex. The two sites present a rare opportunity to chart the development of burial rites at an almost intimate local scale during the Early–Middle Anglo-Saxon period.

The Callow Carr barrow and cemetery lies 40 m east from the boundary between the civil parishes of Dalby and Langton by Spilsby. The boundary runs locally on a north–south line and bisects the gap between the barrows at Callow Carr and Ring Holt. Goodier (1984) found that almost one-fifth of furnished Anglo-Saxon burial sites lay within 50 m of a parish boundary, a correlation that could not be dismissed as random chance, so Callow Carr can be seen as one of this number. Goodier tested various potential mechanisms that may account for this correlation, such as: were pre-existing boundaries chosen for Anglo-Saxon burials, or did the boundaries develop later and use the burials as convenient markers? Alternatively, were local topographic characteristics – such as the presence of watersheds – independently influencing the siting of both burials and boundaries? She concluded that the first factor was most likely – ‘the present relationship between civil parish boundaries and early Anglo-Saxon burials was produced by the Anglo-Saxons burying their dead on their own boundaries’ (*ibid.*, 14) – although patterns varied in different parts of the country (Lincolnshire does not appear to have been included in her study). The fact that the burials focused on a barrow might indicate that the Bronze Age barrow had been co-opted to help define the line of the Anglo-Saxon boundary (but see Goodier 1984 and cited literature for counter-arguments). Callow Carr now lies within the parish of Dalby, and so whatever the antiquity of its boundaries, it can be classed as one of the many cemeteries that ‘are in parishes which have Danish “-by” place-names indicating that they were re-named during the 9th–10th centuries’ (Leahy 1993, 38).



Figure 5.14 Ring ditch, cemetery and road at Callow Carr

Trading networks

The Anglo-Saxon communities that existed along the Interconnector route were by no means isolated and were evidently able to draw on various trading and cultural links. These operated over a wide range of distances: on the one hand, a degree of localism is apparent in some of the pottery types, with the latest excavation evidence

further highlighting (rather than resolving) the complexity of ceramic production in Lincolnshire. At the other end of the scale, some within the county in the Anglo-Saxon period had access to gemstones that probably originated in the Indian subcontinent (Pearce 2024), while earlier, elephant ivory from East Africa was buried with the dead at Scremby (Hemer *et al.* 2023). The items that make up the grave finds assemblage from Callow Carr are overwhelmingly drawn from a common bank of Anglo-Saxon material culture, with ready parallels across much of Anglo-Saxon England, and with some items finding their closest comparisons on the Continent (see Schuster Volume 2, Chapter 8). Similarly, the notion of the propriety of placing material goods alongside the deceased draws on widespread Anglo-Saxon cultural practice, even if the exact manner of this was often locally variable. Obviously, not all items were easy to source, and the two whelk shells found in one of the graves at Callow Carr might have been local substitutes for the cowrie shells (which come from the Red Sea or Indian Ocean) often found within Anglo-Saxon burials, as was suggested for the whelk shell found at Castledyke South (Drinkall 1998, 290). This suggestion is supported by the fact that seashells as grave finds tend to be associated with females of child-bearing age (*ibid.*) and the whelk shells at Callow Carr accompanied a 14–16-year-old girl.

Albone's suggestion that 'Lincolnshire was well situated for Continental trade via the North Sea and its navigable internal waterways' (2000, 6) seems borne out by the Interconnector results, where the wide range of late Saxon pottery types found at Sea Bank Farm might be explained by its access to trading routes along the coast (see J. Young above), although Callow Carr displays that less fragile goods made their way further inland. The living in south-east Lincolnshire was evidently sufficiently good to provision its population with goods that enabled them to engage in exchange with other parts of Britain and with the Continent. However, the results of the isotope analysis, where one individual buried at Callow Carr was found to have spent his early years elsewhere, serves as a reminder that at least some of these objects would have entered the area as personal possessions of travellers and migrants, rather than as traders' stock.

Landscape Foci and Continuity of Place

When delivering accounts of archaeological work associated with linear developments such as Viking Link it is a perennial challenge to give the reader an overview of the chronological narrative of the area as a whole while also giving a sense of place by providing site-specific accounts. The nature of the results from each particular project largely determines how this can be best resolved. The following section considers some of the landscape foci and 'persistent places' encountered along the route of the Interconnector.

The Wolds and Lymn Valley

The results from the Interconnector investigations, in their richness and variety, demonstrate the fact that the Lymn Valley is a very special archaeological landscape, with most periods of the past well-represented. Viking Link finds from the valley include Mesolithic and Neolithic worked flint from various locations, a Neolithic axe head found near Cheals Close, signs of Neolithic settlement in the form of radiocarbon dates from pits at Fourteen Acres and Raithby Lane, and a further Neolithic radiocarbon result (albeit residual) from Raithby Crossroads, Iron Age settlement at Raithby Crossroads and Wood Hill, Romano-British field systems crossed at four locations (Partney Leys, Cheals Close, Area 21, Raithby Lane), and an Anglo-Saxon settlement at Cheals Close. In addition, medieval and post-medieval field boundaries were recorded at numerous locations, products of the ongoing cultivation of the local fields following the emergence of the current pattern of villages and parishes within the valley.

These new discoveries from the Lymn Valley supplement the existing corpus of finds and sites that includes (within 5 km of the Interconnector route): Neolithic pottery and flints,

Bronze Age pottery from pits and ditches, the potential ceramic figurine of a bull of Late Bronze Age date, Iron Age features including enclosure ditches and four-post structures, and potential Iron Age rock art (all found between Harrington and Raithby by Spilsby during the construction of the Covenham to Boston water pipeline: Oxford Archaeology East 2014); a 'nationally important prehistoric and Iron Age/Roman ritual landscape to the west of Partney'; a large mid-late Romano-British settlement; and a medieval hospital associated with the monastery at Partney (these last three found along the course of the Partney bypass: Archaeological Field Unit 2005). Other sites of especial significance, still within 5 km of the Interconnector route, include: an Anglo-Saxon settlement at Halton Hologate; an early medieval barrow near Partney; the Anglo-Saxon cemetery at Scremby; and the monastery at Partney itself.

Given this backdrop, the nature of the Interconnector results appears fitting, perhaps even a little disappointing. One aspect of interest is that, despite the variety of archaeology encountered across the valley and the prevalence of Romano-British farmsteads along the route in general, only two such sites were identified in the Lymn Valley itself (at Partney Leys and Raithby Lane). A coarse but nevertheless revealing measure is that within the Lymn Valley, the investigated areas (both excavation sites and evaluation trenches) produced only around 11 kg of Roman pottery, a relatively small amount considering the 7 km of route it represents. In comparison, this is only slightly more than the 9.3 kg of Roman pottery recovered from Magers Lane, while the most pottery-rich site, Six Hundreds Drove, returned 42.6 kg. This modest quantity from around the River Lymn is, however, partly the result of engineering decisions during the planning stages of the project, and would very probably have been much greater if the large, enclosed settlement detected by geophysical survey on the north flank of the valley below Callow Carr had not been avoided. Excavations elsewhere in the Lymn Valley, principally along the Partney bypass, have exposed concentrations of Romano-British features (Archaeological Field Unit 2005), and another large settlement has been proposed at Spilsby (Last and Willis 2023, 21). The suggestion is not therefore that the valley was unfrequented during the period in question, but more Romano-British evidence from the Interconnector route would have been in step with the general findings. One explanation might be that within the Lymn Valley the Interconnector crossed the agricultural hinterland of the larger Romano-British settlements at Partney and Spilsby, and this meant that the reasonably dense pattern of small farmsteads that has been detected elsewhere was less well expressed here. Alternatively, it may be the case that the sites were once present, but have since been ploughed out, although this would not explain the general lack of Roman pottery and other finds. In contrast to the Interconnector findings, an earlier survey described the Lymn Valley as 'an important area of quite dense Roman settlement, aerial photographic evidence revealing a landscape of small "villas" and associated enclosures' (Bennet 2009, 25).

Despite the evident time depth represented by the results from the Lymn Valley, there are few examples of any boundary continuity, where arrangements from one period can be seen to persist into later periods and structure how space was used subsequently. Again, this is partly a function of the narrow width of the examined area, which meant that the full extent of features could not generally be seen. The restricted sample size also reduced the availability of dating material, making the chronological development of any particular site harder to unpick. At several sites, ditches and gullies of different periods follow a common alignment, suggesting little change to the grain of the land over time. This can be seen at Partney Leys and Cheals Close, for example. The practicalities of drainage may be responsible for the evident 'continuity', however, with channels dug either parallel or perpendicular to the contours representing the best way of managing water in all periods. A more convincing example of a boundary surviving for several centuries was highlighted above in the account of the site at Raithby Lane, where the finds and radiocarbon evidence from one boundary (ditch 380259 and its recut) combined to suggest a late Romano-British date, although the line it marked was matched by the course and position of a trackway and field boundary recorded on 19th-century historical mapping. It is possible that these finds

were residual and came to rest in the fill of a post-medieval ditch; then again it may be the case that the ditch was a Romano-British feature that came to be accompanied by a hedge that was maintained into the Victorian period, long after the ditch had become entirely infilled. Certainly, the 19th-century trackway's north-west to south-east orientation matches that of the confirmed Romano-British boundaries at Raithby Lane, and also nearby extant boundaries, so there does appear to be some degree of stability in the grain of the land in this part of the Lymn Valley, despite changes in its agricultural management. This last observation is supported by the radiocarbon date which derived from a piece of heather, and so, residual or not, suggests the presence of heathland around the site in the later Romano-British period.

Everson (1973, 66) proposed a settlement model for the Lymn Valley, whereby 'land on the north-east (south-west facing) slope of the valley, on the terrace of Spilsby sandstone (which gives a well-drained easily-worked soil), usually well placed for water supply' was the first to be settled after the Romano-British period, as suggested by a string of villages with Old English place-names 'regularly spaced at approximately 2–3 km intervals'. Scandinavian place-names were assumed to be later foundations and infilled the less desirable land, especially on the opposite (i.e., north-facing side of the valley). Everson (*ibid.*) admitted that 'complications exist with this simplified pattern of colonisation' and to his list of such complications must be added the discovery of the Middle Anglo-Saxon settlement at Cheals Close, close to Sausthorpe – with its Scandinavian place-name – and in between Langton and Partney with their Old English place-names, indicating that the first post-Roman settlement of this part of the Lymn Valley did not proceed according to Everson's model.

The Fen-edge

Persistent places are less common within the Fenland section of the Interconnector route, largely because the hydrological conditions of this low-lying part of the landscape made investment in occupation a risky undertaking, and any settlements appear transient. If the area under consideration is expanded to include the slightly safer ground of the northern Fen-edge, however, then long-term occupation can be identified.

Within a 1.5 km stretch of the route in the Fen-edge parishes of West Keal and Stickford four excavation sites (Hagnaby Grange, Magers Lane, Back Lane and Staunch Farm) were found to contain Middle Bronze Age funerary remains, and traces of occupation – dated by stratified pottery and radiocarbon evidence – that extended from the Middle Iron Age until the Early Anglo-Saxon period. Most of the sites largely comprised the typical palimpsest of ditches necessary for the agricultural effort, but at Magers Lane the good range of fine Romano-British 'table ware'-type vessels suggest inhabitants with better-than-average connections with, or receptiveness to, 'Romanising' influences of the wider province. Another point of interest is the salt-bleaching noted on some of the Early Anglo-Saxon vessels at Back Lane, representing potential evidence of salting or some other extractive process. Iron Age activity was apparent at all four sites, but there was no evidence that this involved salt production, a finding in keeping with the results of earlier surveys (Lane and Hayes 1993, 51).

At Magers Lane (7.4 m OD), the majority of the pottery dates to the 1st to 2nd centuries AD, with a few contexts containing types dating to the late Roman period. For the flood-prone Hagnaby Grange (at 6 m OD, and where an alluvial deposit was found interleaved within the stratigraphic sequence of ditches), the emphasis is more on the later Iron Age to early Romano-British period. It is uncertain therefore whether the overall picture is one of settlement drift, with Magers Lane replacing Hagnaby Grange, but it seems reasonable to suggest that the higher elevation of Magers Lane enabled its occupation later into the period. Conditions may have improved somewhat by the Early Anglo-Saxon period, when ditches were again dug at Back Lane (at 4.2 m OD), this site showing no sign of Romano-British occupation.

This concentration of sites from around Stickford stands as something of a corrective to the results of earlier work: the volume on the Fenland Project's fieldwalking survey of the northern Fen-edge observed 'there is little to suggest widespread settlement along the northern Fen-edge after the Early Bronze Age' (Lane and Hayes 1993, 55), and the report did not contain any maps of Iron Age remains because of 'a marked lack of information' (*ibid.*, 51). Signals of Romano-British activity were similarly limited: 'little information has been added with which to contradict an earlier assessment that "the Roman economic miracle overlooked the East Fen parishes"' (*ibid.*, 55), and a summary of the fieldwalking mentioned the 'poverty of Roman sites on the northern fen edge' (Hayes 1994, 25).

The intention is not to appear critical in any way of the work of the Fenland Project, which was here reporting on a non-intrusive fieldwalking survey, but to highlight how the application of further techniques (principally geophysical survey and intrusive excavation) has now better revealed the archaeological components of the landscape, and highlighted its better-than-anticipated potential to contribute to the study of its history. Indeed, many of the earlier observations and conclusions from the Fenland Project remain reasonable in light of the results from the Interconnector: both projects found 'little indication of stone buildings or tiles' in the Romano-British period and once into the Fens proper in Stickney parish 'no finds at all were made' (*ibid.*, 55–6), a blank that for both projects extended to encompass the Witham Valley (Hall and Coles 1994, 153). Similarly, although the fairly refined pottery assemblage from Magers Lane does not sit well with the suggestion that 'relative isolation from the main production centres [of Roman pottery] and transport arteries may have considerably impeded trading options' (Lane and Hayes 1993, 55), the signs of repair on some of the vessels at that site support the statement by highlighting how the inhabitants endeavoured to prolong the life of some pots, including a presumably hard-to-replace samian bowl.

Continuity

Continuity, or renewal, of activity was a common theme in the examination, provided directly above, of the persistent places identified along the Interconnector. A more general consideration of continuity across traditional period subdivisions is also worthwhile, with the findings from Viking Link suggesting that it was not particularly common, with an overall impression of expedient renewal rather than enduring and unbroken settlement.

Sustained settlement or analogous activity during the Iron Age can be evidenced at up to 10 sites. Of these, only four (White Crofts, Ailby Lane, Walk Hill and Hagnaby Grange) went on to be occupied by farmsteads in the Romano-British period. At the remainder (Sutterby Field, Pitchmoor, Raithby Crossroads, Wood Hill, Back Lane, Staunch Farm) almost no transitional Late Iron Age–early Romano-British pottery was found, suggesting all had fallen out of use before the Roman Conquest. As well as the four Romano-British farmsteads mentioned above, there were perhaps up to six others found, and around the same number of places where some form of prolonged Romano-British activity can be identified. It therefore follows that most of the foci within the Romano-British landscape were new foundations brought about by the expansion of the agricultural effort following the Roman Conquest. These results reveal only moderate continuity from the Iron Age to Romano-British period. Activity at most of the Iron Age sites had dwindled or ceased prior to the invasion, and the incorporation of Britain into the Roman Empire acted as a stimulus to the laying out of field systems in new locations. These results form a useful contribution to published research questions concerning the impact of the Conquest upon rural settlements and landscapes and the continuity of occupation from the Iron Age into the following period (Research Frameworks 2024).

In his survey of Anglo-Saxon Lindsey, Vince (1993a, 1) observed that '[Romano-British] Settlement sites appear to be abandoned and their replacements tend to

be in different places'. Although the apparent abandonment of the Romano-British farmsteads is borne out by the results from Viking Link, the relationship between their Anglo-Saxon successors and the landscape of the earlier periods is a little more nuanced. Of the eight sites that showed a good degree of occupation in the Anglo-Saxon period, three (Callow Carr, Back Lane and Pitchmoor) were indeed at places without a clear preceding Roman phase, but Romano-British occupation is apparent at the other five (Sea Bank Farm, White Crofts, Ailby Lane, Cheals Close and North Ing). Moreover, none of the Anglo-Saxon sites that lacked Romano-British forerunners could be described as occupying 'virgin' ground: at Callow Carr, the cemetery had clearly targeted the Bronze Age barrow; a possible barrow was also recorded at Back Lane, with other activity there seeming Iron Age in date, and the main focus at Pitchmoor also appears to have been in the Iron Age.

At the five Anglo-Saxon sites that were successors to Romano-British occupation, unbroken continuity into the Anglo-Saxon period is difficult to prove, and seems unlikely. Only with the deposition of human remains in grave 301291 at White Crofts can activity that appears to be a continuation of Romano-British practices into the sub-Roman period be reasonably confidently identified. Elsewhere, a mundane functional explanation for why Anglo-Saxon activity never occurred on previously untouched ground would be that if places were suitable for occupation prior to the Anglo-Saxon period, then this would also be the case within it, and so some form of activity had a better-than-average chance of eventually resuming. Alternatively, this tendency could reflect deeper motivations of a people keen to anchor their activities to places where the past was present. This can be seen most clearly at Callow Carr.

Of the five Romano-British sites that also contained early medieval remains, three lay in Zone 1 (Sea Bank Farm, White Crofts, Ailby Lane), the fourth was in Zone 2 (Cheals Close), and the last was situated at the southern terminal of the Interconnector in (North Ing). Re-use of Romano-British sites was therefore widely spread, occurring at both the scheme's landfall and its inland terminal, albeit with a slight focus in Zone 1.

At neither of the main Fenland sites (Mown Rakes and Six Hundreds Drove) was there demonstrable continuity from the Romano-British into the Anglo-Saxon period, a result out of step with a recent overview (Oosthuizen 2017) but in keeping with an earlier observation of the general pattern from the northern Fens (Hayes 1994, 26). Re-use, if not unbroken continuity, was only observed at the southern terminal of the Interconnector route (North Ing), and was better expressed at the adjacent, and more extensive, Bicker Fen Substation site (Gaunt *et al.* 2024).

Recent notions of the degree of post-Roman continuity of settlement in Lincolnshire have varied from, on the one hand, the bleak picture painted by Jolliffe ('civil unrest, political fragmentation and severe economic recession ... a few hungry winters ... would have dramatically reduced the population': 2010, 193) to the more optimistic outlook of Green ('no such assumptions of a major decline in population can be justified': 2020, 43). The root of the problem is the virtual absence of material culture from the early part of the Anglo-Saxon period in comparison with the Romano-British, and the difficulty of establishing to what extent that reflects a lack of population. As with much of the country, activity becomes archaeologically 'invisible' following the collapse of Roman rule and the cessation of coinage supply that had underpinned the economy of the province. Again, this is a general pattern to which the Interconnector evidence conforms, with no great insights gained. Although it is a somewhat a crude measure, it is worth noting that of the 52 radiocarbon dates obtained on the project from sites with a Romano-British phase, only five lay within the 5th century after AD 410 (see also Gaunt *et al.* 2024, section 3.4). This relatively low number of sub-Roman dates offers something of a challenge to the notion that rural life carried on with no significant disruption after AD 410, other than the adoption of a new suite of archaeologically invisible organic material goods.

Anglo-Saxon woodland regeneration has been traditionally interpreted to reflect a decline in cultivated land allied with the collapse of Roman rule (Hoskins 1955, 36–7). There are no strong signals of this within the environmental evidence from the Interconnector route, but then there were generally few Anglo-Saxon assemblages to study. Interestingly, the clearest evidence for woodland regeneration was recorded at Ailby Lane, which also supplied two of the five 5th-century radiocarbon dates from the project. As Treasure notes above, charcoal from the sunken-featured building there was from the sorts of species that are quick to colonise areas of open ground such as unused farmland. Within the Lymn Valley also, the evidence from Cheals Close suggests a decline in heathland after the Romano-British period. It would be unwise to construct any grand narrative from such slight and equivocal data, but with its relative lack of sub-Roman radiocarbon dates and indications of post-Roman changes in land-use, the Interconnector data does not immediately support the idea that activity within the Early Anglo-Saxon countryside was on a par with Romano-British levels, and a degree of decline is the more likely possibility. The general contraction of settlement in the region *during* the Romano-British period (Allen 2016, 247–9; Smith 2016, 147–9) should be borne in mind, however, and any 5th-century decline may have been a continuation or quickening of deep-rooted processes.

Here and Elsewhere: Trade and Other Connections

The Hornsea Project One publication described the Lincolnshire Marsh as having a ‘remote, inaccessible character’ and ‘to some degree remote from the culture and status of more “Romanised” regions’ (Tuck 2023, 333 and 369); this was largely on the basis of the very small amounts of traded pottery found along its route. Further south in the Marsh, the Viking Link Interconnector crossed land that, while clearly not at the centre of events in the Romano-British and other periods, showed evidence of slightly better links with the outside world. Again, this is largely demonstrated by the Roman pottery: as described by Rowlandson, the Black Burnished ware from Sea Bank Farm suggests access to coastal traders was possible; further south in the Fens, the assemblages from Magers Lane, Mown Rakes and Six Hundreds Drove show better-than-average trading links, in particular connection to networks that incorporated London in the south and perhaps the Upper Nene Valley in the west also (see Rowlandson in Volume 2, Chapter 8). Overall, the pottery assemblages from Zones 1 and 3 have a more diverse range of production sources than the more landlocked Zone 2 groups, and this is detectable to a certain degree in later periods also: in her discussion of the post-Roman ceramics above, Young has commented that Sea Bank Farm’s wide range of late Saxon pottery types might be explained by its proximity to the sea, and that during the 13th and earlier part of the 14th century, the pottery from Lincolnshire’s coastal fringe was often high-fired and well executed, in contrast to the less competently manufactured vessels found dominating inland assemblages.

Beyond the ceramic evidence, the non-local origins of two of the people buried at White Crofts has been established through isotope study, and evidence of specialist butchery from the same site has been used to propose wider provisioning and involvement in trade/exchange (see Higbee in Volume 2, Chapter 8). As described above, finds from Garwick, near Mown Rakes/Six Hundreds Drove, show how that part of the Fen-edge attracted imports and trade in the early and middle parts of the Anglo-Saxon period, while on the northern Fen-edge, pieces of jet were recovered from Staunch Farm. Later in the medieval period, downstream along the Witham, Boston developed into the second most important port in England, and for a time, one of its richest towns (Minnis and Carmichael 2015, 1), a challenge to the conception of this part of the country as some timeless sleepy backwater. That there was very little indication of this period within the Interconnector results may be because the scheme’s necessary avoidance of modern settlements meant that their medieval forerunners were not encountered (i.e., there has been a largely static settlement pattern since the establishment of parish churches). Although south-east Lincolnshire is remote from the main north–south land routes that cross the Midlands, the results from the

Interconnector route highlight how proximity to the sea and navigable watercourses provided some counterbalance. By contrast, it may be that landing boat-borne traded goods on the soft ground of the northern part of the Lincolnshire Marsh was more difficult (Barton-on-Humber is described as 'providing the first hard ground available for landing on the south bank of the Humber Estuary': Drinkall and Foreman 1998, 361), hence the subdued signals for trade recorded on the Hornsea Project One cable route. The combined results of the two projects, therefore, reveal details of connectivity at the wider regional level, and highlight some of the potential governing factors.

A final observation is that while consideration of the evidence of traded goods (largely ceramics) suggests proximity to navigable waterways was the key that allowed local people to connect with trading networks, in contrast it was Zone 2 that appears the most important area in the earlier periods. The upland concentrations of Neolithic and Bronze Age barrows (Jones 1998b; Last and Willis 2023, fig. 4; May 1976, fig. 39) and the distribution of flint as revealed along the Interconnector route (Fig. 4.2) show a clear focus on the Wolds and Lymn Valley. This may suggest a shift in the centre of gravity in the landscape over time: perhaps the lighter, better-drained and more easily worked soils above the chalk or sandstone, or cultural conceptions related to the distinct character of those parts of the landscape, made them the most attractive to the early settlers. However, the general unavailability of earlier prehistoric horizons for archaeological scrutiny (i.e., because they are buried by later deposits) within the former wetlands crossed by the Interconnector route should be borne in mind, and so the original distribution of earlier prehistoric material remains obscure.

EMHERF Contributions

The 2019–2021 archaeological investigations undertaken along the course of the Viking Link Interconnector have greatly enhanced the understanding of the development of the prehistoric and early historical landscape of south-east Lincolnshire. As outlined above, the project has had considerable success in exploring the research aims that came to guide it, and so in turn has generated useful insights into the research objectives set out in the East Midlands Historic Environment Research Framework (EMHERF: Research Frameworks 2024). An attempt has been made within Table 5.6 to summarise the clearest of these contributions. The exercise is necessarily somewhat reductive, especially as much of the value of the project lies in its aggregated data, but it is useful to be reminded of the clearest contributions to the questions posed within the EMHERF:

- The Early Neolithic barley grain from Walk Hill evidences the initial exploitation of cereals, and is the earliest for the region (and one of the earliest direct results for the country).
- None of the Middle Bronze Age field systems characteristic of the central and southern Fens were found around the northern Fen-edge (in confirmation of patterns already noted: Yates 2007, 84–5), and the laying out of the boundaries seen along the Interconnector route appears to have begun instead in the Middle Iron Age and gathered pace as that period went on, although the Iron Age sites that continued into the Romano-British period were in the minority.
- Direct-dated evidence of funerary activity on the northern Fen-edge was recorded at Back Lane, and the deposition of the deliberately manipulated Romano-British humerus (a somewhat macabre find to modern sensibilities) at Gibbet Hill seems related to its liminal location on the edge of a roddon and the general retreat of settlement around that time. Similar concerns may have been in play with the deposition of the Romano-British cremated remains at Mown Rakes.
- Rural Romano-British farmsteads dominated the excavated record and their quantity and presence across all landscape zones is thought to demonstrate the role of Roman rule as an accelerant upon rural settlements and landscapes.
- The presence of rye in the Romano-British period has been confirmed through radiocarbon dating at Walk Hill; the cultivation of emmer wheat appears to have been abandoned before the Anglo-Saxon period.
- The crop-dryers at Walk Hill and occupation of marginal (very low-lying) land on the Fen-edge, especially at Mown Rakes and Six Hundreds Drove, with their evidence for barley, seems to reflect a move to maximise agricultural output during the Romano-British period.

- Imports in the Romano-British period: continental and regionally traded pottery, coinage, brooches, worked shale, querns, possible imported meat joints at White Crofts; people (isotopic evidence for two 'incomers' from Western Britain or abroad recovered from White Crofts). Likely exports: agricultural produce (crops, dairy produce, meat – either butchered or on the hoof), salt, grey ware vessels from the Six Hundreds Drove kiln (only local use/trade?)
- The newly identified kiln site near Six Hundreds Drove provides further detail on the distribution of pottery production in Roman Lincolnshire. Even so, the range of pottery types recovered from the site and its other Fenland neighbours suggests they were linked to coastal exchange and trading networks transporting goods from London and the Continent. The ORA programme has provided data on the use of Romano-British vessels, and broadly indicates greater specialisation during the period.
- Further associations between crop-dryers and human remains were recorded at Walk Hill; evidence for the curation and deposition of disarticulated human remains was found at Gibbet Hill, with the defleshed humerus recovered from a roddon-edge ditch. These findings shed light on the beliefs and practices associated with certain types of feature, and confirm that structured deposition in settlement/boundary features continued beyond the Late Iron Age in this part of the county.
- Human remains from White Crofts (inhumation cemetery), Mown Rakes (cremated remains), and Walk Hill and Gibbet Hill (disarticulated remains) illustrate the variety of ways the human body could be treated in death during the Romano-British period. As ever, however, it seems that the majority of the rural population were treated in such a way as to disappear from the archaeological record following their death.

Table 5.6 Summary of contributions to the EMHERF

EMHERF research objectives	Site												
	Zone 1			Zone 2						Zone 3			
	Alby Lane	White Crofts	Sea Bank Farm	Sutbury Field	Walk Hill	Callow Carr	Cheels Close	Raithby Crossroads	Wood Hill	Back Lane	Mown Rakes	Six Hundreds Drove	Gibbet Hill
Neo & EBA. 3.3.2: New crops and diet	-	-	-	-	✓	-	-	-	-	-	-	-	-
LBA & IA: 4.6.1: Development of field systems	-	-	-	✓	-	-	-	✓	-	✓	-	-	-
LBA & IA: 4.7.2: Ritual use of wet locations over time	-	-	-	-	-	-	-	-	-	✓	✓	-	✓
RB. 5.4: Rural settlement patterns & landscapes	✓	✓	✓	-	✓	-	✓	✓	-	✓	✓	✓	✓
RB. 5.5.2: Changes to crops and diet	-	✓	✓	-	✓	-	-	-	-	-	✓	✓	-
RB. 5.5.4: Agricultural intensification	-	-	-	-	✓	-	-	-	-	-	✓	✓	-
RB. 5.6.1: Movement of resources	✓	✓	✓	-	✓	-	-	-	-	-	✓	✓	-
RB. 5.6.3: Production, movement and use of pottery	✓	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	-
RB. 5.8.1: Structured deposition	-	-	-	-	✓	-	-	-	-	-	-	-	✓
RB. 5.8.4–5: Burials and funerary practice	-	✓	-	-	✓	-	-	-	-	-	✓	-	✓
EM. 6.1.1 & 6.2.3: Anglo-Saxon cemeteries	-	-	-	-	-	✓	-	-	-	-	-	-	-
EM. 6.4.3: Characterising settlement	-	-	✓	-	-	-	✓	-	-	✓	-	-	-
EM. 6.6.3: Early medieval salt	✓	-	-	-	-	-	-	-	-	-	-	-	-
EM. 6.6.6 Anglo-Saxon pottery	✓	-	✓	-	-	-	✓	-	-	-	-	-	-
EM. 6.7.5 Woodland use and regeneration	-	-	✓	-	-	-	✓	-	-	-	-	-	-
OVER. Exploitation & settlement of diverse ecological zones	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Key: Neo: Neolithic; EBA: Early Bronze Age; LBA: Late Bronze Age; IA: Iron Age; RB: Romano-British; EM: Early medieval; OVER: Overarching research theme. Numbered research objectives relate to scheme of EMHERF, Research Frameworks 2024

- Between the mid-6th and later 7th century, inhumations accompanied by grave goods occurred at Callow Carr, and a prehistoric monument was chosen as the location for this activity by a population that had largely grown up locally but whose home range lay at a slight remove from the cemetery site. The balance of sex within the cemetery population is fairly even, unlike at other comparable sites where females tend to be over-represented (but see Boston's analysis in Volume 2 for caveats). General health of the population was similar to contemporary assemblages further north, with signs that people led a physically strenuous agrarian lifestyle, rather than being some pampered elite, despite the quality of some of the grave finds recovered. Analysis of the grave goods has revealed something of the nuances of the local deployment of such material, including the potential marking of kinship relationships by adjacent 'mirrored' burials. Comparison with the earlier and nearby cemetery at Scremby casts light on the changing burial traditions in the Lymn Valley in the Early–Middle Anglo-Saxon period, with a decline in the influence of the sex as a factor that determined the positioning of the body in the grave evident over time.
- The Early Anglo-Saxon sunken-featured building at Ailby Lane and the Middle Anglo-Saxon post-built structures at Cheals Close (and perhaps Pitchmoor) illustrate the range within settlements in the region and something of its underpinning chronology. Although unaccompanied by clearly inhabited structural remains, evidence of Anglo-Saxon activity from a range of other locations adds detail to the known distribution of occupation across the landscape.
- Sea Bank Farm is identified as a probable Late Anglo-Saxon salt production site (with attendant *terminus post quem* date presumed for construction of adjacent coastal defences).
- Fabric analysis has not so much clarified the production and distribution of Anglo-Saxon pottery as highlighted the complexity of the subject, with several previously unknown types identified, suggesting some instances of extremely localised production. A causal relationship between early medieval salt production, coastal trading links and the diversity of pottery assemblages from coastal sites has been tentatively identified. The existence of a multitude of minor, short-lived and possibly fairly localised pottery-making industries is also suggested for the post-Norman Conquest period.
- Charcoal from the Early Anglo-Saxon sunken-featured building at Ailby Lane offers circumstantial evidence for contemporary woodland regeneration in that the species present within it differed from the earlier assemblages from that site and comprised instead more of the sorts of species that are quick to colonise areas of open ground, such as unused farmland. The evidence from Cheals Close suggests a decline in the heathland noted in the Romano-British charcoal assemblages from the Lymn Valley.
- Despite the expectation that the work would highlight differing farming strategies within the various landscape zones crossed by the Interconnector ('Traditionally [the upland] has provided the bread whilst downhill, the grassland, meadows and fens have fattened the beef': Lane and Hayes 1993, 67; 'on the Wolds in Roman times ... the landscape may have largely formed open range': Jones 1998a, 78) the results were rather more homogeneous than anticipated, indicating mixed agriculture dominated by cattle, wheat and barley across all landscape zones (and especially in the Romano-British period) with – other than saltmaking – little direct evidence of the exploitation of wetland-specific resources. This is based on generally small and poorly preserved animal bone and plant assemblages; however, the composition has been affected by taphonomic factors that privilege certain types of material (e.g., robust elements, or those processed using heat, which have a greater chance of being preserved through accidental charring). Exploitation of shellfish was evident at some of the wetland/coastal sites, although this was limited to the Romano-British period.

Geophysics

Of the 46 excavation sites that were covered by the geophysical survey, one-third ($n = 15$) cannot be discerned in the survey results, with their discovery instead a result of the sampling of apparently geophysically 'blank' areas during the evaluation trenching programme. The geophysical survey was at its most effective on the thin soils overlying the chalk and sandstone of the Lincolnshire Wolds. Here, most excavated sites were detected by the geophysical survey, with the chalk responding best. The results were much more hit-or-miss for those sites on the clays of the Lincolnshire Marsh and Fenland sections of the route. Here, only a little over half of the excavation sites had been signalled by the geophysical survey results. Such information may assist in the design of the investigative stages of other projects within these geologies, with the value of speculative trenching underlined by the project results.

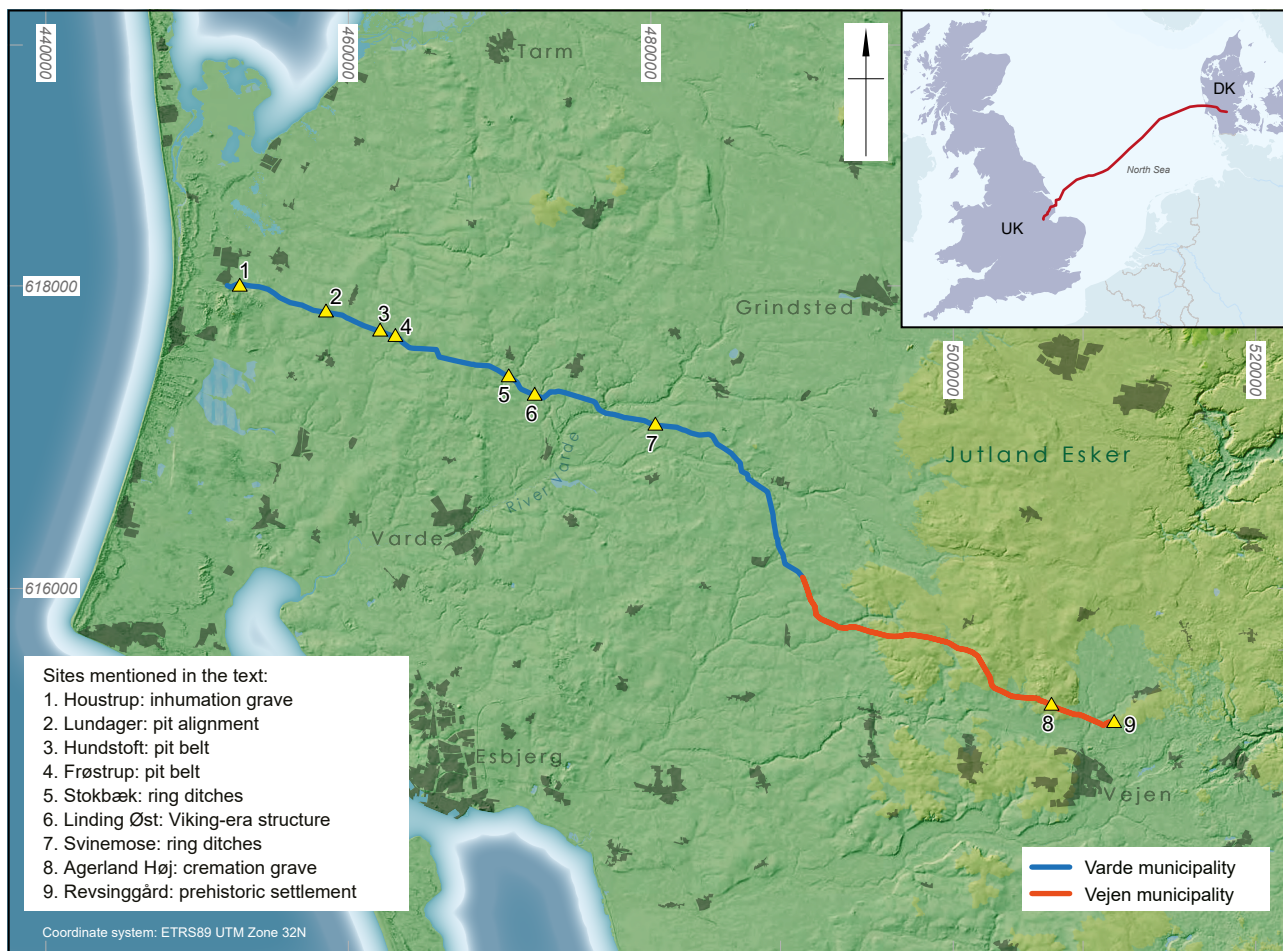


Figure 5.15 The Viking Link Interconnector in Denmark: route and key results

North Sea Links

The Viking Link project was undertaken to connect the electricity distribution grids of Denmark and Great Britain, and led to the archaeological exploration of its onshore route on either side of the North Sea at around the same time. Within the spirit of ‘interconnections’ that the scheme represents, during their preparation of this volume the authors made contact with their counterparts on the Danish leg of the route: our interest was to explore any commonalities or contrasts between the two sets of results.

The Danish stretch of the Viking Link Interconnector lies within Jutland, and traverses largely flat, low-lying farmland with sandy soils. Along the North Sea is a broad coastal plain, from where the ground surface rises to around 40 m above sea level, before descending to cross the valley of the River Varde (Fig. 5.15). From here, around halfway along the Interconnector’s Danish leg, the route again ascends fairly steadily to terminate at around 50 m on the relatively high ground of the Jutland Esker, a north–south belt of moraine that runs along the centre of the Jutland peninsula. As such, the topography of the Danish leg is not markedly different from much of its Lincolnshire counterpart, although the latter, crossing both rolling chalk Wolds and flat, formerly marine fenland, contains starker contrasts.

The Danish investigations were undertaken by two different organisations, each with a territorial remit. Work within the westernmost of the two Danish municipalities crossed by the scheme, that of Varde, was carried out by *Arkvest Arkæologi Vestjylland* (Archaeology West Jutland), while the investigations within Vejle, the eastern municipality, were the responsibility of *Museet Sønderos Arkæologi Sydvestjylland* (Archaeology Southwest Jutland). Varde hosted the majority of the scheme at 51 km, with 24 km, and the new substation connecting the cabling to the Danish national grid, within Vejle.

Even accounting for the differing lengths, archaeological remains were much more numerous within Varde, the westernmost municipality, where a total of 27 'sites' were identified. These included Neolithic and Bronze Age buildings, Iron Age pit alignments, a furnished burial from the 1st or 2nd century AD, early medieval sunken-featured buildings, a well-preserved Viking-era house, evidence of medieval settlement, and a post-medieval pottery production site (Arkvest Arkæologi Vestjylland 2021; Lerke and Facius 2023).

The less plentiful remains in Vejen mostly consisted of dispersed discrete features and occasional boundary ditches (Museet Sønderkov–Arkæologi Sydvestjylland 2022). The most informative remains were found at Revsinggård, the site of the Danish substation, where a Late Neolithic–Late Bronze Age settlement was exposed (Christensen and Mehlsen 2023). The majority of the houses dated to around 2000 BC, and the structural remains were accompanied by rich archaeobotanical assemblages that shed light on the types of crops cultivated and how they were stored. A settlement with further funerary remains was the other highlight from Vejen, here dating to what would be the Roman period in Britain (the Danish *ældre romersk jernalder* – 'Early Roman Iron Age').

The uneven geographic distribution of the sites brings to mind the long, 'empty' Fenland portion of English Viking Link. In the Danish case, the archaeologically quieter section of the scheme lay across former heathlands. These were less heavily exploited up until the post-medieval period, before which there was a genuine local and regional concentration of settlement within river valleys instead (S. Dollar and R. T. Facius, pers. comm.). In both cases, the former character of the landscape influenced the activities that were carried out on it, and this is expressed in the distribution of excavated sites.

Our initial reaction on seeing the well-illustrated Danish site reports was how *familiar* many of the images appeared in terms of working environment, wider landscape and the exposed remains. This is understandable: Denmark has been described as 'fairly marginal in Europe, but still strategically located' (Randsborg 2009, 8), a description that also fits Great Britain. At the very broad level, both countries occupy similar positions on the north-western periphery of the Continent, have long coastlines and look both east and west, while being exposed to influences from northern Scandinavia as well as mainland Europe. During prehistory, both were affected by the same major archaeological changes at approximately the same time; indeed the three-age system for understanding prehistoric chronology (Stone, Bronze, Iron) was a Danish innovation (Thomsen 1836). Classes of monument such as ring ditches, sunken-featured buildings, pit alignments, 'potboiler' pits, furnished inhumations and 'token' cremation burials belong to a common European suite of feature types and were found along the Interconnector route in both countries. The identification of similar features in Lincolnshire and Jutland illustrates long-established links across the North Sea. However, the sense of familiarity was soon replaced by slight unease as the 'uncanny valley' separating the apparently similar datasets became evident. Through their situation-specific distribution and use, seemingly analogous features were less alike than they initially appeared.

An obvious difference between the English and Danish results is that evidence of Neolithic and Bronze Age settlement was much conspicuous on the eastern edge of the North Sea than the western. The ground plans of perhaps four Early Bronze Age houses were identified in Varde, and the Late Neolithic–Late Bronze Age settlement at Revsinggård occupied over 3 ha, with the traces of over 20 structures recorded (Fig. 5.16). No contemporary buildings were recorded in Lincolnshire, an unsurprising result given the scarcity of such structures from the country as a whole (Barclay and Harris 2017; Thomas 1996), albeit a striking contrast with the marked density of long barrows and other monuments from the same period in the county (Jones 1998b; Last and Willis 2023, fig. 4). Prosaically, this may reveal different building techniques were used in the two areas, with habitation in Lincolnshire being less archaeologically

conspicuous than the two and three-aisled longhouses constructed using deeply buried posts recorded in Denmark. Alternatively, it may indicate 'different kinds of way of being Neolithic' (Barclay and Harris 2017, 223) on either side of the North Sea, with a persistence of more nomadic lifeways within this part of Britain in comparison to Denmark, and a less settled, and probably numerically lower, population leaving less of an archaeological mark within Lincolnshire. Fieldwork methodology may also partially account for the mismatch, however. The primary prospection tool along the English onshore section was geophysical survey, with sites of interest being tested by evaluation trenching and then moving on to open-area excavation as appropriate. By contrast, the survey of the Danish route proceeded by the monitoring a 2.5–3 m-wide machine strip along the entire route, which was expanded to occupy the full 7 m width of the easement where concentrations of remains were encountered. This afforded more opportunity to identify the sort of discrete or subtle remains that the earliest structures would likely be composed of, and which would be very difficult to detect by standard geophysical prospection, a technique which is not generally part of common practice ahead of excavation in Denmark (R. T. Facius, pers. comm.). This risk was at least partially offset by the trenching of 'blank' areas, however, and it remains fair to say that the 2nd to 3rd millennia BC were more archaeologically profuse within Jutland than Lincolnshire, with the variations in the record reflecting the differing lifeworlds of the two populations.

Everyone must eat, however, and both projects were united in successfully shedding light on early agriculture within their respective areas. Radiocarbon dated cereal remains at Walk Hill are among the earliest evidence of arable agriculture recorded in eastern England (Griffiths 2022, fig. 1), and significant archaeobotanical assemblages were recovered from the Revsinggård site. Wheat and barley were grown in prehistory at both sites, with such diversification likely a deliberate strategy, not least to guard against a failed harvest, with the exploitation of wild resources also evidenced at both.

Another stark contrast between the two sets of results was that because Denmark lay beyond the frontiers of the Roman Empire, there were no 'Roman' finds from the Danish sites, with some stylistic influences from southern Europe on the pottery from the period marking the limit of Romanisation. It obviously therefore follows that within Denmark there were no signs of the ramping up of the productivity of the countryside evident within Lincolnshire as its inhabitants responded to the demands for goods and opportunities for trade that Roman rule brought, nor a corresponding 5th-century

Figure 5.16 Late Neolithic–Early Bronze Age structural remains at Revsinggård (2 m scale). Photograph courtesy Museet Sønderkov



caesura following the end of Imperial rule. Although archaeologically impactful activity in Lincolnshire became marked in the Iron Age, it is traces of the exploitation of the Romano-British countryside that are the most common element from the scheme, with around 15 of the sites showing sustained activity during this period. As well as the overall impression from the volume of sites, certain features may be traced back to Britain's incorporation within the Empire. Crop-dryers, for instance, are typically seen as proxies for increased production (Lodwick 2017a, 82–83; van der Veen and O'Connor 1998, 136), with two recorded at Walk Hill. Similarly, the saltmaking industry (which, again, has no contemporary Danish analogue) would have been an important element of the regional economy in the Romano-British period. Salt, as well as being a useful commodity in its own right, would have given its producers something to offer to meet tax demands or for trade within the more accelerated markets of the Roman province, when the range of available goods increased. Despite this, salt production in the northern Fens seems to have tailed off from the 2nd century onwards (Lane 2005, 47), for reasons not yet apparent.

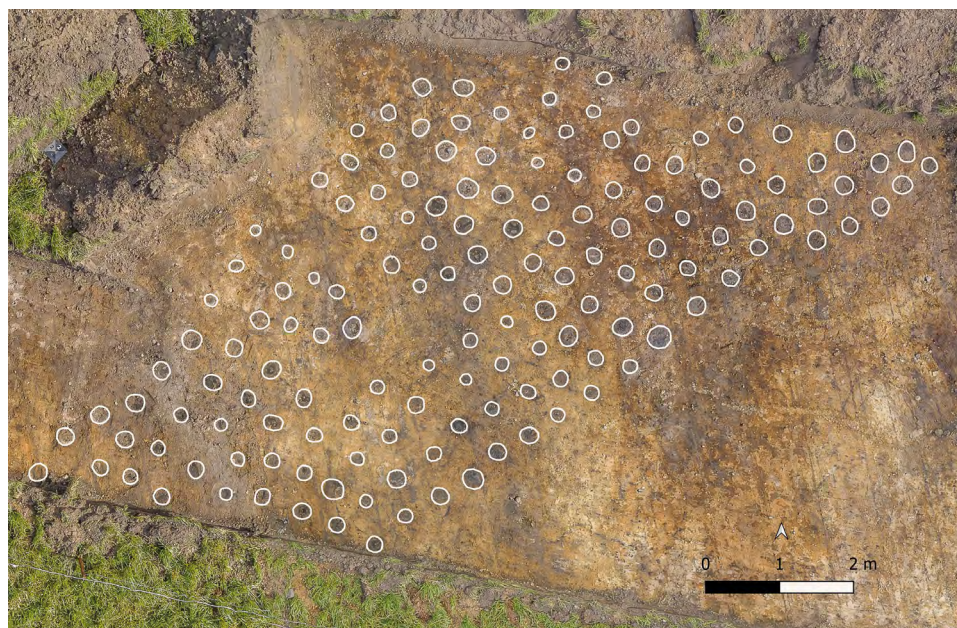
The circular building tradition is absent in Denmark, where longhouse forms dominated house/building architecture throughout prehistory, and ring-shaped monuments are more associated with funerary activity. Ring ditches were found at two locations in Denmark: near Stokbæk lay the remains of five or six ring ditches with diameters in the 4.6–6.6 m range, and further, smaller (4–5 m diameter), examples were excavated at Svinemose (Fig. 5.17). Within Jutland in the pre-Roman Iron Age, such features often enclosed urn burials, although no evidence of human remains was recovered from the Danish Viking Link examples. Furthermore, the ring ditches at Svinemose overlapped each other and their ditches showed much evidence of recutting, characteristics that are so unusual for barrows as to make the team from ArkVest doubt that they had a funerary function. With their location on the edge of a wetland, the Svinemose ditches in particular bring to mind the small ring-shaped feature (400150) from Hagnaby Grange, which was interpreted above as rudimentary shelter. Would a Danish archaeologist have reached different conclusions? By contrast, the potential ring ditch from Back Lane, with its Bronze Age human remains, has been interpreted as a barrow, not least because it occupies the sort of Fen-edge location common for such features around the area. This brief consideration of the ring ditches at either end of Viking Link serves as a reminder that feature form can only take us so far in ascribing function, and interpretation also draws on landscape setting, evidence of re-use, and the expectations of the viewer.

Figure 5.17 Svinemose ring ditches, view from west. Photograph courtesy ArkVest



Pit alignments are a characteristic component of the archaeology of the English Midlands, especially the Trent Valley (Knight and Howard 2004, 102), and are commonly found to date to some time within the 1st millennium BC. The main concentration of the Lincolnshire examples lies within the west of the county (Boutwood 1998b, fig. 8), and their absence from English Viking Link may well reflect their original distribution (although a narrow linear scheme would not be the ideal means of proving this). By contrast, pit alignments did feature in the Danish results, with examples exposed at three locations. A double alignment at Lundager would not be out of place in the Middle Trent Valley. However, two *hulbælter* ('pit belts'), one at Frøstrup (Fig. 5.18) and the other at Hundstoft, lack close parallels within the Iron Age archaeology of the English Midlands. Pit belts comprise multiple parallel pit alignments to form a grid of pits, and are relatively common within Jutland. It is tempting to see these flamboyant monuments as some form of extreme outcome in the evolution from more straightforward alignments. Like many English examples, Danish pit alignments and pit belts are held to be Iron Age features. The *hulbælter* were found 1 km apart and either side of a wetland area, which echoes the observation that the courses taken by British pit alignments are often intimately related to the local topography, running parallel or perpendicular to rivers, cutting off a meander, following ridgelines, or striking across contours at 90° (Thomas 2008, 151–2). Another commonality is that few are well dated and artefacts tend to be rare, leading to uncertainty over their interpretation, although some form of role in boundary marking is favoured on both sides of the North Sea. The results show new ways of organising the landscape were coming into being around the same time, but hundreds of kilometres apart.

Figure 5.18 Frøstrup pit belt.
Photograph courtesy ArkVest



Nominative determinism was unfortunately thwarted on the project overall, with no characteristic Viking-era remains in Lincolnshire. In contrast, at Linding Øst a Viking-era settlement was discovered, with the well-preserved ground plan of a building of a type similar to those found within the well-known Trelleborg fortress exposed within the stripped area. Within the English East Midlands, winter camps at Repton and Torksey are perhaps the best-known Viking monuments and illustrate the importance of the River Trent to the logistics of their army; Lincoln was also occupied at this time. However, the Interconnector excavations provided no characteristically 'Viking' physical traces of this period, and place-names remain the best evidence for Scandinavian occupation: settlements with Old Norse place-name elements on or close to the route in Lincolnshire include Thoresthorpe, Ailby, Spilsby, Raithby and East Kirkby.

The Danish leg did not uncover an organised cemetery similar to that found at Callow Carr, and the only human remains found in Jutland were two separate single burials.

One was Iron Age in date, and the other belonged to the 1st or 2nd century AD, and this aspect of the Danish evidence forms another contrast with the Lincolnshire results. No Iron Age human remains were found in Lincolnshire, in keeping with the characteristic of that time whereby most bodies were disposed of in a way that left little or no archaeological trace (Armit 2017; Brownlee and Klevnäs 2024). The Danish results illustrate varied funerary rites, with an urned cremation burial recovered from Vejen municipality (Fig. 5.19) and a furnished inhumation from Varde. Harsh sandy soil conditions meant that no skeletal remains survived in the Varde grave, which contained a coffin and was sealed beneath a low stony mound. A variety of items accompanied the body, including a group of pots, a perforated amber disc possibly representing a spindlewhorl (Fig. 5.20), and the remains of sea urchins. Amber was found at Callow Carr also, with another grave also containing two seashells, despite the site's distance from, and elevation above, the coast. Perhaps amber – 'the gold of the sea' – and the remains of sea creatures carried some resonance with conceptions of the afterlife at both sites. The association between the sea and death was and continues to be widely shared across cultures (Bradley 2002). It is not suggested that the presence of similar items in graves separated by such time and distance reveals identical 'meanings' to the objects. Rather, their selection as grave goods illustrates how certain classes of objects could be repeatedly judged appropriate for such use, and this would have been because of the special qualities such items were thought to possess. These objects had a long currency, and through each act of deposition, gained new potency as people drew on them when responding to a death of a member of their family or wider community.

Beyond a response to death, surely the greatest of commonalities, the factor that most closely unites the two sets of results is the constrained freedom offered by the geometry of the Interconnector. Linear schemes offer archaeologists the opportunity to explore new ground when following the route to its destination beyond the horizon, but once the route is set, not even the slightest deviation is possible, and the exposed strip can be frustratingly narrow. It is by setting the results in context, comparing them to nearby (and more distant) findings, seeking to understand the factors that may have affected their preservation or visibility, and by making results known and available to the wider world, that the opportunities to improve archaeological understanding through linear schemes can be best realised, wherever they occur.

Figure 5.19 Agerland Høj
cremation grave (0.2 m scale).
Photograph courtesy Museet
Sønderskov





Figure 5.20 Amber disc
from the Houstrup grave.
Photograph courtesy ArkVest

Future Research

As has been demonstrated above, the findings of the project are of direct relevance to questions and themes articulated in regional research agenda (Research Frameworks 2024). And inevitably, the discoveries made during the course of the project have prompted further, more nuanced, questions. It is hoped that the results of the Interconnector investigations will inform tomorrow's studies in the region, with the results of future projects hopefully testing, rejecting or building upon the conclusions presented above. With this aim in mind, questions to guide future research are presented below. It barely needs stating that the chronology and character of the excavated sites require clarification, and this could be achieved through further excavation. The questions that follow, however, relate to what such efforts and any further fieldwork in the area might hope to achieve.

- Does the overall impression of a lack of specialist subsistence strategies across the route reflect the limitations of the dataset (small, generally poorly preserved assemblages affected by taphonomic factors that privilege certain types of material) or does it reveal original circumstances?
- How permanent was the settlement on the inland 'islands' of the Lincolnshire Marsh? Did some become depopulated as new land became available, or were other factors more important in driving settlement shift?
- Can the importance of rivers and the sea for opening this region up to trade, exchange and outside influences be further clarified? Has the role of the road network in allowing goods to reach (and leave) the excavated sites been under-estimated?
- What brought about the end of the Iron Age settlements and why did the occupation of so few continue in the Romano-British period?
- How was the salt transported from the Fen-edge and where was it taken? Why did its production in the Romano-British period dwindle just as transport connections and consumer demand are assumed to have improved? May it have been more than an industrial commodity?
- Does the apparent lack of Romano-British domestic dwellings reflect widespread use at that time of non-earthfast designs? If so, might exploration of sites affected by soil build-up (colluviation or alluviation) reveal well-preserved examples to demonstrate how they were constructed?
- Where were the misfired sherds at Six Hundreds Drove generated? Where is the kiln, or kilns, and what was the character and reach of the enterprise?
- How did the uses to which pots were put change at the start and end of the Romano-British period? What information can be extracted from the lipids analysis of prehistoric and post-Roman assemblages?
- What were quartz- and shell-gritted jars used for in the Romano-British period? Did this vary between sites?
- Are there any patterns detectable in the cohorts of the population represented by behaviours associated with disarticulated human remains? What were the governing principles behind such actions? Bluntly, what did people think they were doing?
- Is there any connection between the Gibbet Hill place-name and the discrepant treatment of human remains detected there?
- Can widespread radiocarbon dating, including on human remains, at sites with late Romano-British occupation identify continuity of settlement into the mid-5th century and beyond? Was the collapse of the Romano-British settlement pattern as marked as it appears?
- With sunken-featured buildings commonly found accompanying post-built structures on Anglo-Saxon sites, do further buildings await discovery at Ailby Lane?
- Do the indications of the reduction in heathland and the concomitant reversion to woodland recorded at the Anglo-Saxon sites of Ailby Lane and Cheals Close reflect a genuine and widespread retraction of land management following the end of the Romano-British period?
- Were those buried in Anglo-Saxon cemeteries in the region closely related to each other? What familial patterns can be detected within and between cemeteries? This is particularly apposite

for Callow Carr and Scremby, which have been included in the *aGB 1000 Ancient Genomes from Great Britain* project.

- Had the ancestors of those found in Anglo-Saxon cemeteries lived in Britain or were some migrants from north-west Europe? What patterns exist between genetic inheritance and material culture?
- Can the source and date of the post-Roman pottery types not previously encountered in the area be resolved? This is particularly pertinent for the vessels recovered from the Ailby Lane site.
- Leading on from the previous point, to what degree has the true extent of Anglo-Saxon settlement in the area been obscured by the difficulty in distinguishing prehistoric and post-Romano-British pottery vessels?
- More generally, an improved understanding of the character and extent of potting clays in the region would help to differentiate between locally produced and imported coarsewares, and so clarify trade and distribution patterns. Thin-section analysis of suitable fired clay fragments (as these almost always represent clay dug from the local area) could eventually provide a useful baseline for this line of enquiry.
- Certain types of feature characteristic of some parts of the East Midlands and Humber region were absent from the results (e.g., pit alignments, burnt mounds, agglomerated Iron Age settlements, Wolds entrenchments, metalwork caches in watery contexts, Roman villas). To what extent was this a genuine absence and illustrative of cultural boundaries or other limiting factors, or an inaccurate picture of the local archaeological resource brought about by chance?
- Finally, a methodological question: many of the features encountered remained undated because of a lack of artefacts, partly a reflection of the narrow window of excavation. What needs to change so future sampling strategies can generate more informative datasets from such narrow samples across sites of larger extent?

Conclusions

The Interconnector investigations have generated a significant body of data relating to the development of the historical landscape of south-east Lincolnshire, the human–environment interactions it hosted, and the production and use of material culture within the region and beyond. By providing details on the artefacts and environmental resources utilised within the Interconnector sites, the character of the ‘mosaic of communities’ (Smith 2016, 207) that made up this part of Lincolnshire at various points in the past can be better appreciated, with the findings now available to inform syntheses exploring the diversity of occupation present at the regional or even national level.

Key findings of the transect provided by the Interconnector include a date for the inception of cereal cultivation in this enduringly agricultural area, the importance of inland ‘islands’ in the exploitation of the Lincolnshire Marsh across a range of time periods, how the landscape was put to work, falteringly at first but then more extensively, from the Iron Age and into the Romano-British period, and how local people drew on and adapted a common cultural bank of material culture and funerary practices in the Early–Middle Anglo-Saxon period. Traces of Anglo-Saxon settlement were generally scant, but improve the knowledge of the distribution of such sites, and have revealed something of a positive correlation between them and previously occupied locales. The project data allowed no real advances in the understanding of the development of the landscape after the 1st millennium AD, with remains dating to the medieval and post-medieval period being fewer in number than might have been hoped. But this in itself may be informative, as the absence is thought partly due to the largely static nature of the local settlement pattern in this part of the country following the establishment of parish churches. Admittedly, desertion of some villages occurred in the medieval period (Russell 2009), although this is not expressed in the project results (with any such known sites standing a good chance of being avoided when the cable route was being decided upon). Within the Lymn Valley in particular, the range of finds and features underscores the richness of its archaeological landscape, but around the northern Fen-edge, a further cluster of results challenged previous assessments

of the dearth of archaeology within that area. Within the Fens proper, an extensive swathe of Romano-British activity relates to a population farming at the very limits of tolerance of arable agriculture, provides detail on the distribution of saltmaking and pottery production in that part of the county, and through the curation and deposition of their deceased, reveals something of the attitudes the inhabitants held regarding a world beyond the here and now. Despite the topographic variety of the Interconnector route, the subsistence strategies employed at the various sites were less diverse than might have been anticipated, with little apparent engagement with wetland or marine resources (what little consumption of shellfish occurred appears limited to the Romano-British period). Although this may reflect the factors that have degraded the necessary evidence over time, the general impression is of an enduring reliance on certain types of tried and tested stock and crops. Such apparent unwillingness to experiment or diversify beyond the familiar is perhaps understandable when the consequences of failure are considered. With regard to the avoidance of seafood, the evidence may also reveal its consumption was considered taboo in prehistory.

The results from the Interconnector do not stand in isolation, and an effort has been made to relate the findings to nearby work, so that the contribution of project to the understanding of the archaeology of the area can be both demonstrated and optimised. At this point in an archaeological publication it would be standard to express the hope that results from future excavations will build upon contribution of the project, and this is indeed wished for here. However, the depositional history of the Fenland basin and Lincolnshire Marsh (see D. Young above) demonstrates the influence of the sea on shaping the local landscape, and the process is clearly ongoing, despite the achievements of mechanical drainage and sea defence construction. Given the low-lying nature of much of the landscape crossed by the Interconnector, the current rise in sea levels (Department for Energy Security & Net Zero 2024, section 3.2) and the recent frequency of local flooding events (Lincolnshire County Council 2024), there is the sense that the excavation of the sites in the Fens and on the Marsh may have been ‘rescue’ digs in a way that surpasses the ordinary meaning of that phrase. One of the unintended benefits of the project may be that it afforded a timely opportunity to excavate sites whose investigation could become untenable in the near future because of deteriorating ground conditions brought about by climate change.

The archaeological remains exposed during the fieldwork are tangible manifestations of complex and somewhat abstract factors such as land tenure, territoriality, cultural transfer and habitation. These are the undercurrents that determine the shape and nature of the archaeological resource, but occasional surface flashes allow the details of individual lived moments to be glimpsed: the keeping up of appearances at Magers Lane by mending the samian pot; the tender gesture of laying the body of the hobbling man to rest with his walking stick at Callow Carr; the wet-shell-shine of fresh bone as the flesh was removed from the Gibbet Hill humerus, the apparently incongruous lap dog puppy in the tough world of ancient Britain (Partney Leys). For these and other details, the data can only take us so far, but its recovery can provoke the imagination and so inspire personal connections with a common past. One of the archaeological contributions of Viking Link is that through its wealth of data, former times can be comprehended and approached in a variety of ways. The past is better known. Whatever the scale of resolution, the main archaeological dividend of Viking Link is that it has connected the present to the past. The results reveal a slightly peripheral area, far from the ‘great thoroughfares of England’ (Stafford 1985, 9), where past land-use was dominated by agriculture. By this description we are brought full circle to the essential conditions of the modern landscape as presented in the introductory chapter, albeit a landscape that now possesses one more link with the wider world.

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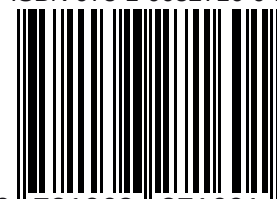
The construction of the Viking Link power cable, which connects the electricity grids of Great Britain and Denmark, has led to the archaeological study of a 67 km-long transect across south-eastern Lincolnshire. The results augment the existing picture of the richness of the archaeological record for the Lincolnshire Wolds and within the valley of the River Lymn, but have also led to the discovery of new clusters of activity in previously little-explored parts of the Lincolnshire Marsh and around the northern Fen margin. Small rudimentary farmsteads and field systems of Romano-British date were widely dispersed across the landscape and form the most common type of site, with earlier remains being few in number but including a small worked flint assemblage, Neolithic pits, at least one Bronze Age barrow and several Iron Age roundhouses. The most significant discovery, however, is a small cemetery serving a local community within this part of the Anglo-Saxon kingdom of Lindsey in the 6th and 7th centuries AD. This is the first Anglo-Saxon cemetery from the southern Lincolnshire Wolds to have been excavated and fully published in the modern era. The overall value of the Viking Link investigations lies, however, in how the combined evidence sheds new light on the long-term development of the regional historical landscape.

This volume introduces the project and sets out the topographic, historical and geoarchaeological context of the landscapes it crossed. A summary of the excavated sites follows, leading to a discussion of how the data has contributed to research aims relating to the development of the prehistoric and early historical landscapes of south-east Lincolnshire. A second volume contains further details on the most significant of the excavated sites, and presents the results of the specialist analyses of the human remains and the artefactual and environmental data.

The two volumes may be seen as a companion piece to the Wessex Archaeology monograph *The Archaeology of the Hornsea Project One Offshore Windfarm Cable Route*, a similar and near-contemporary linear scheme in the north-eastern part of the county. Together, the projects demonstrate how recent renewables infrastructure projects have led to major advances in the understanding of the archaeology of Lincolnshire.



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