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**ARCHAEOLOGICAL  
EXCAVATION AND SALVAGE RECORDING AT THE  
(FORMER) HOPLANDS BUSINESS CENTRE, BOSTON  
ROAD, SLEAFORD  
(HBCS09)**

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Work Undertaken For  
**Westleigh Developments Ltd.**

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**ARCHAEOLOGICAL  
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## 1. SUMMARY

Archaeological excavation and salvage recording was undertaken on land at the Hoplands Business Centre, Sleaford, in advance of development. The site lies adjacent to the Roman road, Mareham Lane, and is situated within an area rich in late Iron Age and Romano-British settlement remains, including field systems, stone building foundations and a late Roman cemetery.

Evaluation of the site had already taken place over a number of phases, as land occupied by industrial and commercial buildings gradually became vacated. The evaluations revealed well preserved remains of late Iron Age and Roman date, including eight late Roman burials, surviving beneath the concrete slab in the northern half of the development area. The south western and central portion of the development area revealed remains of late Iron Age or early Roman, Romano-British and post-Roman date, sealed by transformed 'dark earth' soils. As a result of these discoveries, a programme of excavation and salvage recording was carried out, with emphasis being placed on those areas rich in archaeological remains.

The earliest remains encountered during this phase of works were late Iron Age or early Romano-British sub-circular enclosures. This was followed by at least two stages of coaxial field division, probably of broadly the same period.

A nucleated late Romano-British cemetery, of probable 3<sup>rd</sup> to 4<sup>th</sup> century date, was uncovered in the north eastern quarter of the development area. This consisted of at least fifty three individual graves, aligned east-west, with greater than that number of individual human skeletons being recovered.

The 'dark earth' deposit, known to be extensive in the vicinity, was present across the site and was probably a post-Roman development, although the possibility remains that this deposit disguises more complex archaeological remains.

Modern concrete, hardstanding and demolition layers formed the latest deposits encountered on site.

## 2. INTRODUCTION

### 2.1 Definition of an Excavation

An archaeological excavation is defined as; "programme of controlled, intrusive fieldwork with defined research objectives which examines, records and interprets archaeological deposits. Features and structures and, as appropriate, retrieves artefacts, ecofacts and other remains within a specified area or site on land, inter-tidal zone or underwater. The records made and objects gathered during the fieldwork are studied and the results of that study published in detail appropriate to the project design" (IFA 1999).

### 2.2 Planning Background

Planning permission for residential development of the site had been granted by North Kesteven District Council (N/34/0266/07), subject to a number of archaeological conditions as the site lies within an archaeologically sensitive area, where a programme of archaeological evaluation had confirmed the presence of important archaeological deposits.

An archaeological impact assessment and mitigation strategy was produced by the Heritage Officer of North Kesteven District Council, and an approved method statement and scheme of works produced by Archaeological Project Services.

Archaeological Project Services was commissioned by Westleigh Developments to undertake the archaeological evaluation, excavation and monitoring of the site in accordance with the requirements of the Heritage Officer of North Kesteven District Council. The first phase of work was undertaken in December 2005 (SHBC05). The next phases of work were undertaken in November 2007 and April 2008 (HBCS07). The investigations reported on here were undertaken between 8<sup>th</sup> January and 19<sup>th</sup> February 2009.

### **2.3 Topography and Geology**

Sleaford is located 27km south of Lincoln in the administrative district of North Kesteven (Fig. 1).

The proposed development is located on the eastern outskirts of the town on the northern side of Boston Road. The site lies directly to the rear (north) of the police station on The Hoplands (Fig.2). It covers approximately 0.7ha at a height of c.13m OD, centred on National Grid Reference TF 0776 4601.

The area has not been fully mapped by the soil survey, due to the urban location. However, there are two soil regimes occurring in the vicinity. St. Lawrence Series stagnogleyic brown calcareous earths over calcareous loamy drift are known to the north and New Sleaford Series gleyic brown calcareous sand on calcareous Fen sand and gravel are known to the south (George and Robson 1978, *ibid.* 84 and 76-7).

### **2.4 Archaeological Setting**

The development site lies within the core of the Iron Age and Romano-British settlement at Old Sleaford, now beneath the eastern side of the modern town, where extensive archaeological investigations have been undertaken, in a piecemeal

fashion, over the past century (Elsdon 1997) (Fig. 4). The understanding of the archaeology of Sleaford is an ongoing process, with ever more fascinating evidence remaining to be discovered. Below is a synopsis of the remains thus far recorded.

#### *Prehistoric*

A flint core of Neolithic or early Bronze Age date was recovered from Hoplands Bridge (Taylor 1996) alongside further flint tools from the general area (Rayner 2001). No structural features firmly dating to these periods has been uncovered, although this may be a result of the ephemeral nature of such features, the depth of overlying deposits adjacent to the River Sleas, as well as intensive land use in subsequent periods, rather than a genuine absence of such activity.

Archaeological remains dating to the middle Iron Age become more prevalent. Several middle Iron Age enclosures have been noted in close proximity to the site, one only 500m to the southwest (Rayner 1999), another just 600m to the south (Trimble 1997). These probably represent a pattern of enclosed settlement with related stock enclosures (Taylor 2010, 113).

The site lies directly to the east of Mareham Lane, a north-south Roman road with possible prehistoric origins (Herbert 1998, Margary 1973, 234-58). Late Iron Age remains appear to be concentrated to the west of this road, possibly constituting an undefended nucleated settlement, in contrast to the middle Iron Age pattern.

Ditches, intersecting pits and gullies dating to the late Iron Age have been identified in several archaeological interventions in the general area (Elsdon 1997, 26, 30-34; Trimble 1997; Rayner 2001), whilst excavations at Old Place, to the west of the

site, revealed evidence of late Iron Age occupation, including housing plots, the remains of a wattle and daub building and moderately sized rectangular enclosures, arranged alongside an unmetalled NW-SE trackway, two of which contained the fragmentary remains of buildings (Elsdon 1997, 30-34; Oetgen and Simmons 1992). Over 4000 mould fragments, identified as coin pellet moulds used in the minting process were also recorded during this stage of investigation (Elsdon 1997, 51). This was an internationally significant discovery and has caused Sleaford to be postulated as a regionally important centre for the *Corieltavi* (Elsdon 1997, 75), who occupied much of Lincolnshire and Leicestershire during this period.

To the southeast of the site, recent excavations uncovered late Iron Age ditches, pits, a possible precursor to the east-west aligned Romano-British road and evidence of pottery manufacture in the near vicinity (Glover forthcoming).

Late Iron Age occupation in the form of pits and linears containing domestic refuse were identified during evaluation of the site itself (Bradley-Lovekin 2007; Kitch 2006), with probable boundary features arranged on a north-south/east-west alignment. This was significant, as it had previously been noted that late Iron Age activity was concentrated to the west of Mareham Lane.

#### *Romano-British*

There is substantial evidence that Sleaford was a town of some size and significance during the Roman period. Remains occur across the eastern side of the modern town and include stone buildings, metalled roads and trackways, ritual deposits and burials (Bradley-Lovekin 2005).

The town appears to have been laid out according to a north-south, east-west

orientation, which is possibly a result of the relationship between the town and Mareham Lane, the Roman road joining *Durobrivae* (Water Newton) and *Lindum* (Lincoln). This road has been identified within Sleaford during numerous archaeological investigations (Elsdon 1997, 36-39; Rayner 2001; Parker 2008).

At Old Place, a radical re-organisation of the landscape was noted in this period, the size of enclosures was increased, layout became more regular and solely agricultural features were observed, indicating that settlement focus had shifted (Oetgen and Simmons 1992).

On the eastern side of Mareham Lane, an east-west track, with a possible north-south track extending from it, was identified (Herbert 2010). This appears to have been reflected to the west of Mareham Lane, where an east-west track was identified (Elsdon 1997, 24). Further trackways have been suggested in the general area (Trimble 1997; McDaid 2006).

Immediately to the west of the investigation area, on the opposite side of Mareham Lane, remains of Romano-British stone buildings with paved yards, road surfaces and a corn drier have been identified (Elsdon 1997, 34). This site has recently been re-investigated and further road surfaces and a wall foundation of Romano-British date were uncovered (Wood 2006).

On the eastern and northern perimeter of site, burials of Roman date were identified (Johnson and Palmer-Brown 1995).

Excavations of the area directly to the east of site, during the development of the Bramling Way housing estate, revealed evidence of settlement including a series of inter-cutting linear ditches, pits and a well, predominantly of middle Roman date

(Bradley-Lovekin 2005).

Investigations during the construction of the new police station, immediately to the south of site, revealed the remains of several Romano-British buildings from the later 2<sup>nd</sup> to the later 4<sup>th</sup> century AD (Herbert 1998).

Directly to the north of the current investigation site, a trial trench evaluation targeting a large sub-rectangular earthwork revealed a large enclosure, dated to the later 3<sup>rd</sup>-4<sup>th</sup> century, encompassing a possible cemetery and a 'high status' stone building, probably constructed after the cemetery went out of use (Rayner 2001).

To the southeast of the site, recent excavations have revealed a series of Romano-British buildings, wells and ditches adjacent to the Roman road, which itself was shown to be the result of several stages of development (Glover forthcoming).

The size, nature and development of Sleaford as a Roman town, as well as its regional and national importance, are poorly understood. There is an increasing awareness of the complexity of the remains and the need for further work in order to fully understand Roman Sleaford. Within the confines of the development area, eight late Romano-British burials were uncovered (Kitch 2006), close to where similar burials have previously been found (Johnson and Palmer-Brown 1995; Bradley-Lovekin 2005). Limited evidence was uncovered for structural remains within the area.

Deposits of 'dark earth' containing abundant quantities of 4<sup>th</sup> century Romano-British pottery sealed the remains investigated during the evaluations. These dark earth deposits are commonly found at Old Sleaford and experience has shown

that it is difficult to identify any individual features that may be cut into them (Kitch 2006).

#### *Anglo Saxon and Medieval*

There is little evidence for Anglo-Saxon occupation within the area of investigation. This may suggest a shift in the focus of settlement away from this area during the period. A single middle Saxon ditch was identified within the eastern perimeter of the site, during archaeological monitoring works (Johnson and Palmer-Brown 1995).

On the western side of Mareham Lane is the location of the former church of St. Giles. The church was probably founded in the late Saxon period. The church fell out of use around 1550 and was later demolished (Elsdon 1997; 43). Medieval burials have recently been found within the former church yard (Wood 2006).

Two buildings, along with enclosures and a moat, were revealed during excavations at Old Place (Elsdon 1997, 43). These were probably part of the manorial complex belonging to Lord John Hussey, mentioned by Leland in the 1530s.

### **3. AIMS & OBJECTIVES**

The central aim of the *Residential Development, Boston Road, Sleaford; Archaeological Impact Assessment and Mitigation Strategy* produced by the Heritage Officer of North Kesteven District Council was to 'preserve *in situ* the physical integrity of important archaeological deposits relating to Iron Age and Roman Sleaford' (*ibid*). Where this was not possible, archaeological excavation and recording was required.

The primary aim of the excavations was the preservation by record of the archaeological remains identified in



selected house plots, drains and roadways. Owing to the density of human remains previously recorded, area excavation took place in the impact zone of house plots 31-33 prior to the construction of houses using ring beams and piles.

Included within this aim was the interpretation and reconstruction of the history of land use in this specific area during the prehistoric and Romano-British periods. An assessment of the significance of the 'dark earth' was central to this reconstruction. It was also a priority to assess the level of Anglo-Saxon presence within the site, as this had previously been noted as being significantly scarce in the area.

The narrower objectives of the work were to:

- i. determine the date of the archaeological remains present on the site
- ii. determine the extent and spatial arrangement of archaeological remains present within the site
- iii. establish the character of archaeological remains present within the site
- iv. determine the extent to which surrounding archaeological remains extend into the site
- v. identify the way in which the archaeological remains identified fit into the pattern of occupation and land-use in the surrounding landscape.

## **4. METHODS**

### **4.1 Excavation**

An area of approximately 150m<sup>2</sup>, adjacent to the eastern boundary of the development (Fig. 3), was subject to open area excavation. This area, known hereafter as

Plots 31-33, had been shown to contain the archaeological remains of a probable Romano-British cemetery.

Prior to excavation, topsoil and any other overburden was removed by mechanical excavator using a toothless ditching bucket. Exposed surfaces were then cleaned by hand, if necessary, and inspected for archaeological remains.

Other groundworks were subject to varying levels of archaeological monitoring. In the adjacent building plots – Plots 28-30 and Plots 34-35 (Fig. 3) – excavations for groundbeams were undertaken under archaeological supervision and any archaeological features were excavated and recorded. Stripping for main service runs within the road-line and in the area of Soakaway 1 (Fig. 3) was also monitored and any exposed archaeological deposits recorded. Elsewhere the piled foundation design and shallow ground beam excavations were deemed an acceptable compromise in minimising impact on archaeological deposits.

Each deposit exposed during the excavation was allocated a unique reference number (context number) with an individual written description. A photographic record was compiled. Sections and plans were drawn at an appropriate scale. Recording of deposits encountered was undertaken according to standard Archaeological Project Services practice.

The location of the excavated area, as well as features identified therein, was surveyed in relation to fixed points on boundaries and existing buildings.

### **4.2 Post-excavation**

Following excavation, all records were checked and ordered to ensure that they

constituted a complete archive and a stratigraphic matrix of all identified deposits was produced. A list of all contexts and interpretations appears as Appendix 1. Context numbers are identified in the text by brackets. An equals sign between context numbers indicates that the contexts once formed a single layer or feature. Phasing was based on the nature of the deposits and recognisable relationships between them.

## 5. RESULTS

### 5.1 Description of the results

Following post-excavation analysis, five broad phases of activity were identified:

<i>Phase 1</i>	<i>Natural</i>
<i>Phase 2</i>	<i>Late Iron Age/Early Roman</i>
<i>Phase 3</i>	<i>Romano-British Cemetery, 3<sup>rd</sup>-4<sup>th</sup> Century</i>
<i>Phase 4</i>	<i>4<sup>th</sup> Century/post-Roman</i>
<i>Phase 5</i>	<i>Post-Medieval/Recent</i>

These are discussed in detail below. For ease of reference, each area is discussed separately.

#### Plots 28-30 (Fig. 3)

*Phase 1*      *Natural*

A loosely compacted layer of light yellow sand and gravel (002) was exposed in the base of the pile trenches. This was identified as forming the natural horizon in this area.

*Phase 2*      *Late Iron Age/Early Roman*

A pit, [006], irregular in plan, was uncovered towards the southern extent of this area (Fig. 5). The pit was 3m wide and greater than 0.48m deep and was filled by (005), a soft dark grey-brown silty sand. First century pottery was recovered from this deposit. The purpose of this feature was unclear.

#### *Undated deposits*

Ditch [003] was uncovered towards the east of this area. This appeared to be a curvilinear feature, 2.55m wide extending beyond the excavated area to the north and east. This possibly formed a circular enclosure, or the southwest (rounded) turn of an enclosure, of purpose unknown. No dateable artefacts were recovered from the filling deposit, (004); a soft dark grey-brown sand, 0.6m thick. This feature was possibly related to late Iron Age occupation in the environs, as it does not appear to conform to later land use.

A ditch, [021], was located towards the centre of this area. This was aligned roughly north-south and extended for more than 10m. This feature was not excavated, as it lay below the level of construction impact, but its upper fill, (020), consisted of soft, dark grey-brown silty sand with limestone inclusions. This feature was probably a boundary or drainage ditch.

A layer, (007), 0.7m thick, sealed the above features. This was composed of soft, dark grey-brown sandy silt with frequent inclusions of small, medium and large stones. This was identified as being a buried soil, probably part of the 'Sleaford Dark Earth' horizon encountered on a number of sites within this part of Sleaford. No dateable artefacts were recovered from this deposit.

*Phase 5*      *Post-Medieval/Recent*

Cut [010] was identified in Section 2, truncating deposit (007) (Fig. 7). This feature was not uncovered in plan, but was filled by (008), which contained significant amounts of concrete and modern rubble. It is likely, therefore that [010] constitutes a modern feature connected with the recent occupation of the site.

Deposit (009), a hard but friable mix of rubble, limestone and CBM, 0.3m thick

sealed the area. This formed the modern hardstanding, or surface level, of the site.

### Plots 31-33 (Fig. 3)

#### *Phase 1 Natural*

The earliest deposit encountered was a loosely compacted layer of yellow sand and gravel (002), identified as forming the natural horizon in this area.

#### *Phase 2 Late Iron Age/Early Roman* (Fig. 5, Plates 3-5)

Pit [100] was located at the eastern extent of the excavation area. This was a sub-circular feature, 0.8m long by 0.7m wide, with shallow sides and concave base. It was filled by (099), a loose deposit of dark grey brown silty sand with moderate inclusions of small limestone pieces and occasional fragments and flecks of charcoal. Several sherds of late Iron Age pottery and fragments of animal bone were recovered from this deposit (Appendix 3), which was possibly a domestic refuse pit.

A northeast-southwest aligned ditch, [219], was uncovered towards the western extent of the excavated area. This feature was greater than 3.5m long, 0.4m wide and 0.2m deep, filled by (220), a soft mid grey brown sandy silt with moderate inclusions of small limestone fragments. A collection of late Iron Age pottery was recovered from the area of this ditch and is probably derived from (220). This feature may have formed part of the prehistoric field system present on site, however, as it was only a remnant of a more extensive feature, no further conclusions can be drawn.

Another feature belonging within this phase was [107] a curvilinear ditch forming a semicircle greater than 4m in diameter, 0.57m wide and 0.14m deep. This feature was only partially exposed at the north eastern extent of the excavated area, but it is likely to have formed a

circular/sub-circular enclosure. This was filled by (106), a moderately compacted, very dark brown silty sand, with occasional patches of ash and charcoal. This may indicate that [107] was located close to domestic activity. One sherd of late Iron Age pottery was recovered from this deposit, which also yielded animal bone and a late Iron Age loomweight (Fig. 9, Appendix 3).

Truncating (106) was ditch [150]=[159]. This was an east-west aligned ditch, greater than 5m long, 0.4m wide and up to 0.35m deep. This feature is likely to form part of a prehistoric/early Romano-British coaxial field system (Fig. 5), associated with north-south ditch [152]=[133] and east-west aligned ditches [141] and [193]=[170]. Another stage of field division may have been represented in the form of north-south ditch [191]=[108] and east-west ditch [093]. These were potentially an earlier coaxial field system based on the same, broadly north-south, east-west alignment, but located slightly to the west. This stratigraphic relationship is based on an ephemeral junction between the two field systems within the southwest of the excavated area. All of the above features were, however, badly damaged by later activity, therefore any conclusions drawn are tentative. All of the above ditches were filled by a series of very dark brown sandy deposits with moderately frequent small stones or gravel and occasional flecks of charcoal. No dateable artefacts were recovered from these deposits, but later features were rich in residual late Iron Age and early Roman sherds of pottery, possibly derived from these features.

#### *Phase 3 Romano-British Cemetery,* *3<sup>rd</sup>-4<sup>th</sup> Century*

(Fig. 6, Plates 5-8)

An area of intense burial activity had been identified during evaluations at the site

(see Appendix 2, Grave Catalogue for detailed description of the skeletal remains and Appendix 1, Context summary for the grave cuts and fills). This was located towards the northeast extent of the investigation area. As a result of these discoveries, the area of Plots 31-33 was subject to open area excavation which uncovered the remains of a nucleated Romano-British cemetery (Fig. 6). Fifty three graves were uncovered, containing fifty four individuals, most of which were more than 75% complete. A quantity of disarticulated human remains was also recovered, numbering somewhere between a minimum of seven individual and a maximum of thirty three. The graves and their contents are fully described in Appendices 1 and 2, whilst specialist human bone analysis is included as Appendix 4.

All of the intact burials within this cemetery were supine, ENE-WSW aligned, with heads towards the west. There was relatively little inter-cutting of graves, and there was no evidence of intentionally placed grave goods.

Pottery recovered from the fill of these graves ranged from late Iron Age to 4<sup>th</sup> century AD, and was interpreted as being residual in nature. The presence of such a wide range of pottery indicates that the graves were cut through deposits rich in pottery ranging from the late Iron Age to the fourth century. The animal bone, likewise, was highly likely to be residual in nature (see Discussion and Appendix 3). The graves truncated the late Iron Age/early Roman co-axial field system.

These factors, coupled with other dating evidence, specifically the presence of Roman coffin nails (Appendix 3), combine to suggest a 4<sup>th</sup> century burial ground, with evidence for coffins and burial shrouds being commonplace. These factors and

their import will be discussed further below.

*Phase 4 4<sup>th</sup> Century/post-Roman*

Apparently sealing the Roman cemetery, was (038)=(094), a thick deposit of dark grey brown sandy silt with occasional organic inclusions. In places this was up to 0.9m thick and was rich in sherds of pottery. This deposit was removed by machine, but over 50 individual sherds were recovered for analysis (Appendix 3). Of these, the majority were of late Iron Age type, with three being of Romano-British date (one of which was 3<sup>rd</sup> century) and one sherd of Anglo-Saxon pottery (derived from deposit (094)). The genesis and import of this deposit will be discussed further below.

*Phase 5 Post-Medieval/Recent*

A modern service trench [242] was uncovered at the south western extent of this area. This was sealed by modern overburden and concrete. This formed the modern hardstanding, or surface level, of the site.

**Plots 34-35 (Fig. 3)**

*Phase 1 Natural*

The earliest deposit encountered on site was a loosely compacted layer of yellow sand and gravel (002), identified as forming the natural horizon in this area.

*Phase 2 Late Iron Age/Early Roman*

Uncovered towards the north of this area, [025] and [027] were probably a continuation of the earliest stage of coaxial field system observed in Plots 31-33 (Fig. 5). [025] was a continuation of north-south ditch [191]=[108]. Late Iron Age pottery was recovered from the upper fill of this feature. Only a small part of [027] was uncovered, but it is likely that this formed an east-west ditch, similar to [093]. Both ditches were filled by brown sandy deposits with moderately frequent small

stones or gravel and occasional flecks of limestone.

*Phase 3 Romano-British Cemetery,  
3<sup>rd</sup>-4<sup>th</sup> Century*

Truncating the upper deposits of both [025] and [027] was [022], a grave cut containing SK023 (see Appendix 2, Grave Catalogue for detailed description of the skeletal remains, Appendix 1, Context summary for the grave cuts and fills and Appendix 3 for analysis of associated artefacts). Four further graves were encountered within the centre of Plots 34-35. These were [029], truncated by grave [035], [032] and [045]. These graves all contained ENE-WSW orientated skeletons, with heads to the west. Although there were no specific grave goods, residual pottery dating from the 1<sup>st</sup> to 3<sup>rd</sup> centuries AD was recovered from all of the grave fills, meaning that they were all of, or later than, the 3<sup>rd</sup> century AD. These graves were on the same alignment to those uncovered within Plots 31-33 and were also identical in layout, filling deposits and appearance. Coupled to this, several Roman coffin nails were recovered from graves [029], [032], [035] and [045], strongly suggesting that these were coffined burials of the Roman period, part of the same nucleated cemetery as that uncovered in Plots 31-33.

*Phase 4 4<sup>th</sup> Century/post-Roman*

Sealing the area, was a Dark Earth deposit identical to (007) and (038) (see above).

*Phase 5 Post Medieval/Recent*

Modern overburden and concrete formed the hardstanding, or surface level, of the site.

**Soakaways/Manholes/Road-strip** (Fig. 3, Plate 9)

In accordance with the Mitigation Strategy prepared by the NKDC Heritage Officer, all other development groundworks were

deemed to be too shallow to significantly impact on any *in situ* archaeological deposits (or, in the case of the piling, very limited in extent). As a result, an archaeological watching brief was deemed appropriate for this stage of development. This process involved the recording of any archaeological deposits uncovered, and the excavation and recording of such if development was deemed to jeopardise the survival of the archaeological deposits. The results of this process are discussed below. Unfortunately, a corollary of the watching brief process is that unexcavated features are often undated, as are most of those deposits reported on here.

*Phase 1 Natural*

The earliest deposit encountered on site was a loosely compacted layer of yellow sand and gravel, identified as forming the natural horizon in this area.

*Undated deposits*

A possible linear feature, [039], was exposed during the excavation of the drain run. This was observed in section only, as the excavation area was too narrow for more detailed monitoring, but was more than 0.4m deep and 1m wide. No further information was available. Feature [039] was sealed by (042), identified as forming part of the dark earth horizon, probably the same as deposit (014). This was sealed by a number of modern deposits.

To the southwest of Plots 31-33, Soak-away 1 (Fig. 3) was excavated, uncovering [122], a roughly north-south aligned ditch, 0.9m wide and greater than 1.5m long. Another ditch, [124], was located to the northwest of [122], aligned roughly east-west and measuring 2.5m wide by >1.5m long. The relationship between these features was destroyed by modern disturbance [121], but it is possible that these features form part of the co-axial field system identified in Plots 31-33, and

are, therefore, contemporary with one another.

Towards the western side of the development area a strip of land along the line of the access road, averaging 4m wide and c. 90m long, was stripped by machine. A number of features were uncovered. These were generally below the construction impact level, therefore the majority were not excavated. As a result, only general statements can be made about these features.

Feature [262] was uncovered towards the west of the road strip, this was a pit or ditch terminus greater than 1.4m east-west and 1.6m north-south, extending beyond confines of the strip to the west. Early to mid second century pottery (Appendix 3) was recovered from the surface of this feature, indicating that it possibly related to early Roman occupation of the area.

Towards the south of the road strip was ditch [265], an east-west aligned feature 1.6m wide and greater than 6m long. First and second century pottery was recovered from the surface of this feature, although it is possible that this is a boundary feature relating to the late Iron Age occupation of the area, with later deposits filling the abandoned ditch.

Clearly cutting the upper deposit filling [265] was [264], a sub-circular feature 1.3m long by 0.9m wide. This feature was identified as being either a hearth or pit, filled with burnt material. Deposit (248) was the surviving upper fill, a moderate-firm, red-pink deposit composed of fire affected clay, silt and stones. Second century pottery was recovered from this deposit. A spread of material, (247) was identified adjacent to [264]. This was interpreted as being a deposit formerly filling [264], which had been damaged by machine. Mid second century material was

recovered from this deposit, which was itself composed of dark brown silty sand and ash. It is likely that these deposits are related to early Roman occupation of the area.

Also towards the south of the road strip area was east-west aligned ditch [251]. This feature was above the construction impact level and was, therefore, subject to archaeological excavation. [251] was found to be 0.8m deep by 1.5m wide, filled by (250), a dark brown silty sand with occasional small stones. The feature extended beyond the excavated area to both east and west. No dateable artefacts were recovered from [251], which was probably a drainage or enclosure ditch.

Feature [252], also within the road strip area, was a semicircular/sub-circular cut only partially exposed within the area. This feature was heavily truncated by a modern pipe trench, therefore it was not possible to identify the original dimensions and purpose. The surviving exposed dimensions were 0.8m east-west by greater than 4m northeast-southwest.

Three features, [253], [254] and [255] were all potentially pits or ditch termini, all being only partially exposed, sub-semicircular features within the same general area of the road strip. No dateable artefacts were recovered from the upper fills of these features.

Towards the north of the road strip, two potential ditches were identified. These were [256], a northwest-southeast aligned feature, and [261], a NNW-SSE aligned feature. The upper fills of these features, (270) and (245) respectively, were indistinguishable, it was, therefore, impossible to tell in plan which feature was stratigraphically later than the other. No dateable artefacts were recovered from these deposits.

Numbers were assigned to potential features [257], [258] and [259], towards the southern half of the road strip area. These were possible east-west/NW-SE aligned ditches, although the archaeologist recording these features could not discount that these were in fact natural hollows filled by the dark earth deposit encountered across the investigation area.

No further archaeological deposits were encountered during the road strip. The area was sealed by (260), a moderately compacted, dark brown silty sand with occasional small stones and very occasional oyster shells. This was identified as forming the dark earth horizon identified across the site.

*Phase 2 Late Iron Age/Early Roman*  
Located to the north of Manhole 3, a probable linear, [012], was uncovered. Early second century pottery was recovered from the upper fill, (013). This feature had been truncated by a modern service trench and was only partially exposed. A deposit, (014), sealed [012] and was interpreted as being part of the dark earth horizon identified across the investigation area. Early-mid third century pottery was recovered from this deposit, which was truncated by [015] and [017], both were modern service trenches, although this was probably residual, as the dark earth deposits across the site are characterised by being later than the fourth century cemetery.

*Phase 5 Post-Medieval/Recent*  
Modern overburden and concrete formed the hardstanding, or surface level, of the site.

## 6. DISCUSSION

*Phase 1 Natural*  
The earliest deposit encountered across the

site was a loosely compacted layer of yellow sand and gravel, identified as forming the natural horizon in this area.

*Phase 2 Late Iron Age/Early Roman*  
The intense occupation of the site throughout the Romano-British period and the modern use of the site has meant the early Romano-British and prehistoric remains have been severely truncated. This means it is difficult to draw any firm conclusions regarding land use prior to the organised cemetery phase of use. It seems likely, however, that late Iron Age and early Romano-British occupation is present in the form of sub-circular enclosures (see plots 28-30 and 31-33) and a northeast-southwest aligned co-axial field system, possibly replacing an earlier co-axial field system organised on the same alignment, slightly to the west (Fig. 5). This may be a sign that the field system was of seasonal importance in an area where features were rapidly filled by alluvial silting over time, or possibly subject to a flooding event, thus necessitating the re-excavation of the boundary features. The shift to the east may be indicative of a re-drawing of land boundaries and ownership, or could merely be an accidental innovation resulting from the invisibility of earlier lines.

The shallow nature of the features assigned to this period, as well as the fact that many features were devoid of dateable artefacts makes any more detailed discussion of the late Iron Age and early Romano-British occupation on site purely speculative. A number of points are, however, worth making. The ephemeral nature of late Iron Age remains in the area is worthy of comment as, with a few notable exceptions, this period is under-represented in the area east of Mareham Lane. It is possible that the absence of remains from this period is a result of truncation and later destruction rather than

genuine lack of activity. The presence of land boundaries, probably relating to agriculture, is therefore quite significant in a local context. It is also possible that, whilst the finds recovered from the site are of late Iron Age date and later, the aceramic nature of earlier periods may bias the interpretation of ephemeral features towards a later date, thereby potentially concealing earlier remains. The relative abundance of late Iron Age pottery within later deposits also implies relatively intense activity in the area during this period. This suggests that the pre-cemetery land use may be under-represented in the form of features.

It has also been noted that there is a relative scarcity of early Romano-British (first and second century) remains in the general area (Taylor 2010), possibly indicating a hiatus of occupation and local land use within this period. The residual presence of early Romano-British pottery within later deposits on the Hoplands site undermines this interpretation, rather indicating that remains of this date have been either obliterated by later intensive land use, or that they are yet to be identified. The presence of substantial dark earth deposits (see below) adds further complexity to this problem, as features cut within this deposit are unclear, possibly disguising land surfaces post-dating the late Iron Age.

*Phase 3 Romano-British Cemetery,  
3<sup>rd</sup>-4<sup>th</sup> Century*

All of the burials uncovered during this phase of investigation were ENE-WSW aligned, with heads to the west. There was very little intercutting of graves, given the intensity of land use, and all burials appeared to be arranged in broadly northwest-southeast aligned rows. These elements point towards a formally managed cemetery (Fig. 6), possibly with grave markers having been present at one

stage, although no evidence for these survives.

There is also a great degree of homogeneity in the burial ritual observed within the cemetery, with no clear distinctions between the burial population in terms of sex, age or status. No graves contained intentionally placed items, or grave goods, and most burials contained a single individual. There was evidence in many of the graves for the presence of coffins, either in the form of coffin nails or by inference from the 'apparent tumble of skeletal elements, particularly within the torso area' (Appendix 4). The presence of one shroud pin, as well as the observations made by excavators of the apparent tight arrangement of limbs within the graves, also indicates the use of shrouds being commonplace within the burial rituals observed on site.

This homogeneity across the cemetery implies a common belief system, or religion, and culture. This is reinforced by the common interpretation of east-west aligned burials being an indication of both religion and period. 'The association of Christianity and orientated burials is long established in archaeological accounts despite many provisos ..... Butt Road, Colchester is a good example where it can be shown that there was a rapid and complete adoption of W-E burials c.320-40 AD, with an associated improvement of cemetery organisation. It has been convincingly argued that this change of burial ritual is associated with the adoption of Christianity.' (Cooper 1996, 24). The dating evidence and ritual behaviour exhibited at Hoplands would conform to that of an early Christian cemetery. However, it must also be noted that a number of other factors may inform an east-west aligned burial custom, this includes the rise of the cult of *Sol Invictus* in the fourth century AD (*ibid*) or the



arguable adoption of this alignment by Vikings, who also orientated their long-houses along this axis (Parker Pearson 1999). It is also possible that the cemetery was aligned according to pre-existing enclosures or other topographical features. Christianity cannot be conclusively established from the alignment of the graves alone.

The dating of this cemetery is further complicated by the absence of intentionally placed items within the graves, which would have supplied a broad dating framework. Whilst there is abundant pottery from the grave fills which dates from the late Iron Age to the fourth century AD (Appendix 3), this displays a 'high level of residuality'. It is likely, therefore, that the latter date is that in which the cemetery was in use. However, it must be noted that there was a great degree of similarity between the grave fills and the overburden on this site, these sometimes being indistinguishable to the excavators. This means that it is possible that there is a significant degree of finds contamination within the deposits on this site, possibly skewing dating evidence to indicate a later date than is actually the case.

Analysis of the burial population (Appendix 4) shows that joint disease was commonplace, especially in the middle adult males, suggesting a lifestyle that placed great stresses on the spine, the hands, shoulders and hips. This is suggestive of intense manual labour or physical activity. Chest infections and maxillary sinusitis also showed higher rates of incidence than in the comparable Anglo-Saxon rural population, meaning that it is possible that the population at the Hoplands lived in damper, smokier conditions possibly involving more frequent inter-personal contact. Specialist analysis concluded that it can be inferred

from the skeletal evidence that the population for its time was actually more urban than rural. This is of great importance when considering the nature of the Romano-British settlement at Sleaford, in terms of its size, occupation and context within the local and national settings.

The majority of the skeletons were lying directly on the natural horizon, or overlying late Iron Age deposits, and the grave cuts appear to have been relatively shallow. However, the original depth of the grave cuts and of overlying deposits is unclear, as the dark earth is almost certainly a transformed deposit of later origin. There is evidence of some level of horizontal truncation, as the grave cuts showed no evidence of weathering of their edges, nor was there any evidence of destruction layers or surfaces, a pattern reflected at Old Place (Oetgen and Simmonds 1992). This may indicate that the deposits through which the graves were cut have been destroyed or transformed (into the dark earth) at some point after the cemetery went out of use.

#### *Phase 4 4<sup>th</sup> Century/Post-Roman*

Only one feature appeared to post-date the Romano-British cemetery phase. This was feature [075] which cut grave [138]. A copper alloy bracelet possibly dating to the 4<sup>th</sup> or 5<sup>th</sup> centuries (Appendix 3; Fig. 9) was recovered from the fill (076) of [075]. Little can be concluded from this relationship, other than that activity in the area apparently continued after the cemetery went out of use.

The next deposit is arguably one of the most interesting and important encountered in the area, that is the 'overburden' or dark earth. This deposit is encountered across the Hoplands area and beyond and has been encountered many times in an archaeological context. It is

likely that this dark earth contains a number of phases of development and that it both seals, and is cut by, archaeological features. Unfortunately, the nature of this deposit is such that all differentiation and cut features within it appear to have become obliterated, possibly as a result of the transformation processes involved with its development, thus disguising any phases and features. This has meant that the Sleaford dark earth has traditionally been removed by machine prior to any examination of archaeological deposits taking place. This was the method used during this phase of investigation, as it was assumed that the dark earth sealed the Romano-British cemetery, the main target of enquiry. This, however, was not necessarily the case, as it is likely that the relationship between the dark earth and the archaeological deposits in this area is more complex. During the evaluation phase of this project, the dark earth was interpreted as sealing burials within Trench 6 (Kitch 2006), although the author noted that the difficulty in identifying cuts within this deposit could result in misinterpretation of the stratigraphy. Indeed, on a number of occasions during the excavation of this site, it was felt by the archaeologists excavating the burials that the graves had been cut into the dark earth deposit, although this could not be proven conclusively.

The homogeneity of the dark earth deposit, or overburden, and the abundance of multi-period finds within, makes the interpretation of the period of origin and formation process problematic (McPhail 2004). It is possible that the range of finds indicates a more recent origin for this deposit, or that a common process of development continued over a long period of time. At Old Place it was noted: 'In urban situations, these observations are characteristic of 'Dark Earth' deposits, and it is thought that the overburden at Old

Place may be a similar re-worked deposit, where earlier archaeological strata have undergone post-depositional changes which have obliterated the archaeological contexts of which they were originally comprised' (Oetgen and Simmons 1992).

The removal of the majority of this deposit prior to investigation inhibits any conclusions regarding the place of this deposit within the development of deposits at the Hoplands, although it may be conjectured that the apparent contradiction between the lack of features dated to the 1<sup>st</sup> and 2<sup>nd</sup> centuries and the presence of residual pottery dating from this phase in the general area, could be explained if earlier Roman activity is present within lower levels of dark earth, which are routinely removed during archaeological interventions in Sleaford.

#### *Phase 5 Post-Medieval/Recent*

Modern concrete and hardstanding formed the most recent layers present on the site, with destruction layers, resulting from the recent demolition of industrial units, being uppermost.

## **7. CONCLUSIONS**

Late Iron Age and early Roman activity was identified in the form of sub-circular enclosures, followed by a series of co-axial field systems. This indicates an agricultural use for land at this point, probably with adjacent settlement activity. This is significant in a local context, as late Iron Age and early Roman activity has generally been thought to be confined to that area west of Mareham Lane.

These activities appear to have ceased at some point, probably in the third or fourth century, when the area was given over to use as a burial ground. The cemetery subsequently occupying the area was

intensively utilised, with little evidence of intercutting and a homogeneous burial practice. This is characteristic of a relatively short-lived phase of use, where burial mounds or markers were visible throughout the term of use. The form of the cemetery is characteristic of Christian burial grounds, which is consistent with the potential period in which it was in use.

A deposit of dark earth, or overburden, appears to have formed over the cemetery, although it is possible that an earlier phase of dark earth was stratigraphically earlier than the burials.

No direct evidence of post-Roman/pre-modern activity was uncovered, although map regression and desk-based assessment of the area shows that it was part of the late Medieval/post-Medieval complex of Old Place, used for agricultural purposes right up to the modern Hoplands development.

## 8. ACKNOWLEDGEMENTS

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## 9. PERSONNEL

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CAD Illustration: Tom Bradley-Lovekin, Steve Malone, Katie Murphy and Sue Unsworth.

Post-excavation Analyst: Katie Murphy

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## **11. ABBREVIATIONS**

APS Archaeological Project Services

IFA Institute of Field Archaeologists

LIA Late Iron Age

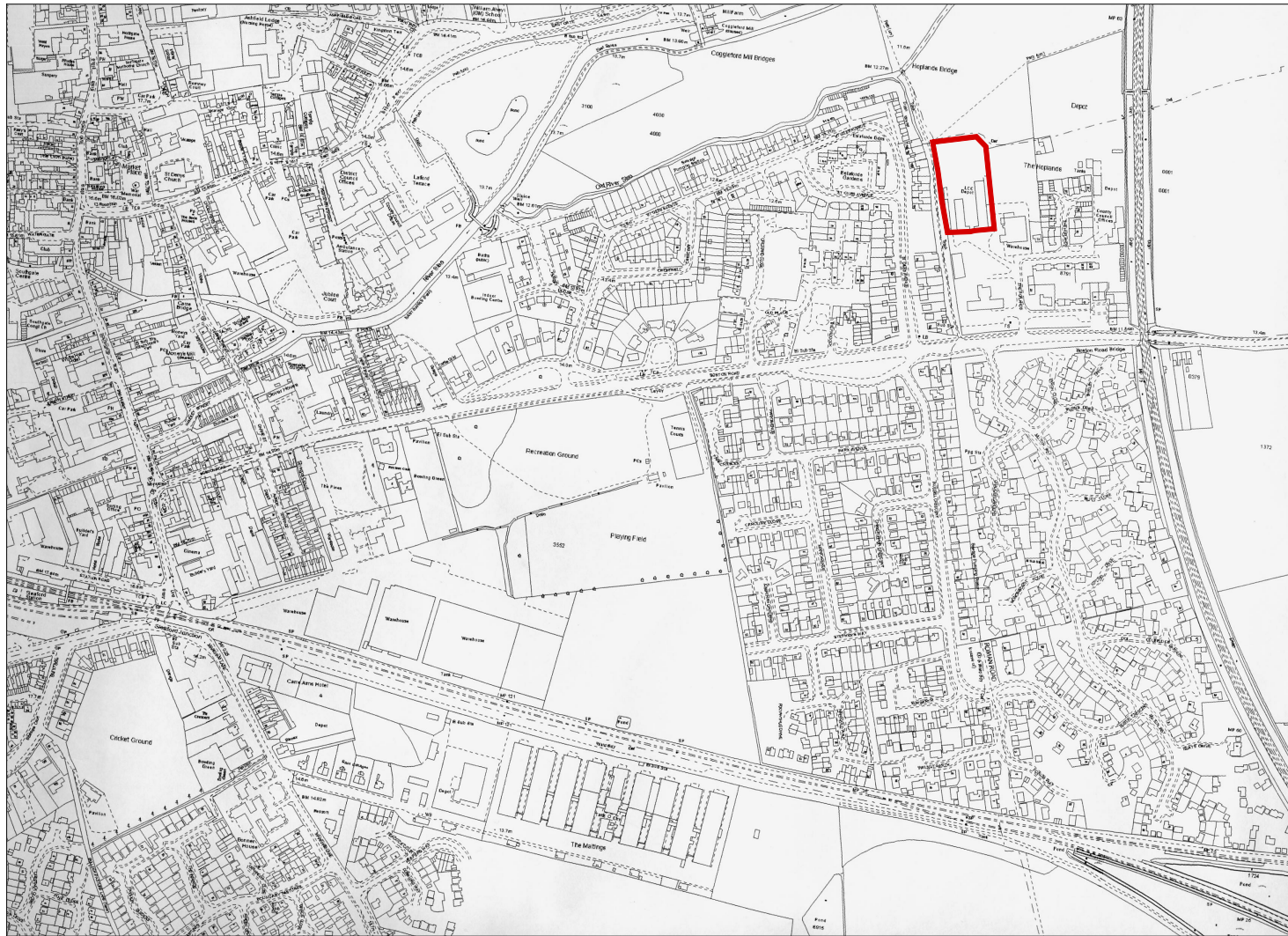




Figure 1: General Location Plan







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 Site Location


 <b>Archaeological Project Services</b>		
Project Name: Sleaford, Hoplands Business Centre		
Scale 1:7500	Drawn by: TBL	Report No: 19/11

Figure 2. Site location



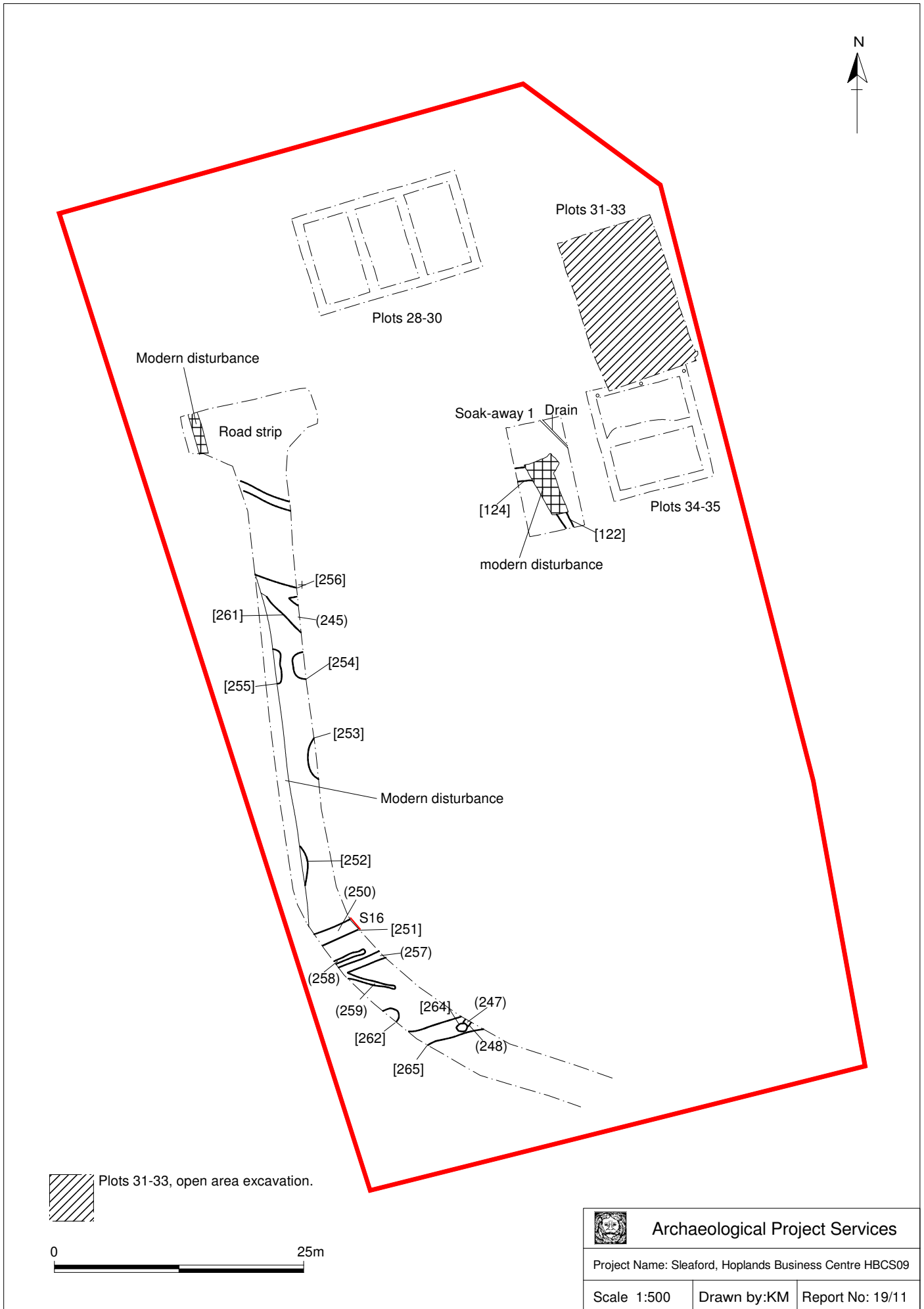


Figure 3 Development outlines showing monitored areas



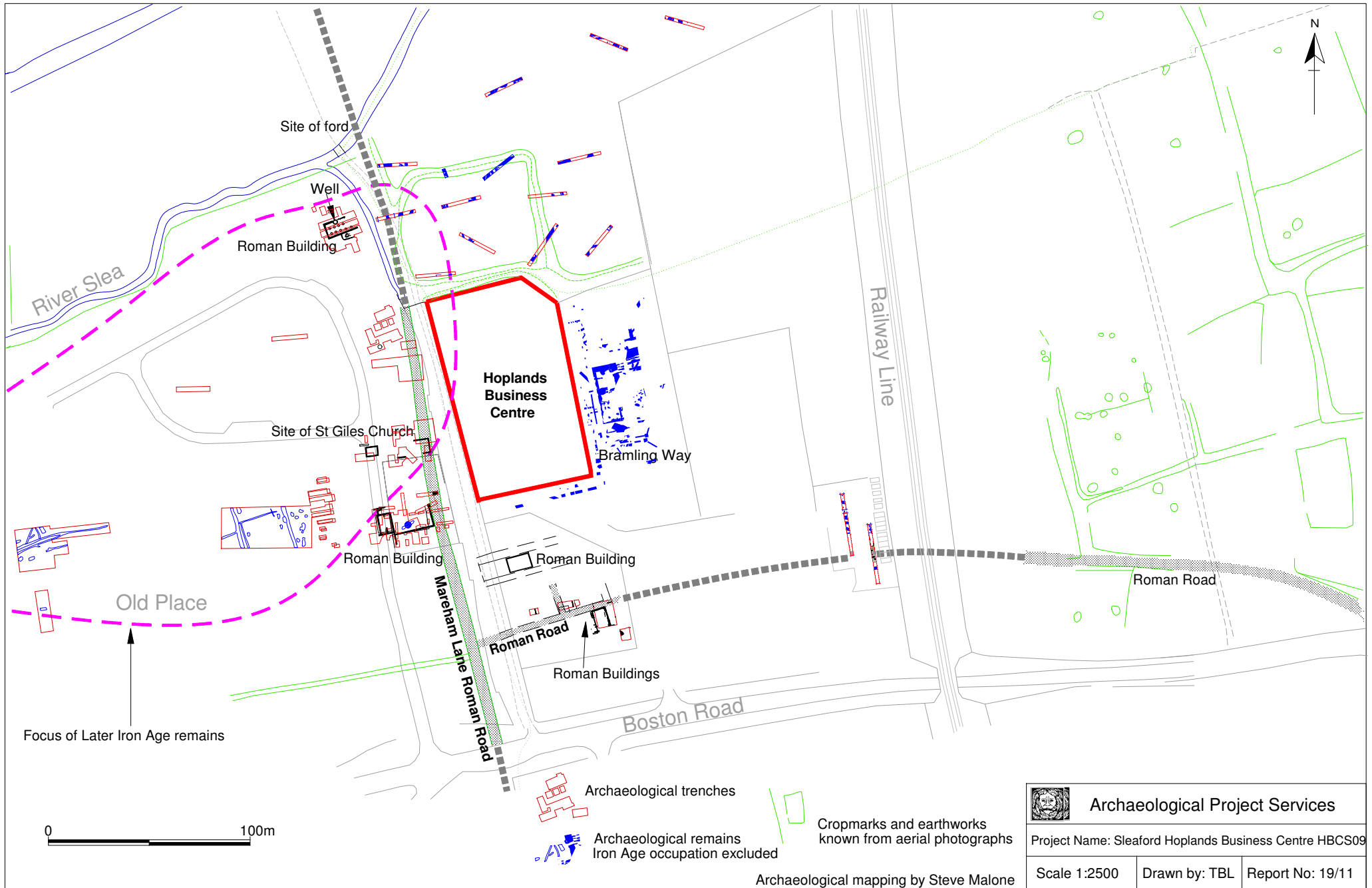


Figure 4 Archaeological setting/previous interventions





Figure 5 Late Iron Age/Early Roman enclosures and field systems





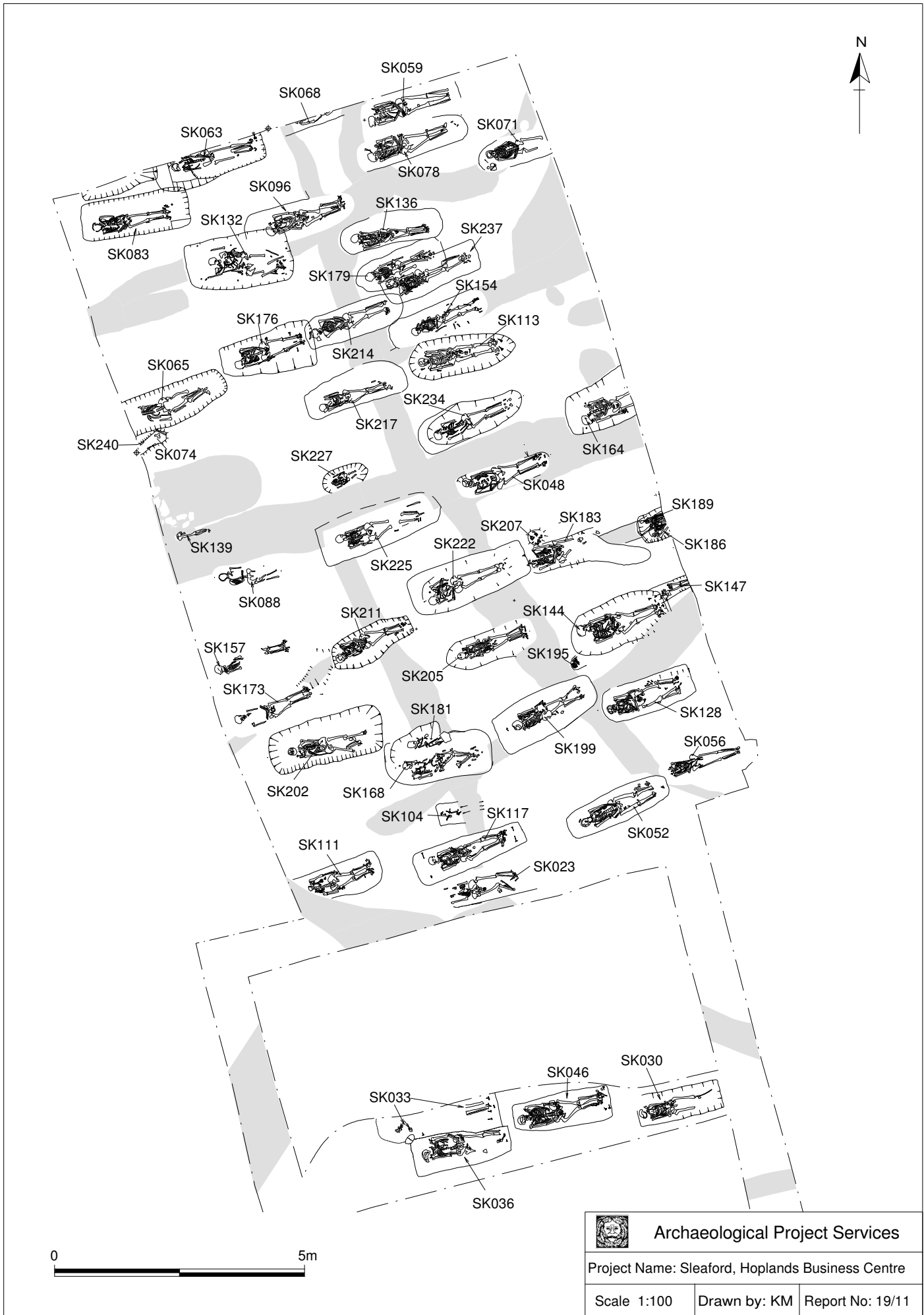
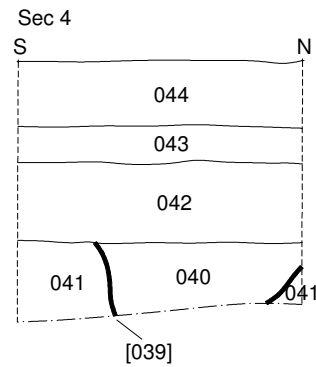
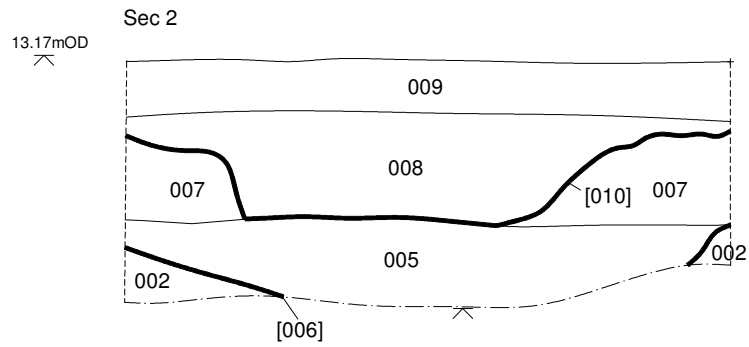
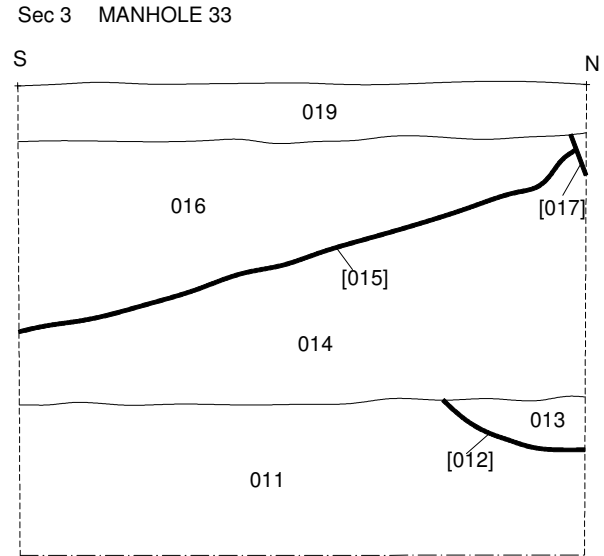
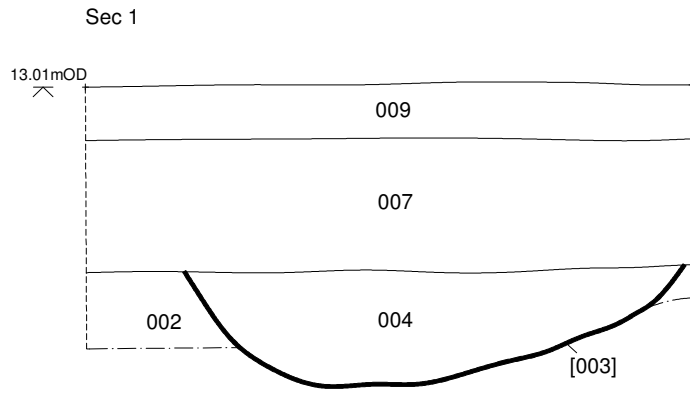


Figure 6 The Cemetery






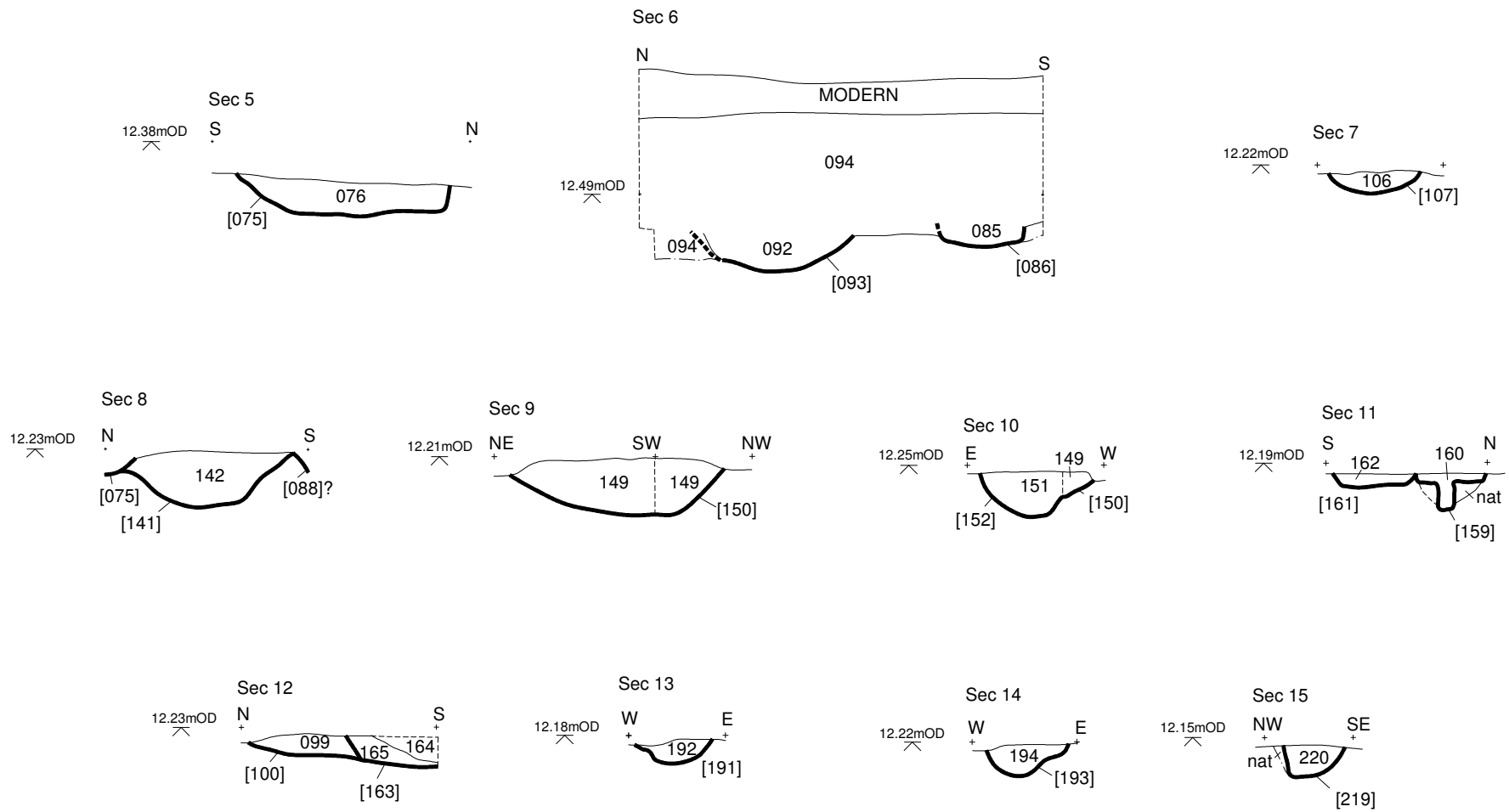
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Project Name: Sleaford, Hoplands Business Centre		
Scale 1:40	Drawn by: SU	Report No: 19/11

Figure 7 Sections 1-4






 <b>Archaeological Project Services</b>		
Project Name: Sleaford, Hoplands Business Centre		
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Figure 8 Sections 5-15



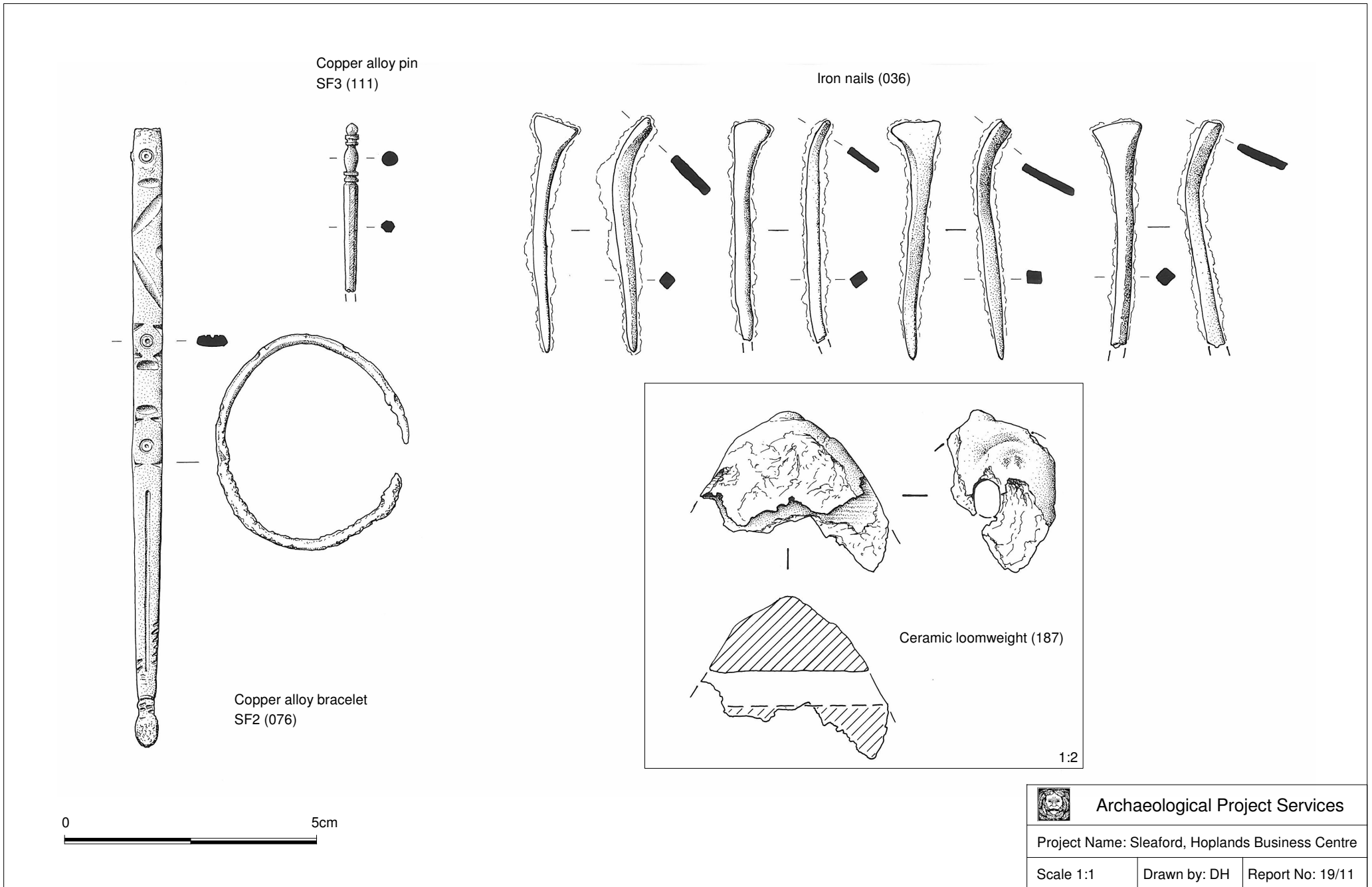


Figure 9 Finds Illustrations







Plate 1 General site view,  
looking north east



Plate 2 General site view,  
looking north west



Plate 3 LIA/RB ditch  
[152], looking north



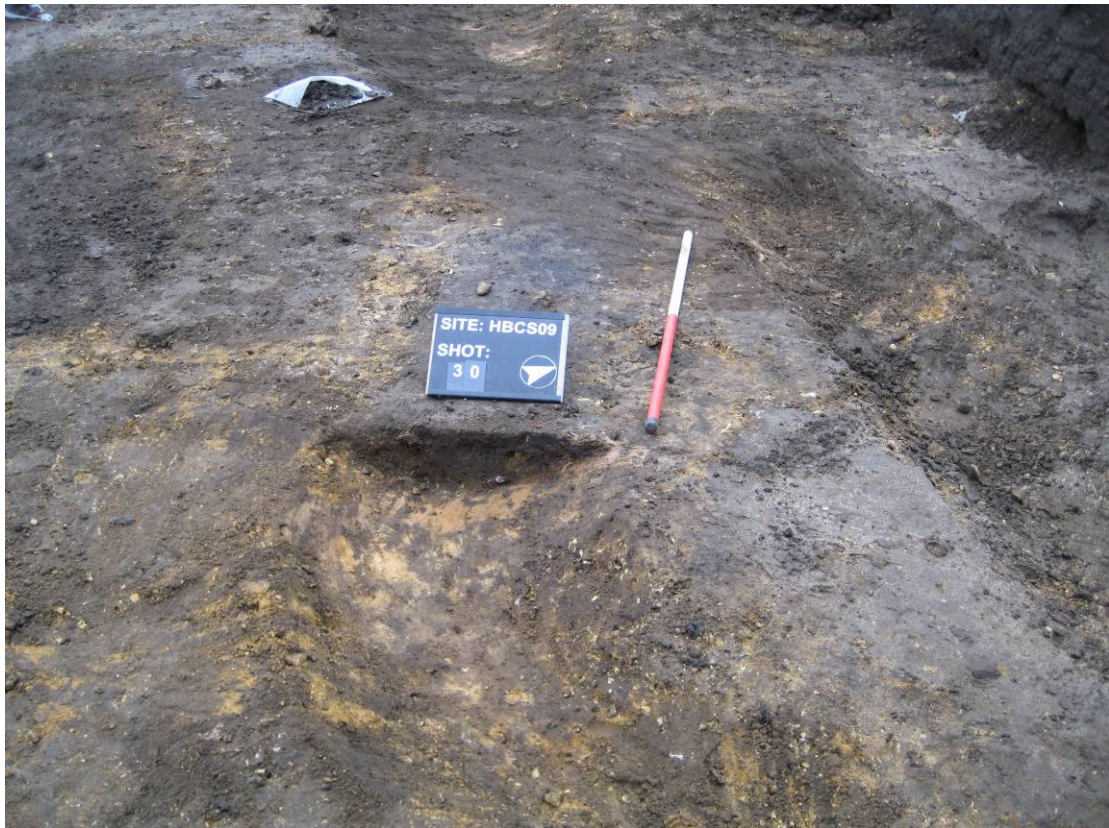


Plate 4 Section through LIA/RB sub-circular enclosure [107], looking west



Plate 5 Panoramic pre-excitation shot showing open area containing cemetery, looking northwest





Plate 6 Skeleton 234, looking west



Plate 7 Skeleton 237, west to top.





Plate 8 Grave cut [127] truncating ditch cut [133], looking west.



Plate 9 Road strip, looking south





## Appendix 1 Context Summary

Context	Plot/Area	Description	Interpretation
001	28-30	Dark earth/buried soil	Number assigned for finds recovered from Plot 28-30
002	30	Loose, light yellow sand and gravel	Natural
003	30	E-W linear, 2.55m wide x 0.6m deep with concave sides and rounded base	Ditch
004	30	Moderately soft, dark grey brown sand and silt, 2.55m wide x 0.6m thick, inclusions of intrusive concrete	Fill of [003]
005	30	Soft, dark grey brown, silty sand with flecks of charcoal and ash, at least 0.48m thick, approx 3m wide	Fill of [006]
006	30	Irregular sub-circular cut, 3m wide x at least 0.48m deep, truncated by machine	Pit
007	30	Soft, dark grey brown sandy silt with frequent small, medium and large stones and intrusive concrete fragments, approx 0.7m thick, same as (001)	Dark earth
008	30	Mixed fill– hard and soft in places, dark grey and light yellow patches composed of sand, silt, gravel and rubble, 3m wide x 0.55m thick	Fill of [010]
009	30	Hard, friable mixed fill composed of rubble, limestone and CBM, 0.3m thick, excavated by machine	Top dressing, upper fill of [010]
010	30	Cut of unknown shape in plan, approx 3m wide x 0.55m deep, sharp b.o.s. top, steep uneven sides and flat base	Modern cut, possibly machine excavated
011	Just N of Manhole 3	Coarse, friable, soft in places, light yellow brown sand and gravel.	Natural
012	As above	Probable linear of uncertain dimensions, concave sides and rounded base, cut by [017]	Ditch
013	As above	Soft, dark grey silty sand with occasional flecks of charcoal, 0.25m thick	Fill of [012]
014	As above	Soft, dark grey brown sandy silt, charcoal and stone inclusions, at least 1.3m thick, excavated by machine, same as (042)	Dark earth
015	As above	Cut of unknown shape in plan, shallow sides, not fully excavated. Truncated by [010]	Possible cut for services
016	As above	Moderately firm, mid yellow brown deposit composed of sand, silt, gravel and rubble. At least 1m thick, excavated by machine	Back-filled material, fill of [015]
017	As above	Linear cut of uncertain dimensions, steep sided, base not excavated, orientated E-W	Service trench

Context	Plot/Area	Description	Interpretation
018	As above	Soft, mixed brown and grey sandy silt with occ-moderate rubble inclusions	Fill of [017], contains BT cables and ceramic drain
019	As above	Moderate-soft dark grey brown sandy silt with moderately frequent small stones, 0.3m thick	Topsoil
020	28-30	Soft, dark grey brown silty sand with occasional flecks of charcoal and sub-rounded/flat limestone inclusions and corn brash lumps, not excavated	Upper deposit in base trench, c. 12.07mOD, fill of Ditch [021]
021	28-30	N-S linear, exposed dimensions 10.2m long x 1.4m wide – not excavated	Possible boundary ditch – not excavated as below level of beam slot
022	34	Sub-rectangular cut, 1.6m l x 0.6m w with shallow, concave sides and slightly concave/flattened base. E-W aligned, truncated by modern activity. Uncertain whether cut is sealed by or cutting through dark earth layer. Cut edges very difficult to define, cut into earlier linear on e-edge, another feature to south and much of cut truncated away to the north	E-W aligned grave cut containing SK023
SK023	34	Supine adult skeleton, skull and upper body absent, heavily disturbed	Human skeleton contained within grave cut [022]
024	34	Moderate-soft, mid grey brown sandy silt with occasional small limestone pieces, 1.6m long x 0.6m wide. Truncated by machine.	Fill of grave [022]
025	34	Curvilinear feature, NW-SE, not fully exposed. Intersects with feature [027] but relationship unknown. Truncated by Grave cut [022]	Possibly same linear as [108] and [191]. not excavated as feature will not be disturbed by development.
026	34	Soft, friable mid grey brown sandy silt with occasional small limestone pieces. Dimensions unknown.	Upper fill of [025], not excavated.
027	34	Partially exposed feature – possible linear, aligned SW-NE, intersects with linear [025] and [242], relationship unknown as not excavated.	One edge of feature running SW-NE under baulk. Will not be affected by constructed therefore not excavated.
028	34	Moderate-firm mid brown grey sandy silt with occasional small limestone inclusions. Dimensions unknown as deposit unexcavated.	Upper fill of feature [027]. Not excavated.
029	34-35	Rectangular E-W aligned cut, 1.8m l x 0.6m. Unexcavated as below construction impact level	Grave cut containing SK030
SK030	34-35	Supine adult skeleton, tightly bound, possibly shroud burial within coffin. Damaged by machine.	Adult skeleton, left in situ

<b>Context</b>	<b>Plot/Area</b>	<b>Description</b>	<b>Interpretation</b>
031	34-35	Moderate-firm mid grey brown sandy silt with och. small limestone pieces. Not fully excavated. Two coffin nails recovered from fill.	Fill of grave [029]
032	34-35	Cut of E-W grave, only partially exposed, at least 1.8m l x 0.6m w, E-W aligned, truncated by grave cut [035] to the south.	Cut of grave exposed during trenching – not excavated as outside area of construction impact.
SK033	34-35	Human skeleton of adult, partially exposed. Left in situ.	Human skeleton contained within grave cut [032]
034	34-35	Moderate-firm mid grey brown sandy silt with occasional small limestone inclusions. Dimensions unknown. Not excavated.	Upper fill of grave [032]
035	34-35	Sub-rectangular cut with flattened base, aligned E-W, 1.84m l x 0.7m w	Grave cut, contains SK036. Cuts grave [032] to the north.
SK036	34-35	Supine human skeleton, skull and legs heavily damaged by machine.	Human adult skeleton contained by grave cut [035]
037	34-35	Moderate-firm, very compact around SK036, mid brown grey sandy silt with occ. small limestone pieces and disarticulated bone. 1.84m l x 0.7m w.	Fill of grave [035], contains disarticulated bone possibly derived from grave [032] to the north.
038	31-33	Moderate-soft dark grey brown sandy silt with occasional organic inclusions.	Dark earth – number assigned for finds retrieval during machining.
039	Drain run	Feature observed in section only, greater than 0.4m deep x 1.08m wide, asymmetrical sides, base not exposed.	Cut of ditch?, exposed in section only
040	Drain run	Loose dark grey brown clayey sand with gravel >0.4m thick	Fill of [039]
041	Drain run	Loose yellow sand and gravel >0.44m thick	Natural sand and gravel horizon
042	Drain run	Loose, dark grey brown clay sand with frequent gravel inclusions, 0.41m thick	Dark earth deposit
043	Drain run	Loose, dark grey brown clay sand, 0.2m thick	Topsoil
044	Drain run	Modern hardcore for industrial estate yard surface	Modern hardstanding
045	34-35	Sub-rectangular cut with rounded corners and flattened base, 1.9m l x 0.72m w, aligned E-W	Grave cut containing SK046
SK046	34-35	Adult, human skeleton, supine. Good state of preservation.	Skeleton contained within grave cut [045]
047	34-35	Moderate-soft, friable mid grey brown sandy silt with occ. small limestone pieces and disarticulated bone. Difficult to distinguish from dark earth deposit above.	Fill of grave [045]
SK048	31-33	Adult human skeleton, supine.	Skeleton – same as SK604 from Trial Trench 6

Context	Plot/Area	Description	Interpretation
049	31-33	Cut of grave containing SK048, dimensions of which are unknown as feature cut into fill of ditch [141] and deposits are indistinguishable	Cut of grave containing SK048
050	31-33	Moderate-soft very dark brown sandy silt with occasional gravel inclusions	Fill of grave [049]
051	33	Moderate-soft dark brown silty sand with occ. sub-angular stones, >0.1m thick, indistinguishable from dark earth of which it is a part of, cuts or is sealed by.	Fill of grave cut [053]
SK052	33	Supine adult human skeleton. E-W aligned. Largely present except for feet, which are fragmentary	Adult skeleton contained within grave cut [053]
053	33	Sub-rectangular cut with rounded corners, 0.54m w x c.2.1m l with concave sides uneven base, broadly E-W aligned, possibly truncated by [232] at eastern extent.	Cut of grave containing SK052
054	33	Grave cut – dimensions indistinguishable	Grave cut containing SK056 – possibly cut into dark earth
055	33	Friable dark brown silty sand, with occ. small stones c.0.1m thick	Fill of grave cut [054]
SK056	33	Probable adult s human skeleton, E-W aligned, only partially present – head, feet and hands largely absent.	Skeleton contained by grave cut [054]. Head possibly recovered from higher level (recorded as SK057), redeposited in roughly correct anatomical position.
SK057	33	Disarticulated human skull found redeposited with dark earth layer?	Disarticulated human skull. Possibly related to SK056
058	31	Moderate-soft very dark brown silty sand with occ. small sub-rounded stones, c.0.2m thick	Fill of grave cut [060]
SK059	31	E-W aligned supine adult human skeleton, moderately well preserved, feet absent	Skeleton contained by grave cut [060]
060	31	Grave cut – dimensions and shape in plan indistinguishable as fill and surrounding deposits identical – possibly cut into dark earth deposit	Grave cut containing SK059
061	31-33	Sub-rectangular cut with rounded corners, 0.65m w x 2.23m l x 0.3m d, steep sides and stepped base	Grave cut containing SK063 – presence of disarticulated human bone within fill (062) may suggest that this feature truncated earlier burial feature/s
062	31-33	Loose, dark grey brown clayey sand with frequent angular gravel, 0.3m thick	Fill of grave [061], disarticulated jaw fragment contained within deposit.
SK063	31-33	Single adult skeleton, supine, moderate preservation. E-W aligned inhumation contained within clear grave cut, presence of nails suggests coffin burial. Skull damaged by machine, although presence of jaw within fill (062) may be suggestive of earlier disturbance.	Skeleton contained by grave cut [061]

Context	Plot/Area	Description	Interpretation
064	31-32	Sub-rectangular cut with rounded corners, 2m E-W x 0.7m N-S x 0.16m deep. Flattened base.	Grave cut containing SK065
SK065	31-32	Articulated human burial, poor state of preservation, skull, jaw hands and feet absent, remaining bones compressed and moved slightly.	Skeleton contained by grave cut [064]. presence of FE nails may be suggestive of coffin burial
066	31-32	Friable dark grey sandy silt with moderate irregular gravel and occ. rounded gravel inclusions. Up to 0.16m thick	Fill of grave cut [064]
067	31	Moderate-soft dark brown silty sand with occasional pebbles, c.0.1m thick	Fill of grave cut [069]
SK068	31	Human skeleton, only partially exposed within excavation area, not fully exposed as remaining parts not under threat of destruction from construction. Right arm, pelvis and upper leg exposed, right hand being located below pelvis.	Human skeleton contained within grave cut [069]. Skull SK239 possibly related to this burial.
069	31	Sub-rectangular cut, visible dimensions 1.3m l x 0.26m w – not fully excavated.	Grave cut containing SK068
070	31	Friable very dark brown, slightly clayey silty sand with occasional small pebbles.	Fill of grave cut [072]
SK071	31	E-W aligned human burial. Skull truncated by machine. Lower legs absent, possibly truncated by feature. Pottery locate4d near skull, pottery and animal bone near northern femur.	Human inhumation burial contained by grave cut [072]
072	31	Sub-rectangular, dimensions unclear due to this cut being at a higher level than surrounding graves, probably subject to truncation	Grave cut containing SK071
SK073	31	Disarticulated human jaw fragment contained within fill (062), located at foot of burial SK063	Disarticulated human bone
SK074	32	Disarticulated human bones, fragmentary remains composed of partial mandible, partial ribcage, and left femur. Possibly an articulated inhumation disturbed by grave cut [064]	Fragmentary human remains
075	32	Not fully exposed, possible linear/sub-rectangular feature at least 2.3m E-W x 1.34m N-S x 0.22m deep, irregular sides and flattened base.	Possible pit/linear feature containing fill (076), which has large irregular pieces of limestone, some burnt, disarticulated human and animal bone and a copper alloy 'bracelet'
076	32	Loose, dark grey sandy silt with frequent large irregular pieces of limestone, some heat affected. Occasional inclusions of human and animal bone, >0.22m thick.	Fill of pit [075], bone inclusions suggests [075] disturbed earlier burials.

<b>Context</b>	<b>Plot/Area</b>	<b>Description</b>	<b>Interpretation</b>
077	31	Dark brown sandy silt with moderate pebble inclusions, 0.3m thick	Fill of grave cut [079]
SK078	31	E-W aligned human burial, articulated, arms crossed over abdomen, head facing south, jaw to north. Fairly good condition.	Human skeleton contained within grave cut [079]
079	31	Rectangular cut, c. 0.7m wide x 1.9m long, edges uncertain as feature appears to truncate 2/3 earlier features	Grave cut containing SK78
080	31	Small pile of animal bone and pot, bone also contained within pot.	Stray find – possible votive deposit
081	31-33	Sub-rectangular cut with rounded corners, 2.15m w x 0.83m w x >0.25m d. with steep sides and flattened base	Grave cut containing SK083
082	31-33	Loose, dark grey brown clay sand with occasional angular gravel inclusions, 0.2m thick	Fill of grave cut [081] containing SK083.
SK083	31	E-W aligned articulated human burial, clear grave cut, nails present within fill, considerable care taken in laying out. Disarticulated infant bones (SK084) recovered	Human skeleton contained within grave cut [081]
SK084	31	Disarticulated neonate bones within deposit (082), contained within grave cut [081]. Recovered from chest area of SK083.	Disarticulated neonate remains
085	31-32	Friable, very dark brown silty sand with occ. Small pebbles and flecks of charcoal, >0.13m thick	Fill of shallow feature [086]
086	31-32	Sub-rectangular cut with rounded corners, 0.5m w x >0.72m l x >0.13m d, steep sides and concave base.	Probable grave cut that has been truncated – likely to have been cut into dark earth, but at what level is unknown as layers cannot be seen within (094)
087	32	Grave cut – dimensions and shape in plan indistinguishable – burial within dark earth. After complete excavation, base of cut could be discerned which appeared to be rectangular with rounded eastern end	Number assigned for indiscernible grave cut containing SK088
SK088	32	Badly damaged and incomplete human skeleton lying E-W. Right arm folded over abdomen. Buried within dark earth.	Human skeleton contained within grave cut [087]
089	32	Friable dark grey brown sandy silt with moderate inclusions of irregular gravel.	Fill of grave cut [087] – not discernible from surrounding dark earth
090	31-32	Friable, very dark brown silty sand with occasional small pebbles and flecks of charcoal >0.05m thick	Fill of shallow feature [091]
091	31-32	Sub-circular cut, 0.48m l x 0.26m w x 0.05m d, concave base, filled by (090)	Very shallow feature – possibly base of post hole or pit

Context	Plot/Area	Description	Interpretation
092	31-32	Friable, very dark brown sand with clay and silt elements, occasional flecks of charcoal and small pebbles	Fill of ditch [093] containing some human bone
093	31-32	Linear, 0.82m w x >0.23m d, extends across plots 31-32, E-W aligned with concave sides and base	Cut of ditch, cut into Sleaford dark earth (094) but cut not visible within this deposit due to similarities between (092) and (094), therefore impossible to say at what level this feature was cut
094	31-32	Friable, very dark brown silty sand with occasional charcoal flecks and small pebbles, 0.87m thick at this point	Sleaford dark earth – probably represents multiple phases of deposition through time, but colour and texture does not permit recognition of this – features are cut into this/these deposits but at what level (physically or stratigraphically) is unknown.
095	31	Friable dark grey brown sandy silt with moderate irregular gravel and occasional pebbles. Occasional pottery and animal bone	Fill of grave cut [097] – indistinguishable from surrounding dark earth
SK096	31	E-W aligned human skeleton in moderate-poor condition.	Human skeleton contained within grave cut [097]
097	31	Indiscernible grave cut	Cut of grave containing SK096 – shape in plan indiscernible due to similarity of deposits (095) and dark earth. Cuts 160, 149, 151, 131?
098	31-32	Concentration of pottery sherds – probably contained within dark earth, but possibly from a feature cut into dark earth but indiscernible	Number assigned to pottery sherds – probably contained within dark earth
099	32	Loose dark grey brown silty sand with moderate small limestone fragments, occasional charcoal fragments and flecks, 0.14m thick.	Fill of [100]
100	32	Sub-circular feature, c. 0.7-0.8m diameter with shallow sides and a concave base. Truncated by grave cut [163]	Possible pit or natural hollow filled by deposit (099)
101	31-33	Sub-rectangular feature with rounded corners. Only partially exposed, but uncovered dimensions were 1.55m l x >0.23m w x 0.25m d with steep sides and concave base.	Grave cut uncovered on northern limit of excavation. Coffin nail and unarticulated bone recovered from filling deposit.
102	31-33	Loose dark grey brown clayey sand with moderate angular gravel inclusions, one coffin nail and unarticulated bone recovered from deposit. 0.25m thick as excavated	Fill of grave cut [101] – does not appear to be an in situ burial, but feature was only partially exposed within the excavation area
103	33	Sub-rectangular cut with sharp corners and flattened base, E-W aligned, 0.44m w x 0.53m l	Grave cut containing SK104. feature heavily truncated by [108] to the east, very little of skeleton remaining
SK104	33	Partially articulated human skeleton – young child, surviving bones in fair condition – coffin nails present. Truncated by linear [108]	Human skeleton contained within grave cut [103]
105	33	Moderate-soft mid grey brown sandy silt with	Fill of grave cut [103]. Little remaining – machined to

Context	Plot/Area	Description	Interpretation
		occasional limestone fragments.	level of skeleton
106	31	Moderately compacted very dark brown silt and sand with occasional patches of ash and charcoal, occasional small pebbles, 0.14m thick	Fill of [107]
107	31	Curvilinear feature >4m long x 0.57m w x 0.14m d, concave sides and base, cut by graves [072] and [074], located at north eastern extent of excavation area, possibly forming a sub-circular enclosure	Cut of curvilinear feature, possibly forming (sub)circular enclosure.
108	33	Cut of linear, roughly N-S aligned – see 191 for details	Linear – possible enclosure ditch
109	33	Same as 192	Same as 192
110	33	Moderate very dark brown silty sand with occasional pebbles, 0.15m thick	Fill of grave cut [112]
SK111	33	E-W aligned human skeleton heavily damaged by modern development – right shoulder and most of head removed by service trench. Dress/shroud pin recovered from below lower back)	Human skeleton contained by grave cut [112]
112	33	Sub-rectangular cut with rounded corners, steep sides and flattened base, 1.6m l x 0.7m w, truncated to west by service trench	Grave cut containing SK111
SK113	31-32	Articulated skeleton, E-W aligned, in good state of preservation with exception of hands and feet. Four nails found in fill suggestive of coffin burial. Hands possibly clasped at pelvis area holding a pot (several sherds found in this area, pot (098) was found situated at foot of skeleton but outside of grave cut, possibly suggestive of votive offerings)	Human skeleton contained within grave cut [114]
114	31-32	Sub-rectangular/ovoid cut with rounded corners, gradually sloping sides and a slightly concave base, E-W aligned, 2.25m l x 0.8m w	Grave cut containing SK113
115	31-32	Soft, loose very dark grey brown silt with frequent small rounded stones and occasional charcoal. Pottery and nails recovered from deposit. 0.16m thick	Fill of grave cut [114]
116	33	Soft very dark brown silty sand with occasional stones and flecks of charcoal and ash, 0.3m thick	Fill of grave cut [118]
SK117	33	E-W aligned human skeleton, sacrum on its side, much of face missing. Animal skeleton/s discovered on chest area of skeleton.	Human skeleton contained within grave cut [118]
118	33	Sub-rectangular cut with rounded corners, 2.38m l x 0.72m w x 0.3m d, steep sides and	Grave cut containing SK116



Context	Plot/Area	Description	Interpretation
		concave base, E-W aligned – cuts SK126 and (109)	
119	Soak-away 1	Loose light yellow brown sand and gravel	Natural horizon
120	Soak-away 1	Number assigned to unstratified finds recovered during machining	Number assigned to unstratified finds recovered during machining
121	Soak-away 1	Large area of modern disturbance, backfilled with recent material (tarmac etc) 6m x 3.4m	Recently backfilled modern excavation – trial trench/geotechnical pit?
122	Soak-away 1	Cut of linear feature 0.9m wide, NNW-SSE aligned. Truncated by [121], not excavated	Linear exposed at base of soak-away
123	Soak-away 1	Friable dark grey brown clayey sand with frequent gravel inclusions – not excavated	Fill of [122]
124	Soak-away 1	E-W aligned linear, 2.5m wide. Truncated by [121]. Unexcavated.	E-W linear exposed in base of soak-away
125	Soak-away 1	Friable dark grey brown clayey sand with frequent gravel inclusions. Unexcavated.	Fill of [124]
SK126	33	Unstratified human remains recovered during machining – probably a burial contained wholly within the dark earth and disturbed by grave cuts [118] and [112]	Partial human skeleton recovered during machining – probably heavily disturbed by RB burials
127	33	Sub-rectangular cut with sharp corners 1.9m l x 0.6m w, flattened base, E-W aligned. Truncates linears [133] and [170]	Cut of grave containing SK128
128	33	Supine human skeleton, E-W aligned, well preserved, largely intact.	Human skeleton contained within grave cut [127]
129	33	Moderate-soft mid grey brown sandy silt with occasional limestone fragments, pottery and bone recovered from deposit	Fill of grave cut [127], possibly confused with finds from deposit (134)
130	31-33	Sub-rectangular cut with rounded corners, steep sides and flattened base, 2.08m l x 0.9m w x 0.4m d, E-W aligned	Cut of grave containing SK132
131	31-33	Friable dark grey brown clayey sand with frequent angular gravel, 0.4m thick – possibly cut by grave cut [097]	Fill of grave cut [130] – in situ coffin nails planned and recovered
SK132	31-33	E-W aligned human skeleton – presence of nails indicative of coffin, mostly present but fairly disarticulated, possibly due to disturbance caused by collapse of coffin.	Human skeleton contained by grave cut [130]
133	33	Cut of linear – same as [152], [232] and [618] (– evaluation) truncated by grave cut [127]	Linear – see [152]
134	33	Same as (151)	See (151)
135	31	Moderate very dark brown silty sand with occasional flecks of ash and charcoal, 0.18m thick. Pottery and bone recovered from deposit	Fill of grave cut [137]

Context	Plot/Area	Description	Interpretation
SK136	31	E-W aligned human skeleton, moderate preservation, mostly present, possibly bound as fairly compact positioning	Human skeleton contained by grave cut [137]
137	31	Sub-rectangular cut with rounded corners, 2.08m l x 0.6m w x 0.18m d, steep sides and flattened base, E-W aligned, possibly truncated by grave to south and truncates [107] [133] [150]	Cut of grave containing SK136
138	32	Grave cut number assigned for SK139, cut not discernible	Grave cut assigned for SK139 – not discernible
SK139	32	Partial human remains – articulated right leg and part of pelvis with disarticulated bones in immediate environs – the bones were immediately south of pit [075] and were probably disturbed by that feature	Human skeleton
140	32	Friable dark grey brown sandy silt with moderate inclusions of small irregular gravel.	Fill of grave cut associated with SK139, part of coaxial field system.
141	32	E-W aligned linear 1.07m wide x 0.35m deep with moderate sides and concave base. Cut by pit [075] and grave cut [087]. Cuts [191] and contemporary with [133]	E-W ditch, earlier than burial [087] and pit [075]
142	32	Friable dark grey brown sandy silt with occasional irregular gravel. 0.35m thick.	Fill of ditch [141], animal horn, human bone and coffin nail recovered. These may have originated in adjacent burial which cut ditch fill (confusion of finds)
143	32-33	Sub-rectangular cut, 1.84m l x 0.92m w, with moderately sharp sides and flattened base, E-W aligned. Western edge slightly truncated by eval trench, possibly cuts SK195, truncates [170] to south	Cut of grave containing SK144 – unusually wide cut. Lies beneath grave [146] to east and cuts linear [170] to south
SK144	32-33	E-W aligned human skeleton. Good preservation. Mainly present.	Human skeleton contained by grave cut [143]
145	32-33	Moderate-soft mid grey brown sandy silt with occasional small limestone fragments	Fill of grave cut [143] – possibly contaminated by finds from linear [170]
146	32-33	Shape of cut unclear due to truncation (possibly by machine) >1.02m l x 0.56m w, probably sub-rectangular cut with flattened base – ENE-WSW aligned – cuts deposit (145)	Grave cut containing SK147 – cut into dark earth. Cuts upper fill of [170] to south and upper fill of grave [143]
SK147	32-33	Human skeleton, E-W aligned, largely destroyed by later activity but legs and feet remain. Buried quite high within dark earth.	Human skeleton contained by grave cut [146], sits on top of grave cut [143] to west
148	32-33	Moderate-soft dark grey brown silt with occasional small limestone fragments.	Fill of grave cut [146]. Backfill may be grave dark earth, Possibly contaminated with finds from linear [170]
149	31-32	Friable very dark brown silty sand with occasional patches of charcoal. Fills [150]	Fill of pit [150]
150	31-32	Sub-circular/oval cut – irregular in plan and	Irregular shaped pit – very hard to see shape in plan as

Context	Plot/Area	Description	Interpretation
		section, 0.35m deep. Cut by [137] and [097] cuts/cut by [159]and[152] – interpreted post-ex as being a contemporary part of the coaxial field system.	heavily truncated/merges with adjacent features – interpreted in post-ex as continuation of IA/Early RB ditch
151	31-32	Friable very dark brown silty sand with occasional small stones and flecks of charcoal	Fill of linear [152]. Indistinguishable from dark earth.
152	31-32	N-S aligned linear, >4m l x 0.51m w x 0.29m d, with steep, concave sides and concave base – cuts or cut by [137] [150] [159][093] ] – interpreted post-ex as being a contemporary part of the coaxial field system.	N-S aligned linear, runs into [137] and [150] but relationship unclear due to similarity of fills] – interpreted post-ex as being a contemporary part of the coaxial field system.
153	31	Moderate-soft very dark brown silty sand with occasional small stones, 0.3m thick	Fill of grave cut [155]
SK154	31	E-W aligned human skeleton, apparently grave was cut into/aligned with line of ditch	Human skeleton contained by grave cut [155]
155	31	E-W aligned grave cut, only visible at western end, although possibly north and south sides also defined.	Grave cut containing SK154
156	32	Number assigned to indiscernible grave cut	Indiscernible grave cut containing SK157
SK157	32	E-W aligned human skeleton, badly damaged by machine and, probably, earlier disturbance, head, right ribcage, legs and parts of feet present, all other bones absent.	Badly damaged human skeleton contained within indiscernible grave cut [156]
158	32	Friable mid-dark brown grey with pale brown patches, sandy silt, occasional small gravel inclusions	Fill of indiscernible grave cut [156]
159	31-33	E-W aligned grave cut, 0.4m w x 0.23m d x >4m l, steep/vertical sides and flat base, cuts/cut by [152] [150] – interpreted post-ex as being a contemporary part of the coaxial field system.	Gully/ditch cut truncated by grave cut [130], relationship with adjacent feature [161] could not be determined. Odd profile in section.
160	31-33	Friable dark grey brown clay sand with frequent angular gravel, 0.23m thick	Fill of linear feature [159], cut by grave [130]
161	31-33	Sub-rectangular cut with rounded corners, 0.51m w x 0.08m d, with moderate/shallow sides and flattened base. E-W aligned, extends beyond limit of excavation to the west.	Shallow feature – possible linear (terminus) or sub-rectangular feature
162	31-33	Loose, dark grey brown clayey sand with frequent angular gravel, 0.08m thick	Fill of [161]
163	32	Sub-rectangular cut with rounded corners, 0.25m d. Gradual/shallow sides and flattened base. E-W aligned.	Grave cut containing SK164 – two nails suggest SK164 may have been a coffin burial. Feature cuts ditch [141], may be placed within this feature.
SK164	32	E-W aligned human skeleton, largely complete. Legs below knee beyond excavation area	Human skeleton contained within grave cut [163]

Context	Plot/Area	Description	Interpretation
165	32	Loose, dark grey brown silty sand with moderate-occasional limestone fragments, sub-rounded stones and occasional flecks of charcoal, 0.25m thick	Fill of grave cut [163], deliberate backfill to cover SK164
166	32	Number assigned to collection of pottery sherds discovered within dark earth layer (probably located within ditch fill (220)?) In close proximity to SK157 and SK173	Number assigned for collection of pottery sherds
167	33	Sub-rectangular cut with rounded corners, fairly steep sides and flattened base, E-W aligned	Grave cut containing SK168, possible coffin burial (Fe nails recovered from filling deposit)
SK168	33	E-W aligned skeleton, largely present, but lower part of skeleton largely disarticulated.	Human skeleton contained by grave cut [167]
169	33	Soft black sandy silt with occasional rounded stones.	Fill of grave cut [167], re-deposited dark earth.
170	32-33	NE-SW linear cut by graves [127] [143] [146], possibly cuts/cut by [133] – interpreted post-ex as being a contemporary part of the coaxial field system.	Same as [193]
171	32-33	Same as (194)	Fill of linear [170], same as (194)
172	32	Indiscernible grave cut – assigned for SK173	Indiscernible grave cut – assigned for SK173 – cuts (220)
SK173	32	E-W aligned human skeleton , badly damaged, poor condition – rib cage, spine and sacrum missing	Human skeleton contained by grave cut [172]
174	32	Friable mid-dark brown grey sandy silt with pale brown patches, occasional fragments of red CBM, pottery sherds, Fe nails, some signs of burning (black staining – coffin stain?).	Fill of grave cut [172]
175	31	Moderate-soft very dark brown sandy silt with moderate stone/pebble inclusions	Fill of grave cut [177]
SK176	31	E-W aligned human skeleton, very poor condition, crumbling on contact. Pottery recovered from area of left femur – grave good?	Human skeleton contained by grave cut [177]
177	31	Sub-rectangular cut with rounded corners, 2m l x 0.6m w x 0.25m d, E-W aligned, sides and base unclear as cut into fill of ditch	Grave cut containing SK176
178	31-32	Friable, very dark brown silty sand with occasional small pebbles and flecks of charcoal	Fill of grave cut [180]
SK179	31-32	E-W aligned human skeleton, good state of preservation, largely complete except for hands and feet. Appears to have been tightly bound (shroud?) and Fe nails suggestive of coffin	Human skeleton contained by grave cut [180]

Context	Plot/Area	Description	Interpretation
180	31-32	Sub-rectangular cut with rounded corners, 1.86m l x 0.62m w with shallow sides and flatted/slightly concave base, E-W aligned	Grave cut containing SK179
SK181	31-33	E-W aligned human skeleton, moderate preservation. Disarticulated/jumbled array of bones, presence of nails may indicate coffin	Human skeleton contained by grave cut [197]
182	32	Cut feature, >0.6m w x >1.3m l with flat base, E-W aligned, truncated by [188]	Cut of grave containing SK183, exposed during Eval therefore cut is no longer visible – see Eval records
SK183	32	E-W aligned human skeleton, poor condition, lower part of skeleton truncated/removed by grave cut [188]. Skeleton uncovered during Eval and partially excavated at that stage – see Eval records.	Human skeleton contained by grave cut [182]
184	32	Moderate-soft mid grey brown sandy silt with occasional limestone fragments	Fill of grave cut [182]
185	32	Sub-rectangular (assumed – only partially visible) cut with rounded corners, 0.6m w x >0.58m l, with steep sides and flat base, E-W aligned. Truncated by grave cut [188], lower part of cut extends beyond excavation area to the east.	Grave cut containing SK186
186	32	E-W aligned human skeleton. Skull badly damaged, lower body extends beyond excavation area. Good state of preservation.	Human skeleton contained by grave cut [185], only partially exposed. Nails recovered possibly indicative of coffin
187	32	Moderate-soft mid grey brown sandy silt with occasional small limestone fragments.	Fill of grave [185], cut by grave [188]
188	32	Probably sub-rectangular, 0.32m w x >1.18m l, truncated by machine. Flat base, E-W aligned grave cut into dark earth so not well defined. Cut immediately above grave [185], cuts grave [182] to the north.	Grave cut containing SK189, truncated by machine and extending beyond excavation area to the east.
SK189	32	E-W aligned human skeleton, heavily truncated by machine, only legs remain, feet remain under eastern baulk	Human skeleton contained by grave [188], within dark earth.
190	32	Moderate-soft dark grey brown silt with occasional fragments of limestone, >0.15m thick	Fill of grave cut [188], consists of backfilled dark earth and disarticulated human bone, probably derived from SK183
191	33	N-S aligned linear, >2m l x 0.55m w x 0.16m d with straight, steep sides and concave base, cut by graves [167] [103][118]- relationship with [193] and [141] unknown – context same as [108]	Ditch – although there is no difference between the fills of this linear and the graves, the survival of the skeletons suggests the graves were the later features– interpreted post-ex as being a contemporary part of the coaxial field system.
192	33	Soft black sandy silt with occasional rounded stones, 0.16m thick	Re-deposited dark earth – single fill of ditch [191]
193	33	ENE-WSW aligned shallow ditch >3m l x 0.5m w x 0.2m d with concave sides and base	Shallow ditch

Context	Plot/Area	Description	Interpretation
		– cut by [167] and [200].	
194	33	Soft black sandy silt with occasional small pebbles, 0.2m thick	Re-deposited dark earth – fill of ditch [193]
SK195	31-33	Disarticulated human bone, possibly within backfilled eval trench – same as SK613 Eval	Disarticulated human bone – same as SK613 from Eval.
196	33	Moderate-soft dark grey brown sandy silt, frequent small limestone fragments and pebbles, occasional charcoal flecks, 0.12m thick. Deposit very similar to that filling the ditches into which it is cut.	Fill of grave cut [197], around SK181
197	33	Sub-rectangular cut with rounded corners, 1.1m l x 0.6m w x 0.12m d with steep sides and flattened base – unclear relationship with SK168	Grave cut containing SK181
198	33	Moderate mid-dark brown silty sand with fairly frequent pebbles, 0.2m thick	Fill of grave [200]
SK199	33	Heavily disturbed human skeleton, roughly E-W aligned, probably disturbed during evaluation stage – same as SK616 from eval.	Human skeleton contained by grave [200]
200	33	Sub-rectangular cut with rounded corners, 2.24m l x 0.2m d – unclear width, E-W aligned, cut into E-W and N-S linears	Grave cut containing SK199
201	32-33	Friable very dark brown silty sand with occasional charcoal fragments.	Fill of grave cut [203]
202	32-33	E-W aligned human skeleton, good state of preservation, largely complete. Fe nails possibly indicative of coffin	Human skeleton contained within grave cut [203]
203	32-33	Sub-rectangular cut with rounded corners, 2.34m l x 0.98m w with steep sides and flat base, E-W aligned	Grave cut for SK202
204	32-33	Sub-rectangular cut with rounded corners 0.15m deep, shallow, concave sides and flattened base, E-W aligned	Grave cut containing SK205
SK205	32-33	E-W aligned skeleton, good preservation, largely complete, some toe and finger bones missing	Human skeleton contained by grave cut [204]
206	32-33	Loose dark grey brown sandy silt with moderate limestone fragments and small stones.	Backfill of grave cut [204], same as dark earth
SK207	32	Human skeleton, highly fragmentary, probably an infant, disarticulated. Same as SK612 eval.	Human skeleton contained by grave cut [209]
208	32	Moderate-soft mid grey brown sandy silt with occasional limestone fragments	Fill around SK207, which was left on pedestal of soil during Evaluation – see eval SK612
209	32	Grave cut for SK207, largely destroyed	Grave cut containing SK207, see eval sheets for SK612

Context	Plot/Area	Description	Interpretation
		during eval stage – probable small pit	
210	32	Sub-rectangular cut with rounded corners, 1.64m l x 0.68m w with steep sides and flattened base, E-W aligned	Grave cut containing SK211, cut into dark earth. Truncates N-S linear [191]
SK211	32	E-W aligned human skeleton, possibly tightly bound (shroud burial?). Right side of skeleton in poor condition.	Human skeleton contained by grave cut [210]
212	32	Moderate-soft dark grey brown sandy silt with occasional small limestone fragments.	Fill of grave cut [210], possibly contaminated by finds from dark earth and linear [191] through which this grave was cut
213	31-32	Friable very dark brown silty sand with occasional flecks of charcoal	Fill of grave cut [215]
SK214	31-32	E-W aligned human skeleton, moderate-poor state of preservation, lower arms, hands and feet only partially present. Nails suggestive of coffin, limbs appeared tightly bound, possibly indicative of shroud burial.	Human skeleton contained by grave cut [215]
215	31-32	Sub-rectangular cut with rounded corners, 2m l x 0.66m w with gradual sides and flattened base, E-W aligned.	Grave cut containing SK214
216	31-32	Sub-rectangular cut with rounded corners, 2m l x 0.75m w x 0.15m d. Fairly steep sides and flattened base, E-W aligned	Grave cut containing SK217
SK217	31-32	E-W aligned human skeleton, largely complete, in good state of preservation	Human skeleton contained by grave [216]
218	31-32	Loose, dark grey silty sand with moderate rounded stones, 0.15m thick	Re-deposited dark earth – backfilled into grave
219	32	ENE-WSW linear >3.5m l x 0.38m w x 0.2m d with steep-moderate, slightly concave sides and flattened base, truncated by grave cut [210]	Cut of narrow ditch – possibly terminates to the east (or is truncated away)
220	32	Moderate-soft mid grey brown sandy silt with moderate-small limestone fragments, 0.2m thick	Single fill of ditch [219] – possibly contained pot sherds (166).
221	31-33	Moderate-soft dark grey brown humic sandy silt with moderate small pebbles and limestone fragments, 0.2m thick	Fill of grave cut [223]
SK222	31-33	E-W aligned human skeleton, largely present, feet seen in trial trench 6 (SK626). Fingers and toes disarticulated.	Human skeleton contained by grave cut [223]
223	31-33	Sub-rectangular cut with rounded corners, 2.5m l x 1m w x 0.2m d, E-W aligned with steep sides and flattened base	Grave cut containing SK222, truncates N-S aligned ditch
224	31-33	Sub-rectangular cut with rounded corners, 1.9m l x >0.6m w x 0.17m d, E-W aligned with fairly steep sides and flattened base, cuts	Cut of grave containing SK225

Context	Plot/Area	Description	Interpretation
		a N-S ditch and a E-W ditch, the latter obscures northern edge of cut	
SK225	31-33	E-W aligned human skeleton, largely present. Good preservation. Hands absent. Feet disturbed.	Human skeleton contained by grave cut [224]
226	31-33	Loose, dark grey sandy silt with moderate pebble inclusions, 0.17m thick	Re-deposited dark earth – backfilled into grave cut [224]
SK227	31-33	E-W aligned human skeleton, child/infant, partial, skull, hands and feet missing	Human skeleton contained by grave cut [228]
228	31-33	sub-circular/rectangular cut with rounded corners 0.95m l x 0.5m at widest point. Concave base. Cuts linear [141]	Grave cut containing SK227
229	31-33	Loose, very dark brown silt with frequent small stones and sandstone, 0.25m thick	Fill of grave cut [228]
230	31-32	Moderate, friable dark brown sandy silt with occasional irregular gravel inclusions, 0.5m thick	Fill of E-W ditch [141]
231	31-32	Moderate-soft dark brown silty sand, with occasional small stones, possibly contained SK057	Fill of [232], deposit indistinguishable from grave fill and dark earth
232	31-32	Cut of (curvi?)linear running NW-SE at SE extent of excavation area – appears to cut graves [053] and [054], and to join with ditch [133] – relationship with this feature not excavated – must be later. 0.2m w x >1m l	Ditch at SE corner of excavated area – appears to be only linear which truncates skeletons?
233	31-33	Moderate-soft dark grey brown humic silty sand with moderate pebbles and small stones, 0.18m thick	Fill of grave cut [235]
SK234	31-33	E-W aligned human skeleton, moderate preservation, left forearm misplaced and left hand absent.	Human skeleton contained by grave [235]
235	31-33	Sub-rectangular cut, narrower at eastern end, with rounded corners, 2.27m l x 0.74m w x 0.18m d, E-W aligned	Grave cut containing SK234
236	31-33	Loose, dark grey silty sand with moderate sub-rounded stones, 0.15m thick	Re-deposited dark earth, backfill of grave cut [238]
SK237	31-33	E-W aligned human skeleton, moderately disturbed, especially hands, spine and feet. Skull partially crushed.	Human skeleton contained by grave cut [238]
238	31-33	Sub-rectangular cut with rounded corners, 2.15m l x 0.6m w x 0.15m d, steep sides and flattened base, E-W aligned	Cut of grave containing SK237 – cuts (178).
SK239	31-33	Disarticulated human skull found in section/trench edge in environ of SK068, possibly belongs to this burial	Disarticulated human skull recovered from dark earth - possibly derived from SK068



Context	Plot/Area	Description	Interpretation
SK240	31-33	Skull found in baulk – in area of SK065 and SK074 - unstratified	Skull found in baulk - unstratified
241	31-33	Moderately compacted, very dark brown silty sand. Not excavated	Upper fill of [242]. Not excavated;
242	31-33	NW-SE aligned linear, >1m l x 0.6m w, not excavated. Cuts or cut by [027] –px according to records for grave cut [112], [242] is a service trench which truncates SK111, it is very likely, therefore, that [242] cuts [027].	Ditch located at south west extent of plots 31-33. Not excavated.
243	30	Moderate-soft dark brown silt and sand. Not excavated.	Fill of pit/ditch terminus – not excavated
244	30	Sub-circular feature, only partially exposed, 1.6m w x >0.75m l, continues to the north	Unexcavated feature at north eastern extent of plot 30. Possible pit or ditch terminus. Cut by services.
245	Road	Moderate, dark brown silty sand with occasional small stones and very occasional oyster shells.	Fill of ditch [261] – not excavated
246	Road	Moderate, mid-dark brown silty sand with occasional charcoal flecks and small stones	Fill of pit [262] – not excavated
247	Road	Moderate-soft dark brown silty sand with some ash within matrix	Probably the upper fill of feature [264], although assigned its own cut, [263], on site as machining had caused deposit to be spread beyond the confines of the feature
248	Road	Moderate-firm red/pink/grey mixed deposit containing fired/heat affected silt, clay and stone	Fill of probable hearth/kiln [264] – a mixed deposit probably containing different layers/lining layer and fill, but unclear as deposit was not excavated
249	Road	Moderate, dark brown silty sand with occasional stones, <0.6m thick.	Fill of [265], uncovered by machine.
250	Road	Moderate mid-dark brown silty sand with occasional small stones and pebbles, 0.8m thick	Fill of ditch [251]
251	Road	Linear, 1.5m w x 0.8m d x >6m long, steep sides and concave base, roughly E-W aligned, truncated by modern service trench	Boundary/drainage ditch
252	Road	Sub-circular/oval cut, only partially exposed, >4m NE-SW x 0.8m E-W – not excavated	Cut of pit/ditch terminus. Not excavated, uncovered by machine
253	Road	Sub-circular cut with rounded corners >4m x 1m, extends beyond area. Not excavated.	Cut of pit/ditch terminus – not excavated, uncovered by machine
254	Road	Sub-rectangular with rounded corners – only partially exposed, >2.7m x 1.6m continues to east. Probably E-W aligned	Pit or ditch terminus, not excavated. Uncovered by machine.
255	Road	Irregular feature (two cuts here?) only partially exposed towards western baulk and not excavated. >3.4m x 0.9m.	Possibly intercutting pits/ditches with indistinguishable fills. Not excavated. Uncovered by machine.
256	Road	NW-SE aligned ditch, >1m l	Ditch or natural hollow filled by dark earth

Context	Plot/Area	Description	Interpretation
257	Road	NE-SW aligned linear/natural hollow, 0.8m wide	Ditch or natural hollow filled by dark earth
258	Road	Linear/band of dark earth, 0.5m w x >1.5m l	Linear or natural hollow filled by band of dark earth
259	Road	Linear/band of dark earth >3m l x 0.5m w, NW-SE aligned	Ditch or natural hollow filled by dark earth
260	Road	Number assigned for unstratified finds recovered during machining	Unstratified finds Dark earth?
261	Road	Cut of ditch, >1.4m w x 6m l – not excavated	Ditch uncovered by machine – not excavated – filled by (245)
262	Road	Sub-circular/oval cut, >1.6m w x 1.4m E-W. not excavated.	Cut of pit/ditch terminus, only partially exposed. Not excavated.
263	Road	Cut sub-circular, only partially exposed, >0.5m x 0.5m, not excavated. NE-SW aligned, possibly truncated by [264]	Possibly a cut feature truncated by hearth feature [264] but more likely to be a non-existent feature, deposit (247) was probably the upper fill of [264], but was dragged out beyond confines of feature during machining. This number is not included in matrix or description.
264	Road	Oval/sub-circular feature with rounded corners, 1.3m x 0.9m, WSW-ENE aligned, not excavated.	Possible hearth or kiln exposed by machine. Not excavated. Filled by (248) and (247)
265	Road	Cut of ENE-WSW aligned linear, 1.6m w x >6m l >0.6m deep.	Ditch – boundary feature? Not excavated, exposed by machine. Filled by (249)
266	Road	Moderate mid grey brown sandy silt with occasional inclusions of ash, charcoal, patches of clay.	Fill of [252] – not excavated. Exposed by machine.
267	Road	Moderate dark brown silty sand with occasional pebbles.	Fill of [253], not excavated.
268	Road	Moderate, dark brown silty sand with mid-large stones towards edge.	Fill of pit/ditch terminus. Not excavated. Exposed by machine
269	Road	Moderate mid brown silty sand with occasional stones/pebbles, >0.5m thick	Fill of [255] – not excavated
270	Road	Moderate – dark brown silty sand with occasional small stones and very occasional oyster shells.	Fill of ditch [256] – indistinguishable from deposit (245) which fills ditch [261]
271	31-33	Irregular/sub-rectangular cut of grave – heavily truncated by later activity, sp. Grave cut [064]. Contained SK074	Cut assigned in post-ex. to heavily truncated grave
272	31-33	Number assigned in post-ex for fill of grave cut [271] containing SK074, coffin nails recovered (assigned to SK)	Number assigned for grave fill, heavily truncated by grave cut [064]

Appendix 2

<b>Skeleton No.</b>	<b>Grave cut</b>	<b>Orientation</b>	<b>Fill. No.</b>	<b>Brief Description</b>
SK023	022	E-W	024	Supine adult skeleton, head to west. Skull absent, most of ribcage absent. Feet disturbed by machine. Mid 2 <sup>nd</sup> - 3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK033	032	E-W	034	Supine adult skeleton, head to west, only partially exposed as outside construction impact zone. Mid 2 <sup>nd</sup> - 3 <sup>rd</sup> C or later pottery was recovered from the grave fill.
SK036	035	E-W	037	Supine adult skeleton, head to west. Skull and legs damaged by machine. Mid 2 <sup>nd</sup> - 3 <sup>rd</sup> C or later pottery was recovered from the grave fill.
SK046	045	E-W	047	Supine adult skeleton, head to west. Largely complete, well preserved. Coffin nails present in fill. 3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK048	049	E-W	050	Supine adult skeleton, head to west, same as SK604 from eval Coffin nails present within fill. Early 2 <sup>nd</sup> - 3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK052	053	E-W	051	Supine adult skeleton, head to west. Right hip, shoulder and skull poorly preserved. 1 <sup>st</sup> - 2 <sup>nd</sup> C pottery was recovered from the grave fill.
SK056	054	E-W	055	Supine skeleton, head to west. Possibly buried in shroud, as bones appear to have been tightly bound. Jaw present, but skull missing. Possibly recovered as SK057, from deposit (231), indicating post-inhumation disturbance. LIA/Early RB pottery was recovered from the grave fill.
SK057	-	-	-	Skull recovered from deposit (231), possibly derives from SK056
SK059	060	E-W	058	Supine skeleton, head to west. Spine in poor condition, head detached and facing south, ribs dislodged. RB Nail or pin recovered from fill. Mid 1 <sup>st</sup> – early 2 <sup>nd</sup> C pottery was recovered from the grave fill.
SK063	061	E-W	062	Supine skeleton, head to west. Skull damaged by machine, feet disturbed, probably by later burial cut. Presence of nails within fill suggestive of coffin burial. LIA pottery was recovered from the grave fill.
SK065	064	E-W	066	Supine skeleton, head to west. Skull missing, bones poorly preserved. Nails present within fill suggestive of coffin burial.
SK068	069	E-W	067	Supine skeleton, only partially exposed as at limit of excavation area. Right hand placed under

Skeleton No.	Grave cut	Orientation	Fill. No.	Brief Description
				pelvis. Late 1 <sup>st</sup> – mid 2 <sup>nd</sup> C pottery was recovered from the grave fill.
SK071	072	E-W	070	Supine skeleton, head to west. Skull damaged by machine, lower legs missing. 2 <sup>nd</sup> C pottery was recovered from the grave fill. RB pottery was recovered from the grave fill.
SK073	-	-	-	Fragment of jaw recovered from deposit (062), indicates that grave [061] probably disturbed earlier inhumations.
SK074	271	E-W	272	Supine skeleton, head to west. Heavily truncated by [064], only partially survives, some ribs, upper left leg and arm present. Head beyond limit of excavation.
SK078	079	E-W	077	Supine skeleton, head to west. Arms crossed over abdomen. Head facing south and jaw to north. Well preserved. Mid 1 <sup>st</sup> – early 2 <sup>nd</sup> C pottery was recovered from the grave fill.
SK083	081	E-W	082	Supine adult skeleton, head to west. Grave cut very clear. Greater than usual care in laying out, disarticulated infant bones (SK084) recovered from fill. Mid 1 <sup>st</sup> -early 2 <sup>nd</sup> C pottery was recovered from the grave fill.
SK084	081	-	082	Disarticulated infant bones recovered from grave fill (082) – located over chest area of SK083, re-deposited from an earlier burial (disturbed by [081]) or intentional deposition.
SK088	087	E-W	089	Supine skeleton, head to west. Badly damaged and incomplete remains, right arm folded across abdomen. 4 <sup>th</sup> C pottery was recovered from the grave fill.
SK096	097	E-W	095	Supine skeleton, head to west. Skull facing south, away from lower jaw. Moderately well preserved.
SK104	103	E-W	105	Partially articulated infant burial, head to west. Coffin nails present. Remains very badly damaged by later activity.
SK111	112	E-W	110	Supine skeleton, head to west. Right shoulder and most of skull removed by service trench. Laid with arms at sides, nails present within fill, suggestive of coffin burial. 4 <sup>th</sup> C or later pottery was recovered from the grave fill.
SK113	114	E-W	115	Supine skeleton, head to west. Good state of preservation with exception of hands and feet. Nails found within fill suggestive of coffin burial, hands placed over pelvis. LIA pottery was recovered from the grave fill.
SK117	118	E-W	116	Supine skeleton, head to west. Sacrum on its side, much of skull damaged by machine. 3 <sup>Rd</sup> - 4 <sup>th</sup> C pottery was recovered from the grave fill.

Skeleton No.	Grave cut	Orientation	Fill. No.	Brief Description
SK126	-	-	-	Unstratified human remains recovered during machining
SK128	127	E-W	129	Supine skeleton, head to west. Skull damaged by machine but otherwise well preserved. 3 <sup>Rd</sup> - 4 <sup>th</sup> C pottery was recovered from the grave fill.
SK132	130	E-W	131	Supine adult skeleton, head to west. Thorax and hands disarticulated, but largely complete and well preserved. Nails present within fill suggestive of coffin burial. Mid 3 <sup>rd</sup> - 4 <sup>th</sup> C pottery was recovered from the grave fill.
SK136	137	E-W	135	Supine skeleton, head to west. Spine, hands, knees and right arm dislocated. Possibly a shroud bound burial, no coffin nails present. Mid 2 <sup>nd</sup> -3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK139	138	E-W	140	Articulated right leg and partial pelvis, probably a complete burial heavily disturbed by [075]
SK144	143	E-W	145	Supine adult skeleton, head to west. Hands placed over pelvis, good preservation of bones. Nails present within fill. Mid 2 <sup>nd</sup> - 3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK147	146	E-W	148	Remains of adult supine skeleton, head to west. Largely destroyed above the pelvis by later activity, lying above SK144. LIA/early RB pottery was recovered from the grave fill.
SK154	155	E-W	153	Supine skeleton, head to west. Moderately preserved, largely present. Mid 2 <sup>nd</sup> -3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK157	156	E-W	158	Supine skeleton, head to west. Badly damaged, partly by machine, partly by earlier disturbance. Central part of skeleton missing, left shoulder blade and ribs missing, some of toe bones missing.
SK164	163	E-W	165	Supine adult skeleton, head to west. Legs extend beyond area of excavation to east. Head facing south. Nails present within fill, suggestive of coffin burial. Mid 2 <sup>nd</sup> C or later pottery was recovered from the grave fill.
SK168	167	E-W	169	Supine adult skeleton, head to west. Largely intact but abdomen, small bones and limbs disturbed, possibly suggestive of coffin burial.
SK173	172	E-W	174	Supine adult skeleton, head to west. Skull on left side, rib cage missing, spine and sacrum missing, scapulae badly degraded, pelvis degraded. 4 <sup>th</sup> C pottery was recovered from the grave fill.
SK176	177	E-W	175	Supine skeleton, head to west. Sternum and ribs in very poor condition. Late 3 <sup>rd</sup> - 4 <sup>th</sup> C pottery was recovered from the grave fill.

Skeleton No.	Grave cut	Orientation	Fill. No.	Brief Description
SK179	180	E-W	178	Supine skeleton, head to west. May have been buried in shroud as limbs appear to have been tightly bound. Nails present within fill suggestive of coffin burial. LIA pottery was recovered from the grave fill.
SK181	197	E-W	196	Supine skeleton, head to west. Bones jumbled. Nails present within fill suggestive of coffin burial.
SK183	182	E-W	184	Supine adult skeleton, head to west. In poor condition, uncovered during Eval. Nail present within fill, indicative of coffin burial. LIA pottery was recovered from the grave fill.
SK186	185	E-W	187	Supine adult skeleton, head to west. Skull badly damaged. Lower body under eastern baulk. LIA pottery was recovered from the grave fill.
SK189	188	E-W	190	Legs of skeleton, head would have been to west but removed, along with torso, probably by later activity. Feet remain under eastern baulk. Mid 2 <sup>nd</sup> - 3 <sup>rd</sup> C pottery was recovered from the grave fill..
SK195	134	-	-	Disarticulated human bone, possibly within backfilled eval. Trench.
SK199	200	E-W	198	Supine skeleton, head to west, largely complete but fairly disturbed and poorly preserved. Same as SK616 from Eval. Mid 2 <sup>nd</sup> - 3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK202	203	E-W	201	Supine skeleton, head to west. Well preserved. Presence of nails suggestive of coffin burial. mid 3 <sup>rd</sup> - 4 <sup>th</sup> C pottery was recovered from the grave fill.
SK205	204	E-W	206	Supine skeleton, head to west. Hands laid over pelvis. Well preserved. Presence of nail indicative of coffin burial. 1 <sup>st</sup> -2 <sup>nd</sup> C pottery was recovered from the grave fill.
SK207	209	-	208	Disarticulated neonate remains, recorded during Eval. as SK612 LIA pottery was recovered from the grave fill.
SK211	210	E-W	212	Supine skeleton, head to west. Slightly disturbed in thorax, possibly by animal burrowing. Apparently tightly bound, possible shroud burial. LIA pottery was recovered from the grave fill.
SK214	215	E-W	213	Supine skeleton, head to west. Hands arranged over pelvis and legs close together, possibly indicating shroud. Nails within fill suggestive of coffin burial.
SK217	216	E-W	218	Supine skeleton, head to west. Well preserved and largely articulated, apart from finger bones which were scattered throughout grave. 1 <sup>st</sup> -2 <sup>nd</sup> C Pottery was recovered from the grave fill.

<b>Skeleton No.</b>	<b>Grave cut</b>	<b>Orientation</b>	<b>Fill. No.</b>	<b>Brief Description</b>
SK222	223	E-W	221	Supine skeleton, head to west. Moderately well preserved, some disturbance of fingers and toes. Early-mid 3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK225	224	E-W	226	Supine adult skeleton, head to west. Good state of preservation, lower legs appear to have moved a little to the east. LIA/Early RB pottery was recovered from the grave fill.
SK227	228	E-W	229	Partial remains of infant. Skull, hands and feet missing, legs only partially survive. LIA pottery was recovered from the grave fill.
SK234	235	E-W	233	Supine adult skeleton, head to west. Left forearm misplaced and left hand absent. Mid 2 <sup>nd</sup> – early 3 <sup>rd</sup> C pottery was recovered from the grave fill.
SK237	238	E-W	236	Supine adult skeleton, head to west. Well preserved, spine, feet and hands disarticulated. Head partially crushed. LIA pottery was recovered from the grave fill.
SK239	-	-	-	Human skull found in baulk section – in area of SK068 so probably derives from these remains.
SK240	-	-	-	Human skull found in baulk section – in area of SK065 and SK074, both of which were missing skull.





## Appendix 3 THE FINDS

### ROMAN AND LATE IRON AGE POTTERY

*By Alex Beeby and Barbara Precious*

#### Introduction

All the material was recorded at archive level in accordance with the guidelines laid out by Darling (2004) and to conform to Lincolnshire County Council's *Archaeology Handbook*. A total of 820 sherds from 489 vessels, weighing 13919 grams was recovered from the site.

The recording codes and system developed for the City of Lincoln Archaeological unit (CLAU) (Darling and Precious, forthcoming) were used for material of certain Roman date, whilst the coding format devised for the recording of later prehistoric pottery in the East Midlands (Knight, 1998) was used for shell tempered late Iron Age pottery. These codes were used instead of the generic Iron Age codes included within the CLAU range, allowing a far more detailed analysis of these earlier fabrics to be undertaken. It should be noted though, that the fabric divisions created using this methodology may to some extent, be artificial. The system would seem to assume a deliberate intent by the potter to regulate the shell size and density within the chosen fabric by utilising clays treated in a particular way or obtained from a particular source. It does not take into account that clays from diverse sources, or prepared at different times, may have a similar visual appearance.

#### Methodology

The material was laid out and viewed in context order. Sherds were counted and weighed by individual vessel within each context. The pottery was examined visually and using x20 magnification. This information was then added to an Access database. An archive list of the pottery is included in Archive Catalogue 1, with a summary of ware types recovered in Table 2 below. Sherds from 12 vessels were removed for the south Lincolnshire Roman pottery type series held by the Heritage Trust of Lincolnshire. The abbreviation 'FS' has been recorded in the comments section of the Archive Catalogue where a sample has been retained.

#### Condition

The condition of the material is very mixed. The assemblage contains a high number of both large fresh sherds and small, frequently highly abraded, fragments. The extreme level of fragmentation of much of the group is reflected in the relatively low overall sherd weight of just 17 grams; however a total analysis of sherd weight by feature type, shows that most of the particularly small sherds were recovered from grave contexts. This pottery, which accounts for 52% of the total by fragment count has an overall average weight of just 9 grams per piece. This suggests a very high level of residuality within this subgroup of the assemblage. In general the pottery from other feature types on the site is much less fragmentary and some is strongly indicative of primary deposition. Notable features producing such material include pit features [005] and [100] and ditches [012] and [021]. Table 1 below shows average weights for each feature type, whilst Table 2 shows weights for each individual context.

*Table 1, Average sherd weights by feature type*

Feature Type	Total NoS	Av. Sherd Weight
Ditch/Ditch?	92	29.8
Finds (Unstratified)	18	120.3
Grave	423	9.3
Kiln or Hearth	63	20.5
Layer	74	18
Linear/Curvilinear Feature	3	7.3
Pit	147	16.6
<b>Total</b>	<b>820</b>	-

#### Dating

A summary of dating listed by context is included in the table below (Table 2). There is a wide range of material dating from the Late Iron Age to the 4th Century AD. There is no obvious chronological pattern in the spatial distribution of material across the site, although no Late Iron Age or very Late Roman material was found in the Road strip or manhole areas (RSM).

In terms of feature type, there are observable patterns. All of the pottery recovered from agricultural/domestic features including a kiln or hearth, pits, linear features and ditches are of Late Iron Age and earlier Roman date (1st century BC- 2nd century AD) whilst the pottery from the grave contexts include a wide range of types, including some with a late Roman date. This suggests that the entire area was largely if not completely turned over to use as a burial ground at some point in the third century AD, by which time domestic/agricultural activity here had ceased.

Table 2, context dating and average sherd weights, sorted by feature type and context

Area	Feature	Date Range (Latest Date)	Context (Fill)	Total NoS (all dates)	Average W(g)
34	Linear/Curvilinear Feature	Late Iron Age	026	2	8
31		Late Iron Age	106	1	6
RSM (Manhole 3)	Ditch/Ditch?	Mid 1st to Early 2nd	013	6	66.5
28-30		Mid to Late 2nd Century	020	62	28
31-32		Mid 2nd to 3rd Century	230	9	15.2
RSM (Road)		Mid to Late 2nd Century	245	11	24.1
RSM (Road)		1st to 2nd Century	249	4	45.5
30	Pit	1st Century	005	112	10.6
32		Late Iron Age	099	32	36.1
RSM (Road)		Early to Mid 2nd Century	246	3	33.7
RSM (Road)	Kiln or Hearth	Early to Mid 2nd Century	247	58	19.5
RSM (Road)		2nd Century	248	5	31.6
RSM (Manhole 3)	Layer/Layer?	Early to Mid 3rd Century	014	3	7.7
31-32		1st to 3rd Century	038	61	20.5
31-33		1st to 2nd Century	218	10	5.8
34	Grave	Mid 2nd to 3rd Century	024	7	6
34-35		Roman	031	6	9
34-35		Mid 2nd to 3rd or Later	034	8	9.8
34-35		Mid 2nd to 3rd or Later	037	6	4.7
34-35		3rd Century	047	5	9.8
31-33		Early 2nd to 3rd Century	050	14	4.7
33		1st to 2nd Century	051	10	6.6
33		Late Iron Age to Early Roman	055	8	5.3
31		Mid 1st to Early 2nd	058	6	10.7
31-33		Late Iron Age	062	2	5.5
31		Late 1st to Mid 2nd Century	067	2	3.5
31		2nd Century	070	15	23.7
32		Roman	072	1	3
31		Mid 1st to Early 2nd Century	077	12	5
31		Mid 1st to Early 2nd Century	082	5	3
31-32		Late Iron Age	085	2	59
32		4th Century	089	2	34.5
31		Late Iron Age	095	6	7.3
33		4th Century or Later	110	12	14.1
31-32		Late Iron Age	115	11	8.9
33		3rd to 4th Century	116	20	7.3
33		3rd to 4th Century	129	15	5.7
31-33		Mid 3rd to 4th Century	131	36	11.8
31		Mid 2nd to 3rd or Later	135	9	9.6
32-33		Mid 2nd to 3rd Century	145	30	8.5
32-33		Late Iron Age to Early Roman	148	5	22.4

Area	Feature	Date Range (Latest Date)	Context (Fill)	Total NoS (all dates)	Average W(g)
31	Grave	Mid 2nd to 3rd Century	153	18	7.1
32		Mid 2nd Century or Later	165	19	14.8
33		Mid 2nd to 3rd Century	169	7	4.1
32		4th Century	174	6	10.5
31		Late 3rd to 4th Century	175	12	17.4
31-32		Late Iron Age	178	3	12
32		Late Iron Age	184	6	8.3
32		Late Iron Age	187	2	11.5
32		Mid 2nd to 3rd Century	190	4	3.8
33		2nd Century or Later	196	2	8.5
33		Mid 2nd to 3rd Century	198	17	4.8
32-33		Mid 3rd to Early 4th Century	201	10	7.2
32-33		1st to 2nd Century	206	11	4.9
32		Late Iron Age	208	1	2
32		Late Iron Age	212	10	7.8
31-33		Early to Mid 3rd Century	221	10	5.2
31-33		Late Iron Age to Roman	226	10	10.2
31-33		Late Iron Age	229	1	4
31-33		Mid 2nd to 3rd Century	233	17	3.8
31-33		Late Iron Age	236	2	9.5
31	Finds (Unstratified)	Late Iron Age	080	2	97
31-32		Late Iron Age	098	11	109
32		Late Iron Age	166	4	134.8
RSM (Road)		Mid to Late 3rd Century	260	1	233
<b>Total</b>				<b>820</b>	<b>-</b>

## Results

A summary of the pottery types recovered from HBCS09 is included in the table below (Table 3). There is a wide range of Iron Age shell tempered types as well as Romanised sandy greywares. Although fine and oxidised wares are present these are relatively rare. The assemblage is dominated by locally produced domestic form types, predominately jar and bowls.

Table 3 ,Summary of ware types recovered

Category	Fabric	Cname	Full name	NoS	NoV	W(g)	
Romanised Type	Amphora	NAAM?	North African Amphorae?	1	1	60	
	Mort	MONV	Nene Valley Mortaria	1	1	17	
	Samian	SAMCG		Central Gaulish Samian Ware	1	1	7
		SAMEG?		East Gaulish Samian Ware?	1	1	1
		SAMSG		South Gaulish Samian Ware	2	2	2
	Fine	NVCC/NVCC?		Nene Valley Colour-Coated/Nene Valley Colour-Coated?	11	11	75
		EGGS?		Eggshell Ware?	1	1	1
	Oxidised (Fine)	OXF		Miscellaneous Fine Oxidised Ware	1	1	1
	Oxidised	CR		Cream Flagon	3	3	9
		OX		Miscellaneous Oxidised Ware	3	3	6
		OXWS		Oxidised with White Slip	4	1	371
	Reduced (Fine)	GFIN		Miscellaneous Fine Grey Ware	6	6	17
		GMIC		Grey Fine Micaceous Ware	5	5	17
	Reduced	BB1		Black Burnished Ware 1	1	1	5

Category	Fabric	Cname	Full name	NoS	NoV	W(g)
		BB2/BB2?	Black Burnished Ware 2/Black Burnished Ware 2?	3	3	8
		BBT	Black Burnished Type Ware	26	2	883
		GREY	Miscellaneous Grey Ware	47	43	417
		GREY1	Miscellaneous Grey Ware Type 1 (Site Specific)	56	9	1202
		GRFF	Fairly Fine Grey Ware	7	3	259
		GRSAN	Undifferentiated Grey Ware with Sandwich Core	2	2	16
		GYBN	Undifferentiated Grey Ware with Brown Surfaces	3	3	10
		GYMS/GYMS?	Grey Wheel-Made With Minimal Fine Shell/Grey Wheel-made With Minimal Fine Shell?	11	11	112
		NVGW	Nene Valley Grey Ware/Nene Valley Grey Ware?	12	12	77
		NVGWC	Nene Valley Coarse Grey Ware	3	3	30
		NVGWV	Nene Valley Grey Ware Variant	1	1	6
		NVGY	Nene Valley Earlier Grey Ware	3	3	46
		OXMS	Oxidised Wheel-made With Minimal Fine Shell	2	2	8
		SLGY	South Lincolnshire Grey Ware	1	1	5
	Grog	GROG	Grog Tempered Ware	1	1	1
		LRGR?	Late Roman Grog Tempered Ware?	2	1	94
	Shell	DWSH	Dalesware Late Shell Tempered	3	3	255
		GRSH	South Lincolnshire Grog and Shell	5	5	91
		SHEL	Miscellaneous Undifferentiated Shell-Tempered	34	5	649
		SHELF	Miscellaneous Undifferentiated Fine Shell-Tempered	1	1	4
SLSH		South Lincolnshire Shell-Tempered	1	1	14	
Iron Age Type	Reduced (Fine)	NATF	Miscellaneous Fine Native wares	1	1	4
	Reduced	COAR	Miscellaneous Coarse Ware	1	1	3
		IAGR	Native Tradition Grit Tempered Ware	2	2	21
		IAORG	Iron Age Fabric with Organic Inclusions	1	1	3
		IASA?	Iron Age Sandy Wares?	1	1	10
		NAT	Miscellaneous Native wares	24	12	189
	Shell	SHCC	Common Coarse Shell Inclusions	14	13	253
		SHCC1	Common Coarse Shell Inclusions Type 1 (Site Specific)	1	1	12
		SHCF	Common Fine Shell Inclusions	52	48	998
		SHCF/M	Common Fine to Medium Shell Inclusions	127	16	1435
		SHCF1/SHCF1?	Common Fine Shell Inclusions Type 1 (Site Specific) / Common Fine Shell Inclusions Type 1 (Site Specific)?	96	48	1941
		SHCM	Common Medium Shell Inclusions	57	51	1488
		SHCM/C	Common Medium to Coarse Shell Inclusions	2	2	65
		SHMC	Moderate Coarse Shell Inclusions	25	24	346
		SHMF	Moderate Fine Shell Inclusions	38	33	265
		SHMF/M	Moderate Fine to Medium Shell Inclusions	2	2	9
		SHMM	Moderate Medium Shell Inclusions	61	43	1567
		SHMM/C	Moderate Medium to Coarse Shell Inclusions	1	1	85
		SHSC	Sparse Coarse Shell Inclusions	17	12	280
		SHSF	Sparse Fine Shell Inclusions	9	8	81
SHSM	Sparse Medium Shell Inclusions	22	15	86		
SHSM/C	Sparse Medium to Coarse Inclusions	1	1	2		
<b>Total</b>				<b>820</b>	<b>489</b>	<b>13919</b>

## Provenance

### Area 28-30

Two features, a ditch [021] and a pit [006] produced pottery here.

### Area 31-33

The bulk of the material was recovered from these areas, mostly from grave fill contexts. A total of 40 graves yielded pottery including cuts [049], [053], [054], [060], [061], [069], [072], [079], [081], [087], [097], [112], [114], [118], [127], [130], [137], [143], [146], [155], [163], [167], [172], [177], [180], [182], [185], [188], [197], [200], [203], [204], [209], [210], [217], [223], [224], [228], [235] and [238]. Although the vast majority of ceramic material came from grave fills, layer (038), shallow feature [086], pit or hollow [100], curvilinear feature [107] and ditch [141] also produced pottery. Any unstratified pieces collected from this area were labelled with context numbers (098) or (166).

### Area 34-35

Roman and Iron Age pottery came from graves [022], [029], [032], [035], [045] and linear feature [025] in areas 34-35.

### Road Strip and Manholes (RSM)

There were no graves recorded within these areas, but three ditches [012], [261], and [265] produced material as did pit [262] and possible hearth or kiln [264]. Unstratified pottery from the road strip phase was labelled with context number (260).

## Range

Given the amount of material here, there is a fairly restricted range of forms represented. The assemblage is overwhelmingly dominated by closed forms, largely jars. See Table 4 below for a breakdown of form classifications recorded.

Table 4, percentages of open and closed forms within the group

Form Type	%age by Sherd Count	%age by Vessel Count
Closed Form (includes Jars, Beakers and Flagons and Amphorae)	66.8	50.5
Open Form (Includes Bowls and Dishes and Mortaria)	2.8	4.5
Open or Closed Form	29.6	44.6
Other	0.7	0.4

Jar forms make up 48% of the total assemblage by sherd count or 23% by vessel number. When uncertain closed forms are included, most of which will be jars, this rises to 63% by number of sherds and 45% by vessel count. The high percentage of material classified as either 'open or closed' reflects the fragmentary nature of the group as a whole. In terms of fabrics, there is a wide range of both Iron Age and Romanised coarse types within the group, the majority of which are in coarse reduced sandy or shell tempered fabric types. There is a noticeable lack of mortaria, amphorae and imported finewares, suggesting a limited range of Roman style cooking activities took place in the immediate vicinity of the site.

### Late Iron Age Shell Tempered Fabrics

There is a very large number of shell tempered vessels, the vast majority of which are Late Iron Age types. These represent 65% of the total assemblage by vessel count or 64% by sherd number. These fabrics range widely in inclusion frequency from sparse fine (SHSF) to common coarse (SHCC) shell. At least some of the material from most of the fabric groups also contain punctate brachiopod or bryozoan fossil pieces. These are characteristic of clay fabrics in some areas of the Midlands, including some part of south west Lincolnshire.

There is a fairly restricted range of forms within this group of vessels most of which are relatively thick walled jar or bowl forms all within the Late Iron Age tradition of this area. There is a high number of sooted vessels here and the pottery is overwhelmingly domestic and utilitarian in nature. There are no obvious beaker types in the shelly fabrics or evidence of any kind of classically influenced high status or drinking. Almost all, of the shell tempered vessels are hand made, although single examples in common fine/medium (SHMF\M) and moderate fine (SHMF) maybe wheel turned or finished.

*Shell - Sparse Fine (SHSF), Common Fine (SHCF), Common Fine/Medium (SHCF/M), Moderate Fine (SHMF), Moderate Fine/Medium (SHMF/M), Common Fine – Site Specific Type 1 (SHCF1)*

Vessels with fine shelling represent approximately a third (31.7%) of the total assemblage by vessel count and considerably more by sherd number (41.9%). Forms are dominated by common Late Iron types, including jars and/or bowls (J, B, JB) with several cordoned examples (JBCOR, BCOR) recorded. There is also a single carinated bowl (BCAR) in SHSF. A large proportion of vessels have burnished surfaces and with the exception of SHCF1 other decorations are rare.

Fabric Common Fine – Site Specific Type 1 (SHCF1) is particular interest. This group includes as many as seven Iron Age globular jars (JGLOB) and seven vessels, one of which is a JGLOB, have an elaborate linear roller stamp and triple circular stamp decoration above the girth. This is bounded by linear grooving (see Drawing 12). Similar vessels have been recorded from nearby excavations in this area of Sleaford (Elsdon and Oetgen, 1997, fig 59-61) and more recently at the neighbouring site of HOPS09, excavated by Network Archaeology Lincoln (c.f. Rowlandson 2010). It is likely that these pieces form a distinct fabric group and that SHCF1 can be equated to the fabric F7 or E/Ea ware described by Elsdon and Oetgen (1997, 124). SHCF1 and SHMF are notable in that bryozoan fossil pieces are very rarely present within the clay matrix. On average around 50% of the vessels within each of the four other fabric groups represented *do* contain varying amounts of bryozoan or brachiopod fragments. Their almost complete absence from SHCF1 and SHMF may well suggest a different (although not necessarily the same) source for these particular types.

*Shell - Sparse Medium (SHSM), Sparse Medium/ Coarse (SHSM/C), Moderate Medium (SHMM), Moderate Medium/Coarse (SHMM/C), Common Medium (SHCM), Common Medium/Coarse (SHCM/C)*

Medium shelled types account for 17.6% of the total pottery collected, by sherd count and 23.1% by vessel count. In contrast to the vessels in finer shelled fabrics these vessels are very rarely burnished or otherwise decorated in any way.

Vessels within this group are generally thick walled and comparatively large, including large jars or bowls (JBL) or other non identifiable closed forms (CLSD). There is a preponderance of large storage jars within the group; in Common Medium (SHCM) there at least nine of these, as well as seven large jar or bowl types. Some of the vessels within this group may fall in to Elsdon and Oetgen's Fabric F9 or D ware. Type moderate medium (SHMM) contains a beaded rim jar (JBR) and a beaded rim bowl (BBR) as well as unidentified closed form with the same type of roller stamped decoration as the SHCF1 vessels.

As with the finer fabrics, material from around half of the vessels contain fragments of punctate brachiopod or bryzoa. A notable exception is Sparse Medium (SHSM), which contains no visible pieces at all.

*Shell - Sparse Coarse (SHSC), Moderate Coarse (SHMC), Common Coarse (SHCC), Common Coarse – Site Specific Type ( SHCC1)*

Vessels with coarse shelling make up just 7.0% of the total by sherds count and 10.2% by vessel number. In terms of forms types, the Sparse Coarse subgroup (SHSC) includes two native type 'cookpots' (CPN) as well as an unusual vitrified vessel from (245), recorded using the miscellaneous item code (Z), which may have had an industrial use (drawing 14). CPN jars have a distinctive sharply in turned internal ledge on the inside of the rim or lip. These are common in Lincolnshire from at least the first century AD and continued to be produced well into the second. Unlike the remainder of the coarse shell tempered fabrics, SHCC does not contain punctate brachiopods/bryzoa.

*Late Iron Age Reduced Fabrics (COAR, IAGR, IAORG, IASA?, NAT)*

There is a very limited range of Late Iron Age type reduced fabrics, with just 17 vessels represented. Most of these (12) are in miscellaneous dark handmade Native fabrics (NAT). Forms include jars, bowls and at least one cordoned jar or bowl (JBCOR) from (038) (drawing 6).

*Roman Shell and Grog Tempered Fabrics (DWSH, GRSH, SHEL, SHELF, SLSH, GROG, LRGR?)*

Romanised shelly fabrics constitute just 5.4% of the total assemblage by sherd number and 4.7% by vessel count. Those within this group are commonly found forms and fabrics. There are sherds from two grog tempered vessels, including a single example of a jar in what maybe Late Roman Grog Tempered Ware (LRGR?). This could be a product of the prolific late 3-4th century industries of south east England, or a locally produced variety.

***Roman Reduced Fabrics***

A wide range of Romanised reduced ware vessels were recovered, although there are no large groups of any one particular fabric type. A pan or 'patera' handle in miscellaneous greyware (GREY) from (248) is unusual (drawing 19). In addition three groups of more specific grey/reduced varieties are of special note.

*Grey1 – Miscellaneous Grey Ware Type (Site Specific)*

This fabric is a highly distinctive very pale grey type with frequent poorly sorted, opaque, well rounded to rounded quartz sand inclusions. Forms include a bowl with a bifurcated rim (BBIF) (drawing 16), two everted rim jars (JEV) (including drawing 17), a curved rim jar (JCUR) (drawing 15) and a carinated jar (JCAR) with nodular rustication (drawing 18). This mix of forms and decoration strongly suggests a second century date, probably early to mid second. Only 10 vessels in GREY1 were recovered, all of which came from just two contexts, probably both within hearth feature [264].

The source of this material is unknown, and although it could be a previously unidentified local product it could equally come from the Nene Valley. Coarse light firing pottery is known to have been produced in the lower Nene Valley area at around this time (L. Rollo, Pers comm.). A Lincoln source has been suggested for a visually similar (though not identical) fabric recorded at the neighbouring site of HOPS09 (Rowlandson, 2010, no page number) and the visual similarity between the material from HBCS09 and some Saxo Norman greywares from the city of Lincoln is striking.

*Black Burnished ware and Black Burnished Types (BB1, BB2, BBT)*

There are three vessels in (early) Black Burnished Ware 2 (BB2), a single sherd of Black Burnished ware 1 (BB1), and two further in a Black Burnished imitation fabric (BBT) (including drawing 5). These types are not unusual in this region.

*Nene Valley Fabrics and Allied Types (NVGW, NVGWC, NVGWV, NVGY, SLGY)*

There is no large amount of Nene Valley Grey Ware (NVGW) within the assemblage, with just 12 vessels recovered in total. It could be that the peak of domestic or agricultural activity across much of the site was over by the mid to late second century AD, from when NVGW becomes very common on sites in southern Lincolnshire.

Fragments from three vessels in a coarser Nene Valley greyware type fabric (NVGWC) and a variant containing clay pellets (NVGWV) was also recovered. Given the huge amount of pottery produced by the Nene Valley industries variations on the usual fine fabric types are not unexpected. The NVGWC could be an upper rather than lower Nene Valley product (L. Rollo, Pers comm.).

Three vessels in Nene Valley Early Greyware (NVGY) and a single example in South Lincolnshire Grey (SLGY) are also present. These types are probably precursors to the main Nene Valley production, and may belong to the same broad fabric group. At Morton saltern these fabrics are largely dated from the late first to early second century AD (Precious, 2001, 138).

*Oxidised Wares including Cream Types*

There is a very restricted range of Romanised oxidised wares with just nine sherds retrieved. White or Cream wares (CR) in particular were a commonly used for preparing and serving food and drink in the Roman kitchen and the obvious lack of these is notable, suggesting a low level of Roman culinary practice during the early (Late Iron Age to second century) phase of the site. There is just a single piece of mortaria (MONV) and this is probably contemporary with the later Roman Cemetery.

An unusual flagon in oxidised ware with white slip (OXWS) is of interest, even though only the lower body was recovered during excavation (drawing 013). This is in a highly micaceous fabric with sparse subrounded to subangular quartz up to 0.5mm and ferruginous grits up to 2.0mm. This is mostly likely a regional or inter regional import. An OXWS flagon with a strikingly similar basal profile and virtually identical concentric incised circles on the base, is noted from earlier excavations carried out between 1960-63. That vessel is a Hofheim type 51 dated to the mid to late first century.

*Finewares*

Given the size of the assemblage it is surprising how few fineware vessels of any date are present. In terms of late Iron Age early Roman types there is just one fragment of Gallo-Belgic style Butt Beaker in a fine native fabric (NATF); this could be of pre-conquest date. This form was fashionable throughout the first century AD and these are relatively common on high status or military 'periconquest' Iron Age transitional sites, including those in this area of Old Sleaford (Leary, 1997, 120). Other more Romanised finewares such as fine grey micaceous (GMIC) and Nene Valley Colour Coated wares (NVCC) are, these are far rarer within this assemblage than the coarser fabrics. Once again this seems to reflect the relatively unromanised and probably quite low status nature of this assemblage.

*Imports*

There are few imports in this assemblage, Small sherds from just four Samian ware vessels (SAMCG, SAMEG, SAMSG) and single amphora of probable North African origin (NAAM?), are the only examples.

Table 3, Summary of vessel forms recovered

Form	Full name	Cname	NoS	NoV	W(g)
Amphora	Amphorae	A	1	1	60
Mortarium	Unclassified Mortaria	M	1	1	17
Bowl	Samian Form 37	37	1	1	1
	Unclassified Bowl/Unclassified Bowl?	B/B?	3	3	14
	Bowl with Bifurcated rim	BBIF	1	1	13
	Bowl with Bead rim	BBR	1	1	19
	Carinated Bowl	BCAR	2	1	40
	Bowl with Cordon	BCOR	1	1	47
	Bowl with Expanded Rim	BEXR	1	1	19
	Bead and Flange Rim Bowl	BFB	1	1	20
	Flanged Rim Bowl	BFL	2	2	150
	Hemispherical Bowl	BHEM	1	1	14
	Triangular Rimmed Bowl?	BTR?	1	1	4
	Wide Mouthed Bowl?	BWM?	1	1	9
Bowl/Dish	Bowl or Dish	BD	1	1	1
Dish	Samian Form 18/31 or 31	18/31-31	1	1	7
Plate	Samian Form 15/17?	15/17?	1	1	1
Open	Unclassified Open Form/Unclassified Open Form?	OPEN/OPEN?	3	3	21
Beaker	Unclassified Beaker/Unclassified Beaker?	BK/BK?	13	13	34
	Baggy Beaker	BKBAG	1	1	3
	Butt Beaker/Butt Beaker?	BKBB/BKBB?	4	4	10
	Beaker with Cornice Rim	BKCOR	1	1	4
	Beaker with Corrugated Walls	BKCORUG	1	1	21
	Beaker with Everted Rim	BKEV	2	2	5
	Folded Beaker	BKFO	2	2	3
	Pentice Moulded beaker	BKPM	1	1	3
Flagon	Unclassified Flagon/Unclassified Flagon?	F/F?	7	3	392
Cook Pot	Cook Pot	CP	25	1	750
	Native tradition Cook Pot	CPN	4	4	48
Jar	Unclassified Jar/Unclassified Jar?	J/J?	89	51	1659
	Jar with Beaded Rim	JBR	3	2	14
	Jar with Upright Rim	JBUP	1	1	16
	Carinated Jar	JCAR	8	1	325
	Cordoned Jar/Cordoned Jar?	JCOR/JCOR?	2	2	25
	Jar with Curved Rim	JCUR	12	5	418
	Dales Ware Jar	JDW	3	3	30
	Jar with Everted Rim	JEV	41	5	697
	Iron Age Type Globular Jar/Iron Age Type Globular Jar?	JGLOB/JGLOB?	50	7	1501
	Large Jar	JL	9	7	719
	Storage Jar	JS	145	22	3753
	Wide Mouthed Jar	JWM	1	1	25
Jar/Beaker	Unclassified Jar/Beaker/Unclassified Jar/Beaker?	JBK/GBK?	19	19	72
Closed	Closed Form	CLSD	103	87	794
Jar/Bowl	Unclassified Jar/Bowl/Unclassified Jar or Bowl?	JB/BB?	23	20	318
	Jar/Bowl with Bead Rim	JBBR	1	1	3
	Cordoned Jar or Bowl	JBCOR	10	8	128
	Jar/Bowl with Everted Rim	JBEV	8	8	63
	Large Jar/Bowl/Large Jar/bowl?	JBL/JBL?	47	38	714
Miscellaneous	Unusual Form	Z	6	2	211
-	Undiagnostic of Form	-	154	143	704
<b>Total</b>			<b>820</b>	<b>489</b>	<b>13919</b>



**The Material by Area**

Table 4 below show a summary of vessel forms sorted by area. There is no real pattern of deposition seen here,4 probably as most of the material was recovered from grave fill contexts.

Table 4, Summary of vessel forms recovered, sorted by area

Area	Vessel Type	Full name	Cname	NoS	NoV	W(g)	
28-30	Bowl	Flanged Rim Bowl	BFL	1	1	133	
	Cook pot	Cook Pot	CP	25	1	750	
	Jar	Unclassified Jar	J	30	1	606	
		Jar with Curved Rim	JCUR	5	1	257	
		Storage Jar	JS	110	1	1143	
Closed	Closed Form	CLSD	3	2	56		
31-33	Amphora	North African Amphora?	A	1	1	60	
	Mortaria	Unclassified Mortaria	M	1	1	17	
	Bowl	Samian Form 37	37	1	1	1	
		Unclassified Bowl/Unclassified Bowl?	B/B?	3	3	14	
		Bowl with Bead Rim	BBR	1	1	19	
		Carinated Bowl	BCAR	2	1	40	
		Bowl with Cordon	BCOR	1	1	47	
		Bowl with Expanded Rim	BEXR	1	1	19	
		Bead and Flange Rim Bowl	BFB	1	1	20	
		Flanged Rim Bowl	BFL	1	1	17	
		Hemispherical Bowl	BHEM	1	1	14	
		Triangular Rimmed Bowl?	BTR?	1	1	4	
	Plate	Samian Form 15/17?	15/17?	1	1	1	
	Open	Unclassified Open Form	OPEN	2	2	5	
	Beaker	Unclassified Beaker/Unclassified Beaker?	BK/BK?	11	11	28	
		Baggy Beaker	BKBAG	1	1	3	
		Butt Beaker/Butt Beaker?	BKBB/BKBB?	4	4	10	
		Beaker with Cornice Rim	BKCOR	1	1	4	
		Beaker with Everted Rim	BKEV	2	2	5	
		Folded Beaker	BKFO	2	2	3	
	Pentice Moulded Beaker	BKPM	1	1	3		
	Jar/Beaker	Unclassified Jar or Beaker/Unclassified Jar or Beaker?	JBK	14	14	35	
	Flagon	Flagon?	F?	3	2	21	
	Cook pot	Native Tradition Cook Pot	CPN	1	1	13	
	31-33	Jar	Unclassified Jar	J	38	33	555
			Jar with Beaded Rim	JBR	3	2	14
			Jar with Upright Rim	JBUP	1	1	16
Cordoned Jar or Cordoned Jar?			JCOR	2	2	25	
Jar with Curved Rim			JCUR	4	2	53	
Dales Ware Jar			JDW	2	2	15	
Jar with Everted Rim			JEV	2	2	35	
Iron Age Type Globular Jar/Iron Age Type Globular Jar?			JGLOB	50	7	1501	
Large Jar			JL	9	7	719	
Storage Jar			JS	31	18	2378	
Wide Mouthed Jar		JWM	1	1	25		
Closed		Closed Form	CLSD	91	77	690	
Jar or Bowl		Unclassified Jar or Bowl/Unclassified Jar or Bowl?	JB/JB?	22	19	297	
	Jar or Bowl with Bead Rim	JBBR	1	1	3		
	Cordoned Jar or Bowl	JBCOR	10	8	128		
	Jar/Bowl with Everted Rim	JBEV	7	7	49		
	Large Jar or Bowl or Large Jar or Bowl?	JBL	44	35	648		
-	Undiagnostic of Form	-	145	134	659		
34-35	Bowl	Wide Mouthed Bowl?	BWM?	1	1	9	
	Open	Unclassified Open Form?	OPEN?	1	1	16	
	Beaker	Unclassified Beaker	BK	2	2	6	
	Jar/Beaker	Unclassified Jar or Beaker	JBK	3	3	8	
	Jar	Unclassified Jar	J	6	6	47	
		Jar with Curved Rim	JCUR	1	1	14	
	Closed	Closed form	CLSD	7	7	38	
	Jar/Bowl	Unclassified Jar or Bowl	JB	1	1	21	
		Jar/Bowl with Everted Rim	JBEV	1	1	14	
		Large Jar or Bowl	JBL	3	3	66	

Area	Vessel Type	Full name	Cname	NoS	NoV	W(g)	
	-	Undiagnostic of Form	-	8	8	28	
RSM	Bowl	Bowl with Bifurcated Rim	BBIF	1	1	13	
	Bowl/Dish	Bowl or Dish	BD	1	1	1	
	Dish	Samian Form 18/31 or 31	18/31-31	1	1	7	
	Beaker	Beaker with Corrugated Walls	BKCORUG	1	1	21	
	Jar/Beaker	Unclassified Jar/Beaker	JBK	2	2	29	
	Flagon	Unclassified Flagon	F	4	1	371	
	Cook Pot	Native Tradition Cook Pot	CPN	3	3	35	
	Jar		Unclassified Jar/Unclassified Jar?	J	15	11	451
			Carinated Jar	JCAR	8	1	325
			Jar with Curved Rim	JCUR	2	1	94
			Dales Ware Jar	JDW	1	1	15
			Jar with Everted Rim	JEV	39	3	662
			Storage Jar	JS	4	3	232
	Closed	Closed Form	CLSD	2	1	10	
	-	Undiagnostic of Form	-	1	1	17	
Misc	Unusual Form	Z	6	2	211		
<b>Total</b>				<b>820</b>	<b>489</b>	<b>13919</b>	

### Potential

An interesting group of pottery was recovered during excavations which should help develop our understanding of late Iron Age and Roman Sleaford. All of this material should be retained. Some of the Iron Age material is quite fragile and should be well packed in acid free tissue paper to prevent further degradation. There should be no further problems for long term storage. A total of 19 vessels have been chosen for illustration for their intrinsic value; see table 5 below.

Table 5, Illustrated vessels

Dr	Cxt	Cname (Form)	Full Name (Form)	Cname (Fabric)	Fabric
1	005	JS	Storage Jar	SHCF/MF	Iron Age Fabric with Common Fine/Medium Shell Inclusions
2	013	F	Flagon	OXWS	Oxidised Fabric with White Slip
3	020	BFL	Bead and Flange Bowl	BBT	Black Burnished Ware Type Fabric
4	020	JCUR	Jar with Curved Rim	GRFF	Miscellaneous Fairly Fine Greyware
5	020	CP	Cook Pot	BBT	Black Burnished Ware Type Fabric
6	038	JBCOR	Jar or Bowl with Cordon/s	NAT	Native Type Fabric
7	038	JGLOB	Iron Age Type Globular Jar	SHCF	Iron Age Fabric with Common Fine Shell Inclusions (Type 1 - Site Specific)
8	070	BCOR	Bowl with Cordon/s	SHMF	Iron Age Fabric with Medium Fine Shell Inclusions
9	077	BKCOR	Beaker with Cordon/s	GFIN	Miscellaneous Fine Grey ware
10	080	JGLOB	Iron Age Type Globular Jar	SHCF1	Iron Age Fabric with Common Fine Shell Inclusions (Type 1 - Site Specific)
11	099	JL	Large Jar	SHCF	Iron Age Fabric with Common Fine Shell Inclusions
12	099	JGLOB	Iron Age Type Globular Jar	SHCF1	Iron Age Fabric with Common Fine Shell Inclusions (Type 1 - Site Specific)
13	245	BKCORUG	Corrugated Beaker	NVGW	Nene Valley Greyware
14	245	Z	Uncertain/ Unusual Vessel Form (Jar)	SHSC	Iron Age Fabric with Sparse Coarse Shell Inclusions
15	246	JCUR	Jar with Curved Rim	GREY1	Greyware (Type 1 - Site Specific)
16	247	BBIF	Bowl with Bifurcated Rim?	GREY1	Greyware (Type 1 - Site Specific)
17	247	JEV	Jar with Everted Rim	GREY1	Greyware (Type 1 - Site Specific)
18	247	JCAR	Jar with Carination	GREY1	Greyware (Type 1 - Site Specific)
19	248	Z	Uncertain/ Unusual Vessel Form (Cooking Pan)	GREY	Miscellaneous Grey Ware

## Summary

A large amount of pottery was recovered during archaeological excavations at HBSC09. The bulk of this is late Iron Age and early Roman in date and is very domestic in nature, with few table or drinking vessels. Most of material was retrieved from later Roman grave contexts, where it is almost certainly residual. Other features including ditches, a pit and a probable oven or kiln produced pottery of an almost exclusively Late Iron Age to second century date. There is a noticeable lack of locally produced ceramics dating from the early to mid third century including Nene Valley greywares and colour coats. This may be taken to indicate a marked drop in activity in this particular area, possibly for many decades before the establishment of the cemetery.

## POST ROMAN POTTERY

By Anne Boyle

### Introduction

All the material was recorded at archive level in accordance with the guidelines laid out in Slowikowski *et al.* (2001) and to conform to Lincolnshire County Council's *Archaeology Handbook*. The pottery codenames (Cname) are in accordance with the Post Roman pottery type series for Lincolnshire, as published in Young *et al.* (2005). A total of three sherds from three vessels, weighing 381 grams was recovered from the site.

### Methodology

The material was laid out and viewed in context order. Sherds were counted and weighed by individual vessel within each context. The pottery was examined visually and using x20 magnification. This information was then added to an Access database. An archive list of the pottery is included in Table 1. The pottery ranges in date from the Late Saxon to the early modern period.

### Condition

All the sherds are in fairly fresh condition, as indicated by the average sherd weight of 127 grams.

### Results

Table 6, Post Roman Pottery Archive

Cxt	Area	Cname	Fab	Full name	Form	NoS	NoV	W (g)	Part	Description	Date
001	28-30	BCHIN		Bone china	?	1	1	57	BS	Unglazed on one face	19th to 20th
094	31-32	LSH		Lincoln shelly ware	In-turned rim Bowl	1	1	123	Rim	Square roller stamping on rim top; Soot; fresh	Early/mid to late 10th
260	RSM	BOUA	B	Bourne-type Fabrics A, B, C, E, F and G	Jug	1	1	201	Base	Soot; concretion; ?ID	13th to 14th?

### Provenance

One sherd was recovered from 'dark earth' layer (094) whilst the remaining two pieces were unstratified.

### Range

It is perhaps surprising that three large, fresh sherds with such an extensive date range are the only examples of post-Roman pottery recovered from the site. A single fragment from a Lincoln Late Saxon shelly ware (LSH) in-turned rim bowl has square roller stamping on the rim top and can be dated to the early/mid to late 10th century. The presence of this vessel here is notable given the paucity of other Late Saxon material recovered from the site. However, Late Saxon pottery has been recovered from previous investigations at the Hoplands (e.g. SHBC05, SHSG06) and Woodside (SPG99).

The medieval jug base is probably a Bourne product and may date to the 13th or 14th century; a single 19th to 20th century vessel was also recovered.

### Potential

All of the pottery is stable and poses no problems for long-term storage. All of the pottery should be retained.

### Summary

Three post-Roman vessels of mixed date were recovered from the site. Of interest is a Late Saxon bowl fragment which may, when considered in light of other evidence recovered during prior excavations, suggest settlement activity of this date in the immediate vicinity of the site.

## CERAMIC BUILDING MATERIAL

By Alex Beeby

### Introduction

All the material was recorded at archive level in accordance with the guidelines laid out by the ACBMG (2001) and to conform to Lincolnshire County Council's *Archaeology Handbook*. A total of five fragments of ceramic building material, weighing 64 grams was recovered from the site.

### Methodology

The material was laid out and viewed in context order. Fragments were counted and weighed within each context. The ceramic building material was examined visually and using x20 magnification. This information was then added to an Access database. An archive list of the ceramic building material is included in Table 6 below.

### Condition

The material is fragmented and abraded. Two pieces are surfaceless and burnt.

### Results

Table 7, Ceramic Building Material Archive

Context	Cname	Fabric	Description	Date	NoF	Weight
001	MOD TILE		Moulded glazed wall tile; back surface reads "HANL..."	20th Century	1	27
099	CBM?	OX/R/OX; fine	Single flake; v abraded; tiny flat area of surface; poorly mixed clay; poss object or RTIL?; sparse fine mica	Roman?	1	26
145	CBM	Oxidised; fine	Surfaceless; burnt; abraded; highly fired	Roman or Post Roman	2	6
221	CBM?	Dull oxid	Flake; abraded; poss FCLAY object or flake of RTIL	?	1	5
<b>Total</b>					<b>5</b>	<b>64</b>

### Provenance

Ceramic building material was recovered from pit or hollow [100], and graves [143] and [223]. A single fragment of modern material is unstratified.

### Range

There are four fragments of unidentified ceramic building material and a piece of modern moulded glazed wall tile. Two fragments may be Roman tile.

### Potential

The material should be retained as part of the site archive and should pose no problems for long term storage.

### Summary

Five pieces of ceramic building were recovered during archaeological investigations at HBCS09. At least two of these pieces could be Roman.

## FIRED CLAY

By Alex Beeby and Gary Taylor

### Introduction

All the material was recorded at archive level in accordance with the guidelines laid out in the Lincolnshire County Council's *Archaeology Handbook*.

### Methodology

The material was laid out and viewed in context order. Fragments of fired clay were counted and weighed within each context. This information was then added to an Access database. An archive list of the fired clay is included in Archive Catalogue 2, with a summary in Table 8 below.

### Condition

The condition of the fired clay in mixed with some large fresh pieces as well as small abraded fragments and flakes.

## Results

Table 8, Summary of the Fired Clay by Category

Classification	Fragments	Weight
Daub/Daub?	2	7
Unclassified Fired Clay	16	193
Loom Weight	10	372
Unclassified Object	4	95
Oven/Kiln Furniture	2	294
<b>Total</b>	<b>34</b>	<b>961</b>

## Provenance

### Area 31-33

The bulk of the material was recovered from these areas, mostly from grave fill contexts. A total of 11 graves yielded fired clay including [054], [060], [079], [081], [130], [143], [177], [185], [188], [217] and [228]. A single fragment was recovered from curvilinear feature [107] whilst any unstratified pieces collected from these areas were labelled with context numbers (098) or (166).

### Area 34-35

Grave [029] produced a single piece of daub here.

### Road Strip and Manholes (RSM)

Fired clay was retrieved from Ditch [261] and possible hearth or kiln [264] in the road strip area.

## Range

A good range of fired clay items were recovered including two pieces of daub, 10 fragments from at least four loomweights, two items of oven or kiln furniture and four fragments from unidentified objects.

Most of the material is redeposited and came from grave contexts. However, feature [264] recorded as a hearth of kiln yielded at least two pieces of oven or kiln furniture including a fragment from flat, hand formed object possibly a oven plate and a long thin item probably a fire bar. Another piece of fired clay in a similar reduced fabric has a single slightly curved surface and is partially vitrified. This could be a piece of oven or kiln lining. The presence of these items suggests the feature was a Roman updraft pottery kiln or oven structure, rather than a simple domestic hearth.

Several small fragments of fired clay loomweight, evident as such by suspension holes were also recovered, although just a single piece came from a non grave context (curvilinear [107]). Only one piece retained enough to establish its form and this was triangular. Loomweights of this form occur widely across south eastern Britain, south of the Humber, on Iron Age sites (Elsdon and Barford 1996, 330). However, at Newton on Trent, about 15km west of Lincoln, loomweights of this same triangular form were found in an early-mid 2<sup>nd</sup> century Roman pottery kiln (Field and Palmer-Brown 1991, 49) and were clearly being made and in use in the early Roman period.

The presence of an oven/kiln, and loomweights on the site indicate that domestic activity including baking or kiln firing and weaving were taking place here although these activities may not be contemporary. The presence of daub suggests the existence of wattle and daub buildings or structures.

## Potential

The material should be retained as part of the site archive. Much of the material is fairly fragile and needs to be carefully packaged in acid free tissue paper.

## Summary

A number of fired clay items were recovered during the archaeological excavations including oven or kiln furniture, loom weights and daub. These pieces are probably largely of late Iron Age or early Roman date, although the majority were recovered from later grave contexts.

## The Animal Bone

By Matilda Holmes.

### Introduction

Bones were recovered from a number of features, the majority coming from graves dated from the late Iron Age to Roman phases (Table 1). There are no obvious associated bone groups indicative of deliberate placements of either complete animals or food offerings within the graves, rather the assemblage is more likely the product of re-burial of residual material. Sample sizes from each phase were very small, and even if amalgamated into one general 'Roman' phase, would not be worth detailed investigation. However, the bones will be considered in terms of species present, and their condition and taphonomy.

Table 1: Number of bones recorded from each feature type. Based on counts of bones identified to species and/ or anatomical element

Feature	LIA-		1-	1-	2-	3-	Roman	Late Saxon	Modern	Total
	LIA	R	2	3	3	4				
Curvilinear feature	10									10
Dark earth layer			7	53				1	3	64
Ditch			10		4		1			15
Grave	17	2	24		36	45	21			145
Pit	5		1				1			7
Votive deposit	5									5

### Methodology

Bones were identified with the aid of the author's reference collection, and further guidelines as required. Due to anatomical similarities between sheep and goat, bones of this type were assigned to the category 'sheep/goat', unless a definite identification (Prummel and Frisch, 1986; Payne, 1985) could be made.

Bones that could not be identified to species were, where possible, categorised according to the relative size of the animal represented (small – rodent /rabbit sized; medium – sheep/ pig/ dog size; or large – cattle/ horse size). Ribs and vertebrae were not identified to species with the exception of 1st and 2nd cervical vertebrae and sacral elements. The zygomatic arch and occipital areas of the skull were identified from cranial fragments.

Tooth wear and eruption were recorded using guidelines from Grant (1982) and Silver (1969), as were bone fusion (Amorosi, 1989 and Silver, 1969), metrical data (von den Driesch, 1976), anatomy, side, zone (Serjeantson 1996) and any evidence of pathological changes, butchery (Lauwerier, 1988) and working. The condition of bones was noted on a scale of 1-5, where 1 is perfectly preserved and 5, the bone is so badly degraded to be almost unrecognisable (Lyman 1994: 355). Other taphonomic factors were also recorded, including the incidence of burning, gnawing, recent breakage and refitted fragments (Table 2). All fragments were recorded, although articulated or associated fragments were entered as a count of 1, so they did not bias the relative frequency of species present. Details of articulated bones were recorded in a separate table.

Table 2: Condition and taphonomic factors affecting the identified bone assemblage (excluding teeth)

Condition		LIA-		1-2	1-3	2-3	3-4	Roman	Late Saxon	Modern
		LIA	R							
Excellent	1									
Good	2	10	1	16	17	4	4	5		2
Fair	3	13	1	12	21	9	18	6		1
Poor	4	2		3	3	6	2		1	
Very Poor	5									
n		25	2	31	41	19	24	11	1	3

Taphonomic Factors	LIA-						Roman	Late Saxon	Modern
	LIA	R	1-2	1-3	2-3	3-4			
Butchery	8%	50%	6%	17%	5%	4%	18%	0%	33%
Burnt	4%	0%	0%	0%	0%	0%	0%	0%	0%
Gnawed	32%	50%	26%	22%	37%	29%	27%	0%	0%
Fresh break	12%	50%	10%	15%	5%	8%	18%	0%	33%
Refit	2=6		2=32	2=4	3=8	2=5	1=2	1=6	1=6
n	25	2	31	41	19	24	11	1	3
Loose molars : mandible with molars	03:02		2:0	0:7	4:3	3:0	2:1		

No sieved samples were available for study, which may lead to a negative bias in the number and variety of small mammals, fish and bird bones recorded in the assemblage.

### Taphonomy and Condition

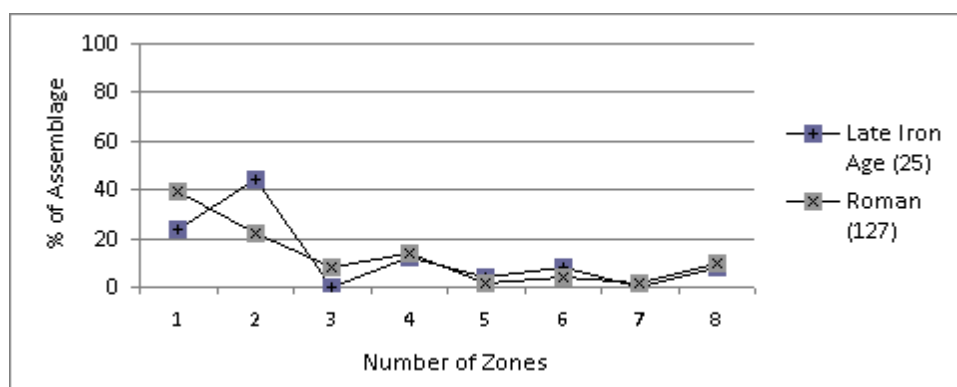


Figure 1: Fragmentation of the assemblage, based on the number of zones recorded for each bone identified to species and/ or anatomical element. (n) number of fragments.

The bones were in fair to good condition, though highly fragmentary. As shown in Figure 1, the majority of the late Iron Age and Roman assemblages consisted of three or fewer zones (based on the recording system of Serjeantson (1996)), with very few complete bones (i.e. those with all 8 zones present). A moderate number of bones exhibiting signs of fresh breakage suggests that they had lost some of their strength during burial (Table 2). Given the small sample sizes, there were a high proportion of refitted fragments which suggests a degree of post depositional movement. Of most note was the high number of bones which had been gnawed by dogs and, in a couple of examples by rodents, which indicates that much of the assemblage was not buried immediately following discard. This is also demonstrated by the greater proportions of loose molars recovered, compared to the number of molars within mandibles – teeth are generally well rooted within the mandible, and only after the connective tissue has degraded are they likely to fall out.

There were very few signs of burnt bone, although a few unidentified, calcined fragments were recovered from grave cuts, which could be representative of cremated bone. Some butchery marks were also present, suggesting that the bones underwent some form of processing prior to burial, the high incidence of gnawing suggests that other butchery marks were obliterated by such damage.

The partial skeleton of an adult dog was recovered from ditch 261 (context 245) dated from the mid to late 2nd century. There was no indication of butchery or burning and it was likely that it was buried fully articulating, either as a convenient way of disposing of a non food animal, or as a 'ritual' deposit.

#### Species Representation

The assemblage was dominated by cattle, sheep/ goats and pigs, of which sheep/ goat predominated in all phases, then cattle, then pigs (Table 3). Horse and dog bones were also occasionally recovered, as well as a low number of wild species from the Roman phases including deer, hare, rabbit, goose and amphibian bones. The nature of rabbits

as burrowing animals makes it most likely that these bones were intrusive, although solitary finds of rabbit bones are occasionally recorded from Roman contexts, rabbits were not common until after the 12th century (Sykes, 2007: 84). The homogenous nature of the assemblages from each phase further indicates either that there was some mixing of the animal bones throughout the site, or that the animal economy was relatively unchanged throughout the periods represented.

Table 3: Species Representation (fragment count) hand collected assemblage

Species	LIA	LIA-R	1-2	1-3	2-3	3-4	Roman	Late Saxon	Modern
Cattle	12	2	4	14	5	8	7		
Sheep / Goat	17		20	25	18	26	12		1
Sheep	1				1				
Goat				1					
Pig	3		6	2	5	3	2		
Horse			1		2	2			1
Dog	1		3*	1	2	2	1		
Deer			1						
Hare				2					
Rabbit					1				
Hare/ Rabbit				1					
Goose			1						
Amphibian					2				
<b>Total Identified</b>	<b>34</b>	<b>2</b>	<b>33</b>	<b>46</b>	<b>36</b>	<b>41</b>	<b>22</b>	<b>0</b>	<b>2</b>
Unidentified Mammal	6		25	17	13		2		
Large Mammal	16		13	27	5	14	8		
Medium Mammal	10		24	8	25	35	7		
Small Mammal					1				
Bird				2					
<b>Total</b>	<b>66</b>	<b>2</b>	<b>95</b>	<b>100</b>	<b>80</b>	<b>90</b>	<b>39</b>	<b>0</b>	<b>2</b>

\* associated bone group included as a count of one

### The Human Bone

A very small amount of human bone was recovered from a number of features, dating from the late Iron Age to the modern periods (Table 1). The bone was generally friable and fragmentary, and given the temporal spread suggests that it is largely residual, and had been redeposited from disturbed graves.

Table 1: Description of the human bone

Date	Feature	Context	Description
Late Iron Age	Grave Dark	095	Pelvis
1st - 3rd C	Earth	038	2x humeri
3rd - 4th C	Grave Dark	129	Premolar
Late Saxon	Earth Dark	094	Partial skeleton
Modern	Earth	001	Tibia



One complete humerus and another shaft fragment were recorded from context 038, from an individual less than 18 years of age. The partial skeleton from context 094 was from a juvenile, and comprised two femur shafts and a number of unidentified long bone fragments. The proximal end and shaft of a tibia from context 001 was from an individual at least 18 years of age (ageing data taken from Bass, 1995).

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## FAUNAL REMAINS

*By Paul Cope-Faulkner*

### Introduction

A total of 21 (45g) fragments of faunal remains were recovered from stratified contexts.

### Condition

The overall condition of the remains was good to moderate, averaging at grades 2-3 on the Lyman Criteria (1996).

### Results

*Table 9, Fragments Identified to Taxa*

Cxt	Taxon	Element	Side	Number	W (g)	Comments
129	Banded snail	shell		15	16	All complete
	Garden snail	shell		2	4	Both complete
131	Banded snail	shell		1	1	complete
142	oyster	shell	top	1	13	Irregular opening notch
221	Banded snail	shell		1	1	complete
245	oyster	shell	top	1	10	

The oyster shells are probably food waste, and one has a shucking notch at the lip. The remaining shells are natural terrestrial species. The large group from (129) is typical of a group of snails that have died in hibernation.

## METAL FINDS

*By Gary Taylor*

### Introduction

A large quantity of metal items, 132 objects together weighing a total of 3598g, was recovered.

### Condition

All of the metal items are in good condition, though all of the iron is corroded.

### Results

*Table 10, Metals*

Cxt	Material	Description	NoF	W (g)	Date
031	iron	Nails, all moderately large, between 67-86mm long, coffin nails	3	62	Roman
033	iron	Nails, 4 moderately small, c. 55mm long, 1 medium, 72mm long, 4 moderately large, between 87-120mm long, coffin nails	10	208	Roman
036	iron	Nails, all moderately large, between 88-95mm long, all have wedge-shaped heads, coffin nails	4	88	Roman
038	iron	Nails, 60-85mm long, coffin nails	2	38	Roman
046	iron	Nails, all moderately large, between 68-110mm long, coffin nails	3	70	Roman
050	iron	Nails, all medium length, between 55-65mm long, coffin nails	3	76	Roman
058	iron	Nail? Pin?, square-sectioned shaft	1	3	Roman?
063	iron	Nail, 80mm long, coffin nail	1	34	Roman
065	iron	Nails, 65-77mm long, coffin nails	2	45	Roman
074	iron	Nail, 100mm long, coffin nail	1	42	Roman
076	Copper alloy	Bracelet, oval penannular loop, 43mm x 39mm, 6mm wide, up to 2mm thick, decorated with ring and dot, V-shaped, transverse and longitudinal grooves	1	8	Roman
082	iron	Nails, 1 is 60mm long, 2 are 83-95mm long, coffin nails	3	107	Roman
083	iron	Nail, moderately small, 50mm long, coffin nail	1	9	Roman
102	iron	Nails, all moderately large, c. 80mm long, coffin nails	2	49	Roman
104	iron	Nails, both moderately small, between 50-65mm long, coffin nails	2	27	Roman
110	iron	Nails, all moderately small, c. 35mm long, flat circular heads, coffin nails	4	40	Roman
111	Copper alloy	Pin, broken shaft, point missing, 34mm long, 2mm thick, head with decoration of 3 reels, a bead and 2 reels	1	1	Roman
113	iron	Nail, moderately large, 70mm long, coffin nail	1	25	Roman
114	iron	Nails, all moderately large, between 70-85mm long, coffin nails	4	122	Roman
116	iron	Nails, all moderately large, c. 110mm long, coffin nails	4	150	Roman
128	iron	Nail, moderately large, 88mm long, coffin nail	1	45	Roman
131	iron	Nails, all large, generally 90mm+ long, several about 125mm long, coffin nails, longer examples probably corner nails	18	738	Roman
140	iron	Nail, moderately large, 113mm long, coffin nail	1	53	Roman
142	iron	Nail, moderately large, 96mm long, coffin nail	1	34	Roman
144	iron	Nails, all moderately large, c. 75mm long, 1 is T-headed, coffin nails	6(1 in 2 linking pieces)	159	Roman
158	iron	Nail, moderately large, 75mm long	1	22	Roman
164	iron	Nails, all moderately large, c. 95mm long, coffin nails	2	63	Roman
167	iron	Nails, all moderately large, between 75-90mm long, coffin nails	7	124	Roman
174	iron	Nails, all moderately large, between 75-90mm long, mostly large round heads but 1 with T-shaped head, coffin nails, Roman	4	108	19 <sup>th</sup> -mid 20 <sup>th</sup> century, or Roman
	iron	Tube, 95mm long, 26mm diameter, threaded at one end, service pipe? 19 <sup>th</sup> -mid 20 <sup>th</sup> century – intrusive?	1	163	
175	iron	Nails, all moderately large, mostly about 70mm long, coffin nails	5	113	Roman
178	iron	Nails, all moderately large, mostly between 70-90mm long, coffin nails	8	147	Roman
183	iron	Nail 63mm long, coffin nail	1	32	Roman
186	iron	Nail, c. 115mm long, bent to L-shape, coffin nail	1	42	Roman
196	iron	Nails, moderately small, c. 45mm long, coffin nails?	2	16	Roman

198	iron	Nails, moderately large, c. 85 long, coffin nails	2	46	Roman
201	iron	Nails, all moderately large, mostly about 90mm long, one larger at 115mm long, coffin nails, longest is probably corner nail	11	397	Roman
205	iron	Nail, 50mm long, bent to L-shape, coffin nail	1	15	Roman
208	iron	Nail, moderately small, broken, 40mm long	1	8	
212	iron	Nail, moderately small, broken, 50mm long	1	5	
213	iron	Nails, all moderately large, between 65-85mm long, 2 with T-shaped heads, coffin nails	3	55	Roman
221	iron	Blade? Flat strip, 69mm long, 3mm thick, tapering from 10mm to 7mm wide	1	9	

### Provenance

The metal items were recovered from grave fills (031, 033, 036, 046, 050, 058, 063, 065, 074, 082, 083, 102, 104, 110, 111, 113, 114, 116, 128, 131, 140, 144, 158, 164, 167, 174, 175, 178, 183, 186, 196, 198, 201, 205, 208, 212, 213, 221), dark earth (038), pit fill (076), and ditch fill (142).

### Range

Iron dominates the assemblage, with only 2 items (of copper alloy) that are not of this metal. Nails also form the greatest part of the assemblage, with most of them coffin nails. There is a variety of distinct size ranges and forms. The largest nails, generally about 110-120mm long, are probably corner bolts for the coffins. Nail head forms, where identifiable, are mostly round, some of them fairly large, circular and flat, though T-shaped heads are fairly common. There is an unusual group, from (036), in which the nail shafts are flatted and widened to form a wedge-shaped head. All the nails from this context were of this form, and this type of nail was not found in any other context.

There is a probable blade, from (221), but the form is not clear. A possible pin, or small nail, was recovered from (058). There is also a tube with an external thread, probably machine-cut, at one end. This is probably a section of service pipe of early modern date and almost certainly intrusive in the deposit it was recovered from.

A copper alloy bracelet was retrieved from (076). Bracelets with similar motifs to this example have been found at Aldborough Roman town in Yorkshire (Bishop 1996, fig 29, no 293) and at Colchester, where one was found in a 4<sup>th</sup>-mid 5<sup>th</sup> century grave (Crummy 1995, fig 44, no 1704).

One other item of copper alloy, a pin, was obtained from (111). This has a bead and reel head and is of Cool's Group 3 type of hairpins (Cool 1990). A near-identical example was found at Aldborough Roman town (Bishop 1996, fig 9, no 48).

### Potential

The metal artefacts are of moderate potential and provide functional evidence for activities at the site. In particular, the high number of coffin nails relate to the many burials found in the area. The items of personal adornment, the hairpin and bracelet, both of copper alloy, may have been buried with the deceased, perhaps still worn on the bodies.

The pin, bracelet and wedge-headed nails from (036) should be drawn.

## OTHER FINDS

*By Gary Taylor*

### Introduction

A moderate quantity of other finds, 11 items weighing a total of 1379g, was recovered.

### Condition

All of the other finds are in good archive-stable condition.

### Results

*Table 11, Other Materials*

Cxt	Material	Description	NoF	W (g)
031	stone	Burnt stone	1	10
076	stone	Lava quern, cutting grooves evident, cut to rectangular block – reused as building stone?	1	800

077	stone	Burnt stone	1	3
099	stone	Burnt stone	1	277
113	stone	Burnt stone	1	5
165	stone	Burnt stone	1	57
	Industrial residue	Slag? Possibly iron smithing slag or vitrified furnace lining	1	69
167	stone	Burnt pebble – pot boiler?	1	21
187	charcoal	charcoal	2	2
206	Industrial residue	Iron slag, plano-convex hearth bottom?	2 (link)	134
230	charcoal	charcoal	1	1

### Provenance

The other finds were recovered from grave fills (031, 077, 113, 165, 167, 187, 206), pit fills (076, 099), and ditch fill (230). There is a piece of quern made from lava from the Mayen area of western Germany.

### Range

Food grinding is indicated by a piece of quern made from lava from the Rhineland of western Germany. This material was imported into Britain from the Roman period until medieval times, though this example is likely to be Roman in date. The quern was subsequently cut down to a rectangular block, probably for use as building stone, though the vesicular and friable nature of the lava does not make it particularly appropriate for that use.

### Potential

The other finds provide some functional information and have moderate potential. Burnt stones indicate fires or hearths and a few pieces of industrial residue may indicate iron smithing nearby. A piece of lava quern indicates not only the grinding of food but the presence of structures, as the quern had been cut down to probably provide a piece of building stone.

### SPOT DATING

The dating in Table 12 is based on the evidence provided by the finds detailed above.

Table 12, Spot dates

Cxt	Date	Comments
001	19th to 20th	Date on a single sherd
005	1st	
013	Mid 1st to early 2nd	
014	Early to mid 3rd	
020	Mid to late 2nd	
024	Mid 2nd to 3rd	
026	Late Iron Age	
031	Roman	
034	Mid 2nd to 3rd or later	
033	Roman	Date on metal
036	Roman	Date on metal
037	Mid 2nd to 3rd or later	
038	1st-3rd	Date on metal
046	Roman	Date on metal
047	3rd	
050	Early 2nd to 3rd	
051	1st to 2nd	
055	Late Iron Age to early Roman	
058	Mid 1st to early 2nd	Date on metal
062	Late Iron Age	
063	Roman	Date on metal
065	Roman	Date on metal
067	Late 1st to mid 2nd	
070	2nd	
072	Roman	Date on a single sherd
074	Roman	Date on metal
076	Roman	Date on metal

077	Mid 1st to early 2nd	
080	Late Iron Age	Unstratified finds
082	Mid 1st to early 2nd	Date on metal
083	Roman	Date on metal
085	Late Iron Age	
089	4th	
094	Early/mid to late 10th	Date on a single sherd
095	Late Iron Age	Unstratified finds
098	Late Iron Age	
099	Late Iron Age	
102	Roman	Date on metal
104	Roman	Date on metal
106	Late Iron Age	Date on a single sherd
110	4th or later	
111	Roman	Date on metal
113	Roman	Date on metal
114	Roman	Date on metal
115	Late Iron Age	
116	3rd to 4th	
128	Roman	Date on metal
129	3rd to 4th	
131	Mid 3rd to 4th	
135	Mid 2nd to 3rd or later	
140	Roman	Date on metal
142	Roman	Date on metal
144	Roman	Date on metal
145	Mid 2nd to 3rd	
148	Late Iron Age to early Roman	
153	Mid 2nd to 3rd	
158	Roman	Date on metal
164	Roman	Date on metal
165	Mid 2nd or later	
166	Late Iron Age	Unstratified finds
167	Roman	Date on metal
169	Mid 2nd to 3rd	
174	19 <sup>th</sup> -mid 20 <sup>th</sup> or 4th Century	Includes one modern metal object - the modern piece is likely to be intrusive
175	Late 3rd to 4th	
178	Roman	Date on metal; also includes late Iron Age pottery
184	Late Iron Age	
183	Roman	Date on metal
186	Roman	Date on metal
187	Early Roman	Date on fired clay; also contains late Iron Age pottery
190	Mid 2nd to 3rd	
196	2nd century or later	
198	Mid 2nd to 3rd	
201	Mid 3rd to early 4th	
205	Roman	Date on metal
206	1st to 2nd	
208	Late Iron Age	
212	Late Iron Age	
213	Roman	Date on metal
217		
218	1st to 2nd	
221	Early to mid 3rd	
226	Late Iron Age to Roman	
229	Late Iron Age	Date on a single sherd
230	Mid 2nd to 3rd	
233	Mid 2nd to 3rd	
236	Late Iron Age	
245	Mid to Late 2nd	

246	Early to mid 2nd	
247	Early to mid 2nd	
248	2nd	
249	1st to 2nd	
260	13th to 14th	Unstratified finds

### ABBREVIATIONS

ACBMG	Archaeological Ceramic Building Materials Group
BS	Body sherd
CBM	Ceramic Building Material
CXT	Context
LHJ	Lower Handle Join
NoF	Number of Fragments
NoS	Number of sherds
NoV	Number of vessels
PCRG	Prehistoric Ceramic Research Group
TR	Trench
UHJ	Upper Handle Join
W (g)	Weight (grams)

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## ARCHIVE CATALOGUES

## Archive catalogue 1, The Roman Pottery

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
30	005	SHCF/M	JS	HM; WIPE	1	FRIABLE; SMASH	1	RIMS TO SH;' BSS; CHANNEL RIM; FS; RARE PBS; RED BRWN FAB WITH GREY CORE ; DIAM 32		110	1143
30	005	SHCF/M	CLSD	HM	1	SOOT INT		BSS		2	43
30	005	ZDATE						1C			
30	005	ZZZ						LIA TO EROM			
RSM (Manhole 3)	013	IAGR	CPN	HM	1	SOOT EX		BS; CLAY PELLIS; OOLITE		1	17
RSM (Manhole 3)	013	OXWS	F		1	CONC (ORG)	2	FTM 100%; BSS: FS		4	371
RSM (Manhole 3)	013	SHSC	CPN	HM	1	SOOT EX		BS; BLACK FAB		1	11
RSM (Manhole 3)	013	ZDATE						EROM			
RSM (Manhole 3)	014	DWSH	JDW	HM	1	SOOT EX; ABR		RIM; INTR?		1	15
RSM (Manhole 3)	014	SAMSG	BD		1	BURNT		BS		1	1
RSM (Manhole 3)	014	SHSC	CPN	HM	1	SOOT EX		BS		1	7
RSM (Manhole 3)	014	ZDATE						EM3C			
RSM (Manhole 3)	014	ZZZ						MIX; 1C SAM			
28-30	020	BBT	BFL	LA; BSCROL BASE	1		3	RIM; BASE; PROFILE		1	133
28-30	020	BBT	CP	LA	1	SOOT; SMASH	5	RIM; BASE 100%; BSS; PROFILE; V COARSE FAB		25	750
28-30	020	GREY	CLSD	B	1			BS		1	13
28-30	020	GRFF	JCUR	BZ; SHG	1	SMASH	4	RIM; FTM 100%; BSS: PROFILE		5	257
28-30	020	SHEL	J	WM; WIPED; SHG	1	SCALE INT		BASE 100%; BSS SOME JOIN; FS; SHCM; SILTY MATRIX; RARE Q		30	606
28-30	020	ZDATE						150-200 (ANTONINE)			
28-30	020	ZZZ						GOOD GROUP; SMSHD HOMOGENOUS; ROOTLETS			
34	024	GYBN			1			BASE		1	4
34	024	GYMS	CLSD		1			BS; SOME LIMESTONE		1	3
34	024	NVGW	OPEN?		1			BS		1	16
34	024	SHCF1	CLSD	BWM?	1			BS; ELSDON E WARE		1	6
34	024	SHCF1	CLSD	ROUZ; B	1			BS; EXTRACTED; ELSDON E WARE		1	3
34	024	SHCM	CLSD	HM?	2			BSS; LIGHT BROWN		2	10
34	024	ZDATE						M2-3C			
34	024	ZZZ						MIXED LIA/ROM			
34	026	SHCF	CLSD	RIL; B	1			BS; FLAKES; DK BRN FAB; ADDED		1	8
34	026	SHCF	CLSD	RIL; B	1			BS; FLAKES; DRK BRWN FABRIC		1	8
34	026	ZDATE						LIA			
34-35	031	GREY	J	BWL	1			BS		1	17
34-35	031	GRFF	JBK		1			BS		1	1
34-35	031	GRSAN	J		1			BS		1	7
34-35	031	GRSH	JB		1			BASE; FS		1	21

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
34-35	031	SHEL			1	ABR		BS; RED BROWN		1	6
34-35	031	SHEL			1			BS; RED BROWN		1	2
34-35	031	ZDATE						RO			
34-35	034	GMIC	BK		1			FLAKE		1	2
34-35	034	GMIC	BK		1			BS; SELFSLIP?		1	4
34-35	034	GREY	J		1			BS; BASAL		1	6
34-35	034	GREY	J		1			BS		1	4
34-35	034	GREY			1	ABR INT		BS		1	3
34-35	034	GYBN			1	ABR		BS		1	3
34-35	034	SHCC	JBL		1	ABR INT		BS; UNUSUAL BLACK INCL; VERY COARSE SHELL		1	42
34-35	034	SLSH	JBEV		1			RIM; LT BRWN; PB		1	14
34-35	034	ZDATE						M2-3C+			
34-35	037	GMIC	JBK		1			BS; SANDWICH CORE		1	6
34-35	037	GREY	J		1			BS		1	9
34-35	037	GREY			1	ABR		FLAKE		1	1
34-35	037	GRFF	JBK		1	V ABR		FRAG		1	1
34-35	037	SHCM			1	ABR		BS; PB; CONTAINS FOSSIL STARFISH?		1	7
34-35	037	SHELF	J		1			BS; GREY WITH COM FINE SHELL; UNUSUAL		1	4
34-35	037	ZDATE						M2-3C+			
31-33	038	GREY	CLSD	BARC	1			BS; 3C; INTRUSIVE?		1	16
31-33	038	NAT	CLSD	HM; B	1			BSS		4	17
31-33	038	NAT	JBL	WM?	1	ABR		BSS		8	71
31-33	038	NAT	CLSD	HM	2	1 VESS BURNT		BSS		2	17
31-33	038	NAT	JBCOR	B; HMWF	1		6	RIM SHLDR; BS; PB		2	63
31-33	038	OX	BKEV		1	V BURNT		RIM		1	3
31-33	038	SHCF	JBL	WIPE	1			BS; PB		1	36
31-33	038	SHCF	CLSD	HM	1	SCALE; SOOT EX		BS; PB		1	14
31-33	038	SHCF	CLSD	ROUZE; STR	1			BS; PB; CF PIECE IN 090		1	30
31-33	038	SHCF/M	J	HM; B	1	ABR INT		BASE; PB		1	29
31-33	038	SHCF1	CLSD	B; HM	1	SOOT EX		BS; PB; 1 TO LINK IT EWARE		1	6
31-33	038	SHCF1	CLSD	B; HM	1			BS		1	1
31-33	038	SHCF1	JGLOB	HM; B	1	SOOT EX; ABR INT	7	RIM TO SHLDR; CORDONED; BSS; FLAKES		15	399
31-33	038	SHCF1	JCOR	HM; B	1			BS; MULTICORDONED; FIND PARALELL		1	21
31-33	038	SHCF1	JEV	HM; B	1			RIM; FIND PARALELL		1	30
31-33	038	SHCF1		HM; B	1			RIM FRAG		1	4
31-33	038	SHCF1	JBK	B; HM	1			BS		1	5
31-33	038	SHCF1	J	B; HM	2	SOOT INT		BSS		2	93
31-33	038	SHCM	JS		1			BSS		2	81
31-33	038	SHCM	JS	HM?	1			RIM; BEADED; LID SEAT; FIND PARALELL; ADDED		1	40
31-33	038	SHCM	JS	BA	1			RIMS; ABUN PB		1	60
31-33	038	SHCM	JS	HM?	1			RIM; BEADED		1	69
31-33	038	SHCM	CLSD	HM	1	SOOT EX		BSS; JOIN		3	18
31-33	038	SHMF	J	WM?	1			FTM		1	41
31-33	038	SHMF	CLSD	B; HM	1	SOOT EX		BSS		4	53



Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31-33	038	SHMF	CLSD	HM	2			BSS		2	24
31-33	038	SHMF		B	1	ABR INT		BS		1	9
31-33	038	ZDATE						EROM/3C			
31-33	038	ZZZ						MOSTLY LIA; 3 ROM INCL 1 3C?			
34-35	047	GREY	BWM?		1	ABR		RIM		1	9
34-35	047	SHCM	JCUR	HM	1	SOOT		RIM; ABUN PB; FIND PARRS		1	14
34-35	047	SHCM	JBL		1			BS; ABUN PB		1	12
34-35	047	SHCM			1	ABR EX		BS; PB		1	2
34-35	047	SHCM	JBL	HM	1			BS; PB		1	12
34-35	047	ZDATE						3C			
34-35	047	ZZZ						MIX; DATE ON GREY			
31-33	050	GREY		B	1			BS		1	1
31-33	050	GROG		B	1			BS		1	1
31-33	050	IAGR		B	1			BSS		1	4
31-33	050	NAT			1	ABR		FLAKE		1	2
31-33	050	NVGW		B	1			FLAKE		1	2
31-33	050	OXMS	J		1			BS; FINE FAB		1	4
31-33	050	SHCC	CLSD		2			BSS; ABUN PB AND MOD PB		2	15
31-33	050	SHCF			2			BSS; PB		2	3
31-33	050	SHCF1		B	1			BSS; PB		1	2
31-33	050	SHCM	CLSD	SCRH; B	1	ABR INT		BS; PB		1	12
31-33	050	SHMC	CLSD	HM	2			BSS		2	20
31-33	050	ZDATE						EM2-3C			
31-33	050	ZZZ						MIXED GRP; MLIA AND ROM			
33	051	GFIN	JBK?	B	1			BS		1	4
33	051	GREY			1			BS		1	2
33	051	GRSH	JS	HM?	1			BS; PB		1	11
33	051	SHCF1	CLSD	B	1			BS		1	1
33	051	SHCM	CLSD	HM	1			BS		1	12
33	051	SHCM	CLSD	HM?	1			BASE		1	6
33	051	SHMC	JS	HM	1			BS		1	17
33	051	SHMM	CLSD		1			BS		1	4
33	051	SHSM		HM?; WIPE	1			BSS		2	9
33	051	ZDATE						1-2C			
33	051	ZZZ						MIXED			
33	055	IASA?	JB	B	1			RIM; POSS CORDONED		1	10
33	055	SHCF/M	CLSD	HM	2			BSS; ABUN PB		2	13
33	055	SHCF1	CLSD	HM; B	4			BSS		5	19
33	055	ZDATE						LIA-EROM			
31	058	GREY	JB		1			BS		1	6
31	058	OXF	BKBB	ROUZ	1			BS		1	1
31	058	SHCC			1	ABR		FRAG; PB		1	3
31	058	SHCF/M	CLSD	HM?	1	ABR INT		BS; PB		1	12
31	058	SHCF1		B	1	ABR		BS		1	1
31	058	SHCM	JB	HM?	1	ABR INT		BS; ABUN PB		1	41
31	058	ZDATE						EROM			
31	058	ZDATE						LIA			
31-33	062	SHCF	CLSD	HM	1	V ABR		BS		1	5

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31-33	062	SHCF1	CLSD	ROUZE	1			BS		1	6
31-33	062	ZDATE						LIA			
31	067	GREY	J	BL	1			BS		1	1
31	067	NVGWV	J	B	1			BS; BLACK SURFS; CLAY PELLETS		1	6
31	067	ZDATE						L1-M2C			
31	070	COAR			1	ABR		FRAG		1	3
31	070	CR	F?		1			BS; CLAY PELLETS; LARGE RED FE; FS		1	7
31	070	GREY	JBK		1			BS		1	4
31	070	GREY	J		1			BS		1	4
31	070	SHCF	CLSD		1			BS		1	6
31	070	SHCF/M	BCOR		1	SOOT	8	RIM TO GIRTH; CF ELSDON F9		1	47
31	070	SHCF1	JB	ROUZE	1	SOOT EX		BS		1	37
31	070	SHCF1	JGLOB	B	1	ABR INT		BSS; CF 080 SAME FORM		5	186
31	070	SHCM	CLSD		1	ABR INT		BS; BLACK SHINY INCL; FS		1	18
31	070	SHMF	JB		1			BS; CF ELSDON F9		1	29
31	070	SHSF	JB	HM	1	SOOT EX		BS		1	14
32	070	GREY	J		1			BS		1	3
31	070	ZDATE						2C			
31	070	ZZZ						MIXED GRP			
31	077	GFIN	BKCOR		1		9	RIM SHLDR		1	4
31	077	GYBN	J		1			BS		1	3
31	077	SHCC	CLSD		1	ABR		BS		1	6
31	077	SHCF	CLSD		1			BASE		1	12
31	077	SHCF/M	CLSD		1			BS		1	9
31	077	SHMF			1	ABR INT		FLAKE		1	1
31	077	SHMM	CLSD		1			BSS		3	13
31	077	SHMM			1			FRAG		1	2
31	077	SHMM	CLSD	HM; ROUZE	1	SOOT; ABR INT		BSS; EXT		2	10
31	077	ZDATE						EROM			
31	077	ZZZ						MIXED; IA/RO			
31	080	SHCF1	JGLOB	B:HM; SHG	1	ABR INT	10	BSS; SIM FORM TO 070		2	194
31	080	ZDATE						LIA			
31	082	GMIC	BKBB?	ROUZ	1	SOOT		BS; V MICACEOUS; IMPORT?		1	1
31	082	GREY	CLSD		1			BS		1	5
31	082	GYMS	CLSD	B	1	ABR INT		BS		1	4
31	082	NAT		B	1			BS		1	1
31	082	SHCF	CLSD	HM	1			BS; PB		1	4
31	082	ZDATE						EROM			
31	082	ZZZ						SOME LIA			
31-32	085	SHCF	JL	HM; WIPE	1			BS	099	1	104
31-32	085	SHCF1	CLSD	HM; B	1			BS		1	14
31-32	085	ZDATE						LIA			
32	089	NVCC	BHEM		1			RIM; WHITE FAB		1	14
32	089	SHCM	JL	WIP; HM	1	SOOT?		BS; LIA		1	55
32	089	ZDATE						4C			
31	095	SHCC1	J		1	ABR		BS; ELSDON F6?; PB		1	12
31	095	SHCF	J	HM	1	ABR INT; LEACH		BS		1	15

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31	095	SHCF			1	ABR		FLAKE		1	3
31	095	SHCF1		B	1	ABR		BS		1	5
31	095	SHCF1	CLSD	B	1			BS; GROG?		1	7
31	095	SHMM			1	ABR INT		BS; EC		1	2
31	095	ZDATE						LIA			
31-32	098	NAT		HM?	1			BS		1	2
31-32	098	SHMM	JS	HM	1	SOOT?		BSS; PB; JOINING; PULL TOWARD BASE; CF ELSDON F8		10	1198
31-32	098	ZDATE						LIA			
32	099	IAORG	CLSD	B;HM	1			BS; BLK ORGANICS; CLAY PELLS		1	3
32	099	SHCF	JL	HM	1	SOOT?	11	BASES; JOIN; 90%	085	2	472
32	099	SHCF		HM?	1	ABR		BS; RARE PB		1	5
32	099	SHCF1	CLSD	B; ROUZE; HM?	1	ABR		BS; EXTRACTED; INTERSECTING ROULETTING		1	6
32	099	SHCF1	CLSD	B;HM	1			BS		1	3
32	099	SHCF1	JGLOB	B; ROUZE; STR; HM	1	ABR INT	12	RIM; BSS; BASES; CF FIG 114 ELSDON 1997; SEV JOINS		22	601
32	099	SHCM	CPN	HM	1	SOOT EX		RIM		1	13
32	099	SHMM		HM?	1			BS		1	13
32	099	SHSF	BCAR	B;HM	1	CONC		RIM; BS		2	40
32	099	ZDATE						LIA			
31	106	SHCF1	JBCOR	HM; B	1	SOOT+O BREAK		BS; ABUN PB		1	6
31	106	ZDATE						LIA			
33	110	DWSH	JDW		1	SOOT		RIM; PB		1	7
33	110	EGGS?	BK		1			FLAKE		1	1
33	110	GREY			2			BSS		2	4
33	110	LRGR?	J	HM; WIPE	1	SOOT?		BSS; FS		2	94
33	110	NVCC	BFB		1	ABR		RIM TO L WALL		1	20
33	110	SHCF1	CLSD	ROUZE	1			BS; PB; EXTRACT		1	4
33	110	SHCF1	JGLOB?		1	SOOT EX		BS; PB		1	11
33	110	SHMC	JBL	HM?	1	ABR INT		BS; IA?; PB		1	21
33	110	SHSC		HM	1	ABR INT		BS; IA?		1	5
33	110	SHSM	CLSD	HM?; B	1			FRAG; CLAY PELL		1	2
33	110	ZDATE						4C+			
33	110	ZZZ						MIXED; SOME LIA; REMEMBER GROG TEMPERED!!!; INTRUSIVE TO GRP?			
31-32	115	SHCC		HM?	1	ABR INT		BS; PB		1	6
31-32	115	SHCF	JB	HM	1			BSS; PB; F9?		2	27
31-32	115	SHCF	JB	HM	1	SOOT EX		BSS		2	26
31-32	115	SHCF/M	JBL	HM	1	ABR INT		BS; MOD PB		1	9
31-32	115	SHCF1	JGLOB?	HM; B	1	ABR INT		BS; PB		1	3
31-32	115	SHCF1	JBEV	HM; B	1			RIM; PB		1	6
31-32	115	SHMF	CLSD	HM?; B	1			BS		1	6
31-32	115	SHMF		HM?	1	ABR INT		BS; CLAY PELLS		1	4
31-32	115	SHSF	JCUR	HM; B	1			RIM		1	11
31-32	115	ZDATE						LIA			
31-32	115	ZDATE						LIA			
31-32	115	ZZZ						POSS INTO EROM			

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
33	116	GFIN	BK	B	1			BS; CF PART		1	1
33	116	GFIN	JBK		1			BS		1	2
33	116	GREY	CLSD		1	BURNT OXID		BS		1	7
33	116	GREY	B		1	ABR		BS		1	8
33	116	GRSAN	J		1			BS		1	9
33	116	GRSH	JBL		1	ABR INT		BS; CLAY PELLS		1	27
33	116	GYMS	JBL		1	ABR INT		BS		1	22
33	116	NVCC	BK		1	ABR INT; SOOT EX		BS; WHITE FAB		1	6
33	116	SAMEG?	37		1			FRAG; OVOLO		1	1
33	116	SHCF		HM?	4			BSS; PB; MISC		4	10
33	116	SHCF		HM?	1	ABR EX		BS		1	2
33	116	SHCM		HM?	2	ABR		BSS; MISC		2	7
33	116	SHCM		HM?; BHR?	1	ABR INT		BS		1	4
33	116	SHEL	JBL	HM	1			BS		1	10
33	116	SHEL	JBL		1	SOOT EX		BS		1	25
33	116	SHSM			1	ABR		BS; CLAY PELLS		1	4
33	116	ZDATE						3-4C			
33	116	ZZZ						MIXED			
33	129	CR	BK		1			BS; H??M		1	1
33	129	NVCC	CLSD		1			FTM		1	7
33	129	NVCC	BK?		1			BS		1	4
33	129	NVGWC	J		1			BS		1	4
33	129	SHCC		HM?	5	ABR		BSS		5	19
33	129	SHCF	JBCOR	HM; B	1			BSS		2	9
33	129	SHMC	JBL		1			BS;PB		1	9
33	129	SHMC			1			BS		1	14
33	129	SHSC	J	HM	1			BS		1	13
33	129	SLGY	J		1			BS		1	5
33	129	ZDATE						3-4C			
33	129	ZZZ						MIXED			
31-33	131	GREY	BEXR	B	1			RIM; SPOOLISH		1	19
31-33	131	GREY	CLSD		1			BS; CLAY PELLS		1	8
31-33	131	GRSH	CLSD		1	SOOT EX; ABR INT		BS; CLAY PELLS		1	13
31-33	131	MONV	M		1	SOOT INT		BS; WORN TRITS		1	17
31-33	131	NVCC	BKBAG	BADZ	1			BS; LATE; V HIGH FIRED; CHECK CODE		1	3
31-33	131	NVGW	BKFO		1			BS		1	2
31-33	131	NVGW	J		1			BS		1	12
31-33	131	NVGW?	J		1	SOOT EX		BS		1	5
31-33	131	SHCF1		B; HM	2	ABR INT		BSS; PB		2	6
31-33	131	SHCF1	JBCOR	B; BDL; HM	1	ABR INT		BS; PB		1	14
31-33	131	SHCM			2	ABR		BSS		2	7
31-33	131	SHCM			3	2 WITH SOOT EX; ABR		BSS; PBS		3	37
31-33	131	SHCM	JS		1	ABR		BS		1	13
31-33	131	SHCM	JS		1	ABR EX		BS; PB; BRWN FAB		1	85
31-33	131	SHCM/C	JS		2	SOOT EX		BSS; LIGHT BRWN		2	65
31-33	131	SHMC	JB		1	SOOT EX		BS; UNUSUAL FOSS; PB; EXTRACT		1	13
31-33	131	SHMC	JB		7	ABR		BSS; MISC		7	69
31-33	131	SHMF		HM; B	1	ABR INT		BS		1	15

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31-33	131	SHMF			1	ABR EX		BS		1	3
31-33	131	SHMF			2	ABR INT		BSS		2	9
31-33	131	SHMF		B	1	ABR INT		BS; PB		1	2
31-33	131	SHMF	JBEV	HM; B	1			RIM		1	3
31-33	131	SHMF1	JBK	HM; B	2	ABR INT		BSS; PB		2	3
31-33	131	ZDATE						M3-4C			
31-33	131	ZZZ						MIXED			
31	135	GREY	BFL		1			RIM TO GIRTH; BB TYPE		1	17
31	135	GYMS		BA	2	1 ABR		BSS; ADDED		2	11
31	135	NVGW	J	SWL	1			BS		1	7
31	135	SHCC	JS	HM	1	ABR		RIM; ABUN PB		1	20
31	135	SHCF1		B	1			FLAKE		1	2
31	135	SHMC	JBL	HM	1	ABR EX		BS; PB		1	23
31	135	SHMF		B; HM	1			BS		1	3
31	135	SHMF	B?		1	ABR		BS; LIA		1	3
31	135	ZDATE						M2-3C			
31	135	ZZZ						MIXED			
32-33	145	BB2	OPEN	B	1			BS		1	3
32-33	145	GREY	JB		1			RIM		1	3
32-33	145	GREY			1			BS		1	5
32-33	145	OX		B?	1	ABR; BURNT?		BS		1	2
32-33	145	SHCF		B; HM	2			RIM; BS		2	15
32-33	145	SHCF1	J	B; HM	1			PB; BS NECK		1	17
32-33	145	SHCF1?		B; HM	1	ABR INT		BSS; BLACK SURFS; PB		2	12
32-33	145	SHCM	JBEV		1	SOOT		RIM		1	10
32-33	145	SHCM	JBL		3			BSS; MISC		3	46
32-33	145	SHCM	JBL	WIPE	2	1 SOOT INT		BSS		1	53
32-33	145	SHCM	JBL	B	1			BS; LIGHT BRWN		1	7
32-33	145	SHCM	J		1	ABR INT		BS; BASE		2	26
32-33	145	SHMC1		B; HM	1	ABR INT		BS; PB		1	11
32-33	145	SHMF		B	1	ABR INT		BS		1	2
32-33	145	SHMF			2	ABR		BSS		3	3
32-33	145	SHMM			1	V ABR		BSS		2	5
32-33	145	SHMM		2B	3	ABR INT		BSS		3	12
32-33	145	SHMM	J	B; SHG	1	LEACH INT		BSS; PB; OXIDISED		3	23
32-33	145	ZDATE						M2-3C			
32-33	145	ZZZ						MIXED			
32-33	148	GYMS	CLSD	WM; B	1			BS		1	5
32-33	148	SHCF1	JGLOB	HM; B	1	V ABR; SCALE INT		BSS; PB		4	107
32-33	148	ZDATE						LIA/EROM			
31	153	BB2	OPEN	B	1			BS		1	2
31	153	GMIC	BKBB	ROUZ	1			BS; FS; LOOK AT ELSDON FOR SOURCES AND PARRAS		1	4
31	153	GREY	J	BARC	1			BS; UNUSUAL FAB		1	12
31	153	GREY	F?		1			BSS; NECK		2	14
31	153	SHCF	JS		1			BS		1	16
31	153	SHCF			1	ABR INT		BS; OX		1	7
31	153	SHCF	JL	B; HM?	1			BS		1	5

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31	153	SHCF1	CLSD	B; HM; ROUZE	1	ABR		BSS		3	16
31	153	SHCM	JBEV	HM?	1			RIM; BURNT OX		1	9
31	153	SHCM	JS	HM	1			RIM; LID SEATED; CF ELSDON PG 138 F28; PB		1	20
31	153	SHCM	JBEV	B;HM?	1			RIM		1	6
31	153	SHMM			1			FLAKE		1	4
31	153	SHMM	JBL		1	ABR INT		BS; OXID; PB		1	7
31	153	SHSF			1	ABR		BS		1	1
31	153	ZDATE						M2-3C			
31	153	ZZZ						MIXED GRP			
32-33	153	SHMM	JCOR?	HM	1			BS; OX		1	4
32	165	GREY	JWM		1			RIM		1	25
32	165	GREY	JCUR		1			RIM NECK; BSS		3	42
32	165	GYMS		B	1			FLAKE		1	2
32	165	NAT		B; HM	1	ABR INT		BS		1	2
32	165	SHCF		B?	1	ABR INT		BS		1	15
32	165	SHCF	CLSD	B; HM?	1	ABR INT		BS		1	2
32	165	SHCF		B; HM	1	ABR INT		BS		1	13
32	165	SHCF	J	B; HM	1			BSS; 1 BASAL		2	45
32	165	SHCF/M	JL	B; HM	1	ABR INT		BS; NECK; PB		2	52
32	165	SHCM	JBCOR	B; HM	1	ABR		BS; PB		1	21
32	165	SHMC	JBL	SHG	1	ABR INT; LEACH INT		BS; GROG?		1	45
32	165	SHMF	JBR		1	ABR		BS; RIM		2	10
32	165	SHSC	CLSD	B; HM	1	ABR		BS		1	2
32	165	SHSM	JBL	HM	1	ABR INT		BS		1	6
32	165	ZDATE						M2C+? CHECK!!			
32	166	SHCM	JS	HM	1	SMASH		BSS; GIRTH TO BASE; FS; ABUN PB		4	539
32	166	ZDATE						LIA			
33	169	GREY	J		1			BS		1	2
33	169	NVGW	BK	BA	1			BS		1	4
33	169	SHMF/M	JB	HM	1			BS NECK		1	5
33	169	SHMM	CLSD	HM?	2			BSS		2	12
33	169	SHMM		HM	1			BS; PB		1	3
33	169	SHSF	JBBR		1	ABR		RIM; CLAY PELL; PB		1	3
33	169	ZDATE						EM2-3			
33	169	ZZZ						MIXED GRP			
32	174	NVCC	BKPM	ROUZ	1			BS; LATE FAB; FS		1	3
32	174	NVCC?	JL		1			BS; MISFIRED?; DARK CORE		1	12
32	174	SHCF			1			BS		1	4
32	174	SHCF1	J	B; HM	1	SOOT EX		BS		1	18
32	174	SHMF	CLSD	HM	1	SOOT INT		BS; PB		1	12
32	174	SHMM	JBL	HM	1			BS; OXID		1	14
32	174	ZDATE						4C			
32	174	ZZZ						MXD GRP			
31	175	NAAM?	A		1			BASE; SALINE WASH; GOLD MICA; BLACK SAND; LIMESTONE; D WILLIAMS		1	60
31	175	BB1	CLSD	BZ	1			BS		1	5

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31	175	NAT	JBEV	HMWF	1			RIM		1	6
31	175	NVCC	BK		1			BS; LATE FAB		1	3
31	175	SHCF			1			BS; PB		1	3
31	175	SHMC	JBL	HM	1	ABR INT		BS		1	28
31	175	SHMF	CLSD	B; HM	1			BS		1	3
31	175	SHMF	JBCOR	HM?	1			BS; OXID; PB		1	2
31	175	SHMM			1	ABR		BS		1	3
31	175	SHMM			1	ABR		BS; OXID		1	2
31	175	SHMM/C	JS	HM	1			BASE; PB		1	85
31	175	SHSM	CLSD	HM	1			BS; OX		1	9
31	175	ZDATE						L3-4C			
31	175	ZZZ						MIXED GRP			
31-32	178	SHCF	JBL	HM	1			RIM; PB		1	11
31-32	178	SHCF1	JBCOR	B; HM	1			BS; PB		1	6
31-32	178	SHMM	BBR	HM	1			RIM; OXID; ABUN PB		1	19
31-32	178	ZDATE						LIA			
32	184	SHCF1	JBCOR	B; HM	1			BS		1	7
32	184	SHCM	CLSD	HM	1	SOOT INT		BS; OXID; PB		1	6
32	184	SHMC	JBL?	HM?	1	ABR INT		BS; OX		1	14
32	184	SHMM	CLSD	HM	3			BSS; OXID; PB		3	23
32	184	ZDATE						LIA			
32	187	NATF	BKBB?	RIL	1			BS; CLAY PELL		1	4
32	187	SHCF/M	JBL	ROUZE	1			BS; THICK WALL		1	19
32	187	ZDATE						LIA			
32	187	ZZZ						BOTH SHERDS EXTRACTED			
32	190	NVGW	BK	BZ	1	ABR INT		BS		1	4
32	190	SHCM	CLSD	B; HM	1			BS; D WARE; PB		1	6
32	190	SHMF		HM	2	ABR		BSS; PB		2	5
32	190	ZDATE						EM2-3C			
32	190	ZZZ						MIXED; DATE ON NVGW			
33	196	GREY	JBK		1			FTM		1	5
33	196	SHMC	JBL	HM?	1	SOOT INT; ABR		BS; PB		1	12
33	196	ZDATE						2C+			
33	198	BB2?	B		1	V ABR		BS		1	3
33	198	CR	BK	SHG	1			BS; MICACEOUS		1	1
33	198	GREY	J		1			BS BASAL		1	3
33	198	NVCC	BK	ROUZ	1			BS		1	2
33	198	NVGW	BK	ROUL	1			BS		1	1
33	198	SAMSG	15/17?		1			FLAKE; SLIGHT GROOVE		1	1
33	198	SHCF			1	ABR INT		BS; PB		1	6
33	198	SHCF	JBK	B?	1	ABR INT		BS; PB; OXID		1	1
33	198	SHCF1		B	1	ABR INT		BS		1	2
33	198	SHCM	JBL		1	SOOT INT		BS		1	10
33	198	SHMM			1	V ABR		BS; PB		1	2
33	198	SHMM			1			BS; OX		1	15
33	198	SHMM	J	HM	1	SOOT INT		BASE		1	23
33	198	SHMM	JBR	HM?	1			RIM; PB		1	4
33	198	SHSC			1			BS		1	4

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
33	198	SHSF			1			FRAG		1	2
33	198	SHSM			1	SOOT?		FRAG; OXID		1	2
33	198	ZDATE						M2-3C			
33	198	ZZZ						MIXED GRP			
32-33	201	GREY	JEV		1	BLACK CONCRETIO N		RIM; CP		1	5
32-33	201	GREY	J		1			BS		1	3
32-33	201	GREY	J		1	SOOT EX		BS		1	7
32-33	201	GREY	JDW	WF?	1	SOOT INT		RIM; ELSDON 145; FS		1	8
32-33	201	GRSH	JL		1	ABR INT		BS; THICK WALL; CLAY PELLS; PB		1	19
32-33	201	GYMS			1	ABR INT		BS		1	12
32-33	201	SHCM	CLSD	HM?	1	SOOT INT		BS; PB; OX		1	7
32-33	201	SHMC			1			BS; OX		1	5
32-33	201	SHMC			1	SOOT INT		BS		1	4
32-33	201	SHSM/C			1			BS		1	2
32-33	201	ZDATE						ML3-E4C			
32-33	201	ZZZ						MIA?			
32-33	206	GREY	JBK		1			FRAG		1	1
32-33	206	OXMS	JBK	WM	1			FTM; BBK?; MICACEOUS		1	4
32-33	206	SHCF			1	ABR		FRAG		1	1
32-33	206	SHCF		HM	2			BSS; PB		1	18
32-33	206	SHCF		HM; B	1			FRAG		1	2
32-33	206	SHMF			1	ABR		BS; PB		1	4
32-33	206	SHMF/M			1	ABR		BS		1	4
32-33	206	SHMM			3	ABR INT		BSS; PB		3	12
32-33	206	SHSF			1	ABR INT		BS		1	8
32-33	206	ZDATE						1-2C			
32-33	206	ZZZ						MIXED GRP			
32	208	SHCF		HM; B	1			FRAG		1	2
32	208	ZDATE						LIA			
32	212	SHCF			1	ABR		FRAG; PB; OX		1	3
32	212	SHCF1	JB?	HM	1			BSS		2	17
32	212	SHMF			1	SOOT INT		BS; OX		1	7
32	212	SHSC	JBL	HM?	1			RIM FRAG		1	13
32	212	SHSC		HM?	1	SOOT EX		BSS		2	16
32	212	SHSC	CLSD	HM	1			BS		1	7
32	212	SHSC	J	HM	1			BS; OX		1	14
32	212	SHSM			1			FRAG		1	1
32	212	ZDATE						LIA			
31-32	218	GFIN		B	1	V ABR		BS		1	2
31-32	218	NAT		B	1	V ABR		FRAGS		2	5
31-32	218	NAT		B	1			BS		1	3
31-32	218	SHCM			1	ABR INT		BS; PB; OXID; PALE EXTERIOR		1	17
31-32	218	SHMM	JBL	HM	1	SOOT EX		BS		1	16
31-32	218	SHMM			1	ABR INT		BS; OX		1	7
31-32	218	SHSM			1	ABR		FRAG		1	4
31-32	218	SHSM			1	V ABR		BSS; OXID		2	4
31-32	218	ZDATE						MOSTLY MIA			



Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31-32	218	ZZZ						1-2C			
31-33	221	GREY	BKEV		1			RIM; COARSE FAB		1	2
31-33	221	NVCC	BKFO	ROUL	1			BS; VH FIRED; MOSEL KERAMIK COPY		1	1
31-33	221	SHCF		HM?	1	ABR		BS		1	6
31-33	221	SHCF			1	V ABR		FLARE; OX		1	1
31-33	221	SHCF		HM?	1	ABR INT		BASE?; ABUN PB; FS		1	14
31-33	221	SHMM			1	ABR INT		BBS; OX		2	9
31-33	221	SHMM			1	ABR INT		BS; OXID; PB		1	6
31-33	221	SHSM			1			BS		1	4
31-33	221	SHSM			1	ABR INT		BS; OX		1	9
31-33	221	ZDATE						EM3C			
31-33	221	ZZZ						MX GRP			
31-33	226	SHCF/M	CLSD	HM	1			BS		1	11
31-33	226	SHCF/M	CLSD	HM	1			BS		1	11
31-33	226	SHMM	JS		1			RIM		1	25
31-33	226	SHMM	JBL	HM?	1	ABR INT		BS		1	21
31-33	226	SHMM	JBL	HM?	1	ABR INT		BS; PB		1	10
31-33	226	SHMM	JBL	HM?	1	ABR INT		BS; PB		1	10
31-33	226	SHSM			1	ABR		BSS; OXID		2	7
31-33	226	SHSM			1	ABR		BSS; OX		2	7
31-33	226	ZDATE						LIA/RO			
31-33	229	SHMF			1	ABR EX		BS; F6?		1	4
31-33	229	ZDATE						LIA			
31-32	230	GYMS	CLSD	WM	1	SOOT EX; CONC		BS		1	15
31-32	230	NVGW	JBK		1			BS		1	1
31-32	230	SHCF	JBEV		1			BEAD RIM; OXIDISED; PB		1	9
31-32	230	SHCF/M	CLSD	WM?	1	CONC; SOOT EX		BS; PB		1	15
31-32	230	SHCF1		HM; B	1	ABR INT; SOOT EX		BS		1	19
31-32	230	SHCF1	CLSD	ROUZE	1			BS; EXT		1	18
31-32	230	SHCM	JS		1			BS		1	34
31-32	230	SHCM	JBL		1			BS		1	17
31-32	230	SHMM	CLSD	HM	1	BURNT; VITR		BS		1	9
31-32	230	ZDATE						EM2-3			
31-32	230	ZZZ						MIX; MOST LIA; DATED ON NVGW			
31-33	233	GFIN	BTR?	B	1			RIM; CF PART		1	4
31-33	233	GREY	JBK		1	ABR INT		BS		1	2
31-33	233	NVGW	J		1			BS		1	2
31-33	233	OX	JBK		1			BS		1	1
31-33	233	SHCF/M	CLSD	HM; B	1	ABR INT		BS		1	5
31-33	233	SHMF		B?	1	ABR		BS		1	2
31-33	233	SHMF	CLSD		1	SOOT INT		BS		1	3
31-33	233	SHMM	JBL		1	ABR INT		BS		1	5
31-33	233	SHMM	JBL		1	ABR INT		BSS		3	20
31-33	233	SHSF	JBK	HM; B	1			BS		1	2
31-33	233	SHSM	JBL?		1	ABR INT; SOOT EX		BSS		2	11
31-33	233	SHSM			1	ABR		BSS		3	7
31-33	233	ZDATE						EM2-3			

Area	Cxt	Cname	Form	Decoration	NoV	Alter	Dr	Comments	Join	NoS	W(g)
31-33	233	ZZZ						MIXED GRP			
31-33	236	SHCM	JBUP	HM	1	ABR INT		RIM; DIAM 10CM		1	16
31-33	236	SHCM			1	ABR		BS; ABUN PB		1	3
31-33	236	ZDATE						LIA			
RSM (Road)	245	GYMS	JBK	BHL; WM?	1	ABR INT		RIM		1	15
RSM (Road)	245	NVGW	BKCORU G	BHL	1		13	RIM TO GIRTH		1	21
RSM (Road)	245	SHMC	JS		1			RIM		1	31
RSM (Road)	245	SHMC	CLSD	HM	1	SOOT EX; BURNT EX		BSS		2	10
RSM (Road)	245	SHSC	JS		1			BS		1	59
RSM (Road)	245	SHSC	Z	HM	1	HEAVILY SOOTED EX; VITR	14	RIM TO LWALL; BSS; INDUSTRIAL USE?; SHOW J COWGILL		5	129
RSM (Road)	245	ZDATE						ML2C			
RSM (Road)	246	GREY1	JCUR		1	SOOT EX	15	RIM; BS; DARK GREY SLIP		2	94
RSM (Road)	246	SAMCG	18/31-31		1	BLK CONC; ABR ON RIM		RIM; ING GR		1	7
RSM (Road)	246	ZDATE						EM2			
RSM (Road)	247	GREY	J		1			BSS; SIM TO GREY1		1	8
RSM (Road)	247	GREY	J		1			BSS; AS GREY1; BUT GREY		2	21
RSM (Road)	247	GREY1	BBIF	B	1		16	RIM		1	13
RSM (Road)	247	GREY1	JEV	BHL	1	BURNT; SMASHED	17	BSS; RIM; BASE; PROF; FS		36	585
RSM (Road)	247	GREY1	J	BIA	0			BS		1	28
RSM (Road)	247	GREY1	JCAR	RNOD	1	SMASH	18	BASE 100%; BSS		8	325
RSM (Road)	247	GREY1	J	RNOD; BZ	1	VITRIFIED		BSS; FLAKED		3	36
RSM (Road)	247	GREY1	JEV	SHG	1	BURNT		RIM TO SHOULDER; BS		2	59
RSM (Road)	247	NVGWC	J		1			BS; FINE VARIANT		1	8
RSM (Road)	247	NVGWC	JEV		1			RIM; FINE VARIANT; AS CP		1	18
RSM (Road)	247	NVGY	J		1	ABR BURNT		FTM; OX		1	26
RSM (Road)	247	NVGY	J?		1			BS		1	6
RSM (Road)	247	ZDATE						EM2C			
RSM (Road)	247	ZZZ						GOOD HOMOGENOUS GRP; INTERESTING FABS			
RSM (Road)	248	GREY	Z		1		19	PATERA HANDLE; RESEARCH NEEDED		1	82
RSM (Road)	248	GREY1	J		1			BS; DARK GREY SLIP		1	17
RSM (Road)	248	GREY1	J		1			BS; CORE PINK		1	28
RSM (Road)	248	GREY1	J		1			BS		1	17
RSM (Road)	248	NVGY	JBK		1			BS; NECK GROOVE; WIDE GIRTH		1	14
RSM (Road)	248	ZDATE						2C+			
RSM (Road)	248	ZZZ						SAME FABS IN 247			
RSM (Road)	249	GYMS?	J	BHL; WM	1			BS; LS OR SHELL		1	23
RSM (Road)	249	SHCC	JS	HM	1	HEAVILY SOOTED		BASE; BS; OX		2	142
RSM (Road)	249	SHCF/M		HM?	1	SOOT EX; ABR INT		BS; OXID		1	17
RSM (Road)	249	ZDATE						1-2C+			
RSM (Road)	260	DWSH	J	HM	1	SOOT INT AND EX		BASE 100%		1	233
RSM (Road)	260	ZDATE						ML3C			

Archive catalogue 2, Fired Clay

Area	Context	Classification	Fabric	Frag	W(g)	Comment
34-35	031	DAUB	OX/R; Fine	1	2	Flake; single curved surface; wattle impression
31	058	DAUB?	Reduced; fine sandy	1	5	Single curved surface; flint; poss wattle impression
31	058	FCLAY	Oxid; shell	1	5	V abraded; surfaceless; piece of pot or waste?
31	077	FCLAY	Reduced light firing; fine	2	5	Abraded; sparse fine mica; irregular shaped; abraded surfaces; poss strike marks?; could be daub
31-33	082	FCLAY	Oxidised; medium sandy	1	6	Abraded; surfaceless; poorly mixed clay; burnt
31-32	098	OBJECT	Ox; medium sandy	1	21	Single curved surface; poorly mixed clay; sparse fine mica; sparse Ca grits up to 2mm; sparse rounded to subrounded Quartz
31-32	098	FCLAY	Dull Oxid; fine	1	3	Abraded; surfaceless; sparse v fine mica
31	106	LOOM WEIGHT		1	61	Loom weight fragment; suspension hole partially survives
31-33	131	LOOM WEIGHT		1	32	Loom weight fragment; suspension hole partially survives
32-33	145	FCLAY	Dull Oxid; fine sandy	1	7	Abraded; single uneven sanded surface; rounded to sub rounded Quartz; poorly mixed clay; large Ca and Fe grits
32	166	OBJECT	OX/R; Medium-coarse sandy	2	64	Coarsely bedded; flat base; abraded uneven curved upper; joining pieces; tiny pieces of slag and metal residue adhered; straw impression within fabric; frequent opaque rounded to subrounded quartz
32	175	OBJECT	OX/R; medium sandy	1	10	Abraded; sooted; rough rounded corner piece; three surfaces; rounded to subrounded quartz; prob loom weight or oven furniture
32	187	LOOM WEIGHT		7	242	Loom weight fragments; suspension hole partially survives in 1 piece of a triangular weight; Early Roman
32	190	FCLAY	Dull Oxid; medium sandy	1	11	Abraded; sooted; burnt; poorly mixed clay; frequent rounded to subrounded Quartz
31-32	218	LOOM WEIGHT		1	37	Loom weight fragment, suspension hole partially survives
31-33	229	FCLAY	Oxidised; fine sandy	1	1	Abraded; sparse fine mica; single surface?
RSM (Road)	245	FCLAY	Reduced; oolitic	1	33	Abraded; surfaceless; poss piece of CBM or obj?
RSM (Road)	248	FCLAY	Reduced; medium coarse sandy	3	72	Fresh; organic/straw impressions; slightly vitrified fabric; single surface with slight curve; poss hearth or kiln/oven lining
RSM (Road)	248	OVEN/KILN FURNITURE	Reduced; Medium coarse Sandy	1	256	Fresh; hand formed; organic void and straw impressions; sunken margins on upper edge surface; coarse sanded base; rounded to sub rounded quartz; kiln or oven bar
RSM (Road)	248	FCLAY	Reduced; medium sandy	1	27	Fresh; hand formed; frequent organic voids in both surfaces and fabric; very poorly mixed; low fired; uneven but approx 9mm thick; kiln oven plate or daub?
RSM (Road)	248	OVEN/KILN FURNITURE	Reduced; medium sandy	1	38	Fresh; hand formed; organic voids; sparse sub rounded quartz; slightly vitrified; uneven width but approx 10mm; prob oven plate
RSM (Road)	248	FCLAY	Reduced; medium coarse sandy	3	23	Abraded; flakes; organic/straw impressions; slightly vitrified fabric; single uneven surface ; poss hearth or kiln/oven lining?



**Appendix 4**  
**Osteological Analysis of Human Remains**  
**from The Hoplands, Sleaford, Lincolnshire**

*by Gaynor Weston*

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## 1. Introduction

The aim of this report is to present the data collated from the osteological analysis of human skeletal remains recovered from The Hoplands Business Centre, Sleaford in Lincolnshire (Grid Reference TF 077 460, site code: HBCS09). The excavation was carried out by Archaeological Project Services in 2009 and although few finds were recovered directly associated with the inhumated remains, analysis of the stratigraphy and associated features suggests that the burial ground dates to the late Roman period (3<sup>rd</sup>- 4<sup>th</sup> century). The unaccompanied burials were aligned East-West and were cut into a dark earth deposit.

## 2. The Hoplands, Sleaford: Contextual Evidence

### 2.1 *Archaeological and Historical Background*

The Roman cemetery at The Hoplands, Sleaford forms a focus to an area of land containing several more widely dispersed burials. A series of other graves containing both inhumated and cremated bone have been recorded at the site. Though it is unclear if all the burials belong to the Roman period, one burial was radiocarbon dated to between 130-400AD. Two of the burials were on an East-West alignment. Disarticulated material has also been recovered from the area. One interpretation put forward of the site is that the burial ground fell into disuse but was reused at a later date. It may also be the case that as inhumation became a more popular or accepted practice, the more intensely used area represents a more formally managed cemetery. Eight Roman burials have also been found to the west of Mareham Lane (HER 64442: Grid reference TF 076 459) to the west of the Hoplands area, associated with enclosure ditches, a common practice in rural Roman burial (Western 2009). These ditches form part of a field system associated with the Romano-British settlement of Old Sleaford (HER 60584: Grid Reference TF 077 459) along each side of Mareham Lane. The earliest phase of settlement appears to date from the late 2<sup>nd</sup> century. Five infant burials on an East-West alignment and all under 2.5 months old were discovered beneath a late 3<sup>rd</sup> to early 4<sup>th</sup> century building. This building appears to have been abandoned by the late 4<sup>th</sup> to 5<sup>th</sup> centuries. Other finds from the site include limestone roof tiles, hypocaust tile and painted opus signinum, indicating habitation of at least moderate status, although evidence of timber buildings has also been found. A watching brief carried out at TF 0781 4597 revealed a dark earth deposit identified as dating to the late 3<sup>rd</sup> and 4<sup>th</sup> century and as possibly indicating the abandonment of the Roman town.

Other settlements in Lincolnshire with associated Roman cemeteries are Greetwell, Brauncewell, Waddington, Stainfield (Haconby), Horncastle, Londonthorpe and Harrowby Without, Billingham, Ludford, West Deeping, South Witham and Great Casterton. The best documented, however, are perhaps those at Lincoln and Ancaster. Lincoln was a major urban settlement known as a 'colonia' and is associated with several cemeteries located outside of the town walls, following Roman burial law, along the major routes leading into the city. Tombstones of soldiers belonging to the Legio IX and Legio II *Adiutrix* have been found at Lincoln indicating that the military personnel originated from diverse backgrounds, coming from Spain, Hungary and Macedonia

(Whitwell 1992: 17-18). More funerary monuments were found at Monks Road and also a Roman altar at the site of St. Swithins was dedicated by the guild treasurer of a 'burial club'. It is believed that in the Roman period the site would have acted as a communal burial ground maintained by a group of administrators including the treasurer (Whitwell 1992:42). Several burial grounds also surround the settlement of Ancaster, including a large cemetery to the north containing 327 individuals. Votive offerings re-used in the late Roman period as grave covers have also been found at the west cemetery outside Ancaster. Whitwell (1992: 162) describes one of these stones as being comparatively poorly carved and as being dedicated by Trenico, possibly a name of Celtic origins, to the god Viridius, understood to be a local Celtic deity, although funerary traditions interpreted as being Christian were also observed there.

## 2.2 *Health, Disease and Medical Treatment in the Roman Period*

The understanding of health and causes of disease during the Roman period in Britain is underpinned by a complex of ethnic diversity and historical traditions. Understanding of the body in terms of precise anatomical functions was limited by the lack of practical dissection of human cadavers during this period and this, in part, contributed to the great scope for interpretations of the symptoms of physical ailments in the setting of a variety of inter-related medico-religious belief systems. The main focus of evidence for medical understanding during the Roman period comes from a series of texts written by medical practitioners of the time, such as Celsus (AD 14-37), Scribonius Largus (AD 1-50), Dioscorides (AD 40-90), Soranus of Ephesus (AD 40-90) and Galen (AD 131-201), probably the most influential on the development of medicine as a discipline. It is clear that many of the beliefs and approaches to medicine closely follow Ancient Greek traditions and it is generally thought, furthermore, that many of the practitioners themselves were actually Greek. The main groups of medical philosophies, the Dogmatists and Empiricists strove to elucidate the causes of diseases either through observing physical manifestations and hypothesizing scenarios of their origins or by relying purely on previous experience (Cruse 2006: 197). Both approaches followed a humoral, holistic approach advocated by Hippocrates whereby good health was maintained through keeping the 4 humors in balance, whether through physical or spiritual means. Later, Methodism rejected this paradigm, favouring a new classification of diseases including 'acute' and 'chronic' states brought about by atomic disarrangement (Cruse 2006: 198). Patients might be believed to be excessively dry and constricted, excessively fluid and atomic or it was possible for both conditions to co-exist. Methodists sought to advance their understanding of disease by revising their current knowledge with new cases, unlike the Empiricists and, additionally, experimented with practical applications of their theories, contrary to the Dogmatists.

In Roman Britain, it is likely by the 3<sup>rd</sup> and 4<sup>th</sup> centuries that the Methodist approach was the most commonly observed among the formal practitioners, though undoubtedly treatment would have varied from place to place. Still, however, the prescription of many herbal remedies for certain ailments would have been long established. Roman authors extolled the medicinal benefits of many plants and clearly had access to a well-tested pharmacopeia. Silphium (likely to have been *Fenula tingitana*) was valued enough by the Romans to be stored in the public treasury along with gold and silver (Cruse 2006: 63); its leaves were used to purge the uterus



and bring away the still-born, its root for soreness of the windpipe and in distilled form was a panacea, used in treatments of chills, afflictions of the sinews, promoting menstruation, as a diuretic and for corns. Pain relief was achieved through administration of henbane, datura (or thornapple), mandrake and deadly nightshade (Roberts and Cox 2003: 161). These are now known to contain the relaxant drug hyoscine, which is a source of scopolamine used in anaesthesia today. Other more common plants such as opium, mugwort, rue, willow, rose, myrtle and valerian were also employed. Flax was noted by Celsus to make good bandages. Additionally, medicines could contain minerals composed from copper flakes and iron scrapings, as well as animal fats, insects, pine resins (Cruse 2006: 67) as well as ingredients that would now be considered to be a health hazard, such as lead and arsenic (Summerton 2007: 31).

Access to such medicines may have varied according to location and availability, although recovery of pharmaceutical vessels and medical equipment from Roman ship-wrecks confirms that drugs were traded throughout the Empire and were quite likely easily accessible in urban centres. Environmental archaeology has provided evidence suggesting that non-native botanical species were also introduced to Britain during the early Roman period. Cruse (2006: 56) considers rural peoples to have been more likely to produce their own medicinal crops. Here, it is likely that inhabitants would have sought the assistance of a herbalist (also known as root-cutters) as well as itinerant healers, part of a raft of less formally recognized medical practitioners such as pharmacists, schoolmasters and the head of the household (Summerton 2007: 17). Although evidence of hospital buildings have been excavated on the Continent and some propose that they may be present at Chester, Vindolanda, Hod Hill and along Hadrian's Wall at Housesteads, Benwell and Wallsend, it is generally believed that hospitals only existed for military personnel and slaves, not for civilians (Cruse 2006: 94, Roberts and Cox 2003: 160), though it is possible that some civilians may have been treated at military hospitals. In addition to some of the medical equipment found at these hospital sites, surgical instruments are sometimes excavated from domiciliary sites, believed to have been misplaced by itinerant healers, probably providing civilians with their only opportunity to undergo specialist operations. For example, at Hockwold-cum-Wilton, in Norfolk, a uterine sound was discovered, used for 'foeticide'. In addition, finds from the Stanway Doctors burial, Silchester and Corbridge, such as scalpels, tweezers, forceps, needles, saws, ointment spoons, scoops and probes provide physical evidence that at least some people would also have had access to surgical treatment (Cruse 2006: 161). Osteological evidence for surgical intervention, however, is rare in Roman assemblages, though there are a few well-documented examples of trephination, amputation and embryotomy (Roberts and Cox 2003: 161).

In addition to pharmaceutical therapy, a very important aspect of healing was ritual. In Britain, some medical instruments but more often votive offerings have been recovered from a number of shrine sites. The gods and divine intervention were widely believed to be both the cause of ill-health and to have the ability to heal through supplication. For example, to ensure the safe delivery of a baby, a pantheon of goddesses were prayed to, each with their own specific role. Allemona (Guardian of the Foetus), Partula (presiding over the delivery), Vagitanus (ensuring the first cry of the baby), Cunina (watching over the cradle) and Rumina (safeguarding breast-feeding) could all be called upon to assist in promoting the health of an infant. Cruse (2006: 109) suggests that the existence of these goddesses testifies to the belief in a divine origin in the fate of infants and it can perhaps be surmised that medico-religious practices filled the void created

by contemporary pharmaceutical and surgical failings in striving to prevent disease and heal the sick. Both the stylised form of medical instruments recovered and inscriptions indicate that in Britain, traditional Roman values were inextricably intertwined with more native 'Celtic' belief systems, where deities are part Roman and part Celtic, such as Sulis-Minerva at Roman Bath. In Britain, several shrine or healing sanctuary sites have been discovered and contain stone anatomical votive offerings, representing a wide range of body parts, from eyes, to feet and internal organs such as the womb. The practice of making votive offerings carried on throughout the late Roman period in Britain.

### 2.3 *Burial Practices*

Despite to the diverse nature of cultural origins and traditions of the population of Britain during the Roman period, there are several recurring elements to burial rites that have been observed. Interment is generally accepted to have become more common place during the later Roman period and evidence for burial in coffins is common. The location of Roman burial sites are almost always near boundaries due to the fundamental Roman belief in the existence of 'ghosts' or 'spirits of the dead' that should not be disturbed by the living (Macdonald 1977, Henig 1995), thus making it imperative to physically separate the dead from the living in clearly bounded areas (Cleary 2000: 128-9).

Some individuals are interred with grave goods and quite commonly hobnail boots. The provision of footwear for the dead to allow them to undertake their journey to the afterlife appears to have been an important aspect of Roman funerary ritual, with footwear on occasion being placed beside the body as well as more commonly on the feet, as was noted at The Roman Cemetery at Jesus Lane, Cambridge (Alexander *et al.* 2004). It has been noted that hobnailed footwear is recorded more frequently on rural sites (Philpott 1991) and may be associated with a physically demanding agricultural lifestyle (Simmonds et al 2008). Although there are numerous exceptions to the claimed rural:urban dichotomy, Simmonds et al (2008) found that both male and female individuals associated with hobnails at the cemetery serving the *colonia* at Gloucester (120-122, London Road) were all adult and all young or middle-aged adults, suggesting that the choice of footwear worn by the dead may have reflected status or occupation during life. It is unclear, however, to what extent fashion and individual tastes would have influenced choice, which is similarly influenced by age.

Another common Roman burial practice at other cemetery sites is for bodies to be laid out in a prone position. This has been noted to occur in 1<sup>st</sup>-early 2<sup>nd</sup> century as well as in 3<sup>rd</sup>-4<sup>th</sup> century burials (Simmonds et al. 2008). This practice is found in many Roman cemeteries (Philpott 1991) and in some cemeteries (i.e. Bath Gate, Cirencester) occurs in up to 8% of the burials although a figure of around 3% is more commonly reported (i.e. East Cemetery of Roman London, Lankhills School, Winchester) (Simmonds et al 2008). Decapitation burial is also a fairly common practice of the period, with an estimate of approximately 2.5% of all Roman burials containing decapitated remains (Watts 1998). Whilst it has been demonstrated by Philpott (1991) that there is an increase in this practice by the 4<sup>th</sup> century and that it tends to be found in more rural areas, there are again many exceptions to this (i.e. Lankhills, Winchester and East Cemetery of Roman London). Watts (1998: 88) has observed that decapitations tend to occur in areas that

are highly Romanised and that where there are decapitations there seems to be little evidence of Christianity. There appears to be no association of the practice with a particular sex or age group but rather than representing a purposeful denigration of the body, it is now believed to have consisted of a carefully carried out procedure requiring some skill. Many decapitated skeletal remains reveal no evidence of cutmarks (i.e. at the East Cemetery of Roman London) but those that do indicate that the head was removed from the front (Simmonds et al. 2008), with the head subsequently being placed back in the grave in a variety of locations. There is little differentiation between decapitated burials and other Roman inhumations regarding the provision of grave goods and the remains themselves appear to have been laid out with equal care. Some authors suggest that the ritual of decapitation may be associated with placating 'ghosts' or 'souls' of the individuals who died in inauspicious circumstances (Simmonds et al. 2008). At the late Roman cemetery in Jesus Lane, Cambridge, evidence of coffin nails, the provision of grave goods, the presence of hobnails and examples of the practice of prone burial and decapitation (Alexander *et al.* 2004) all point to funerary rites being typically 'Roman'.

### **3. The Physical Evidence: The people**

#### **3.1 Part 1: Analysis of the Inhumations from the Hoplands, Sleaford**

##### *3.1.1 Introduction*

Excavations at the site of the Hopland Business Centre Site by Archaeological Project Services in 2009 resulted in the retrieval of inhumated burials and a small amount of disarticulated human skeletal material. A total of 53 burials were excavated, comprising 54 articulated inhumated individuals. Further disarticulated inhumated material that had been disturbed by post-depositional events was collected by hand during the excavation. Osteological assessment of these remains was undertaken separately and is reported on in Part 2.

##### *3.1.2 The Articulated Assemblage: Methods and Process*

The skeletal material was analysed according to the standards laid out in the guidelines recommended by the British Association of Biological Anthropologists and Osteologists in conjunction with the IFA (Guidelines to the Standards for Recording Human Remains, Brickley and McKinley (eds) 2004) as well as by English Heritage (Human Bones from Archaeological Sites: Guidelines for producing assessment documents and analytical reports, Centre for Archaeology Guidelines, 2002).

- Recording of the material was carried out using the recognised descriptions contained in Standards for Data Collection from Human Skeletal Remains by Buikstra and Ubelaker (1994). Full recording forms are supplied separately to be archived with any other archaeological

recording forms. All skeletal data has been recorded using an MS-Access database(s) which can be found on the CD-Rom provided.

□ The material was analysed macroscopically and where necessary with the aid of a magnifying glass for identification purposes. Where relevant, digital photographs have been used for illustration and a full digital image archive of all pathologies and any other features of interest has been provided on the CD-Rom enclosed with this report.

□ The material was analysed without prior knowledge of associated artefacts so that the assessment remained as objective as possible.

□ Comparison of the results was made with published osteological data from local contemporary skeletal populations. Comparable Roman populations with sufficient data are urban. For this reason, comparison was also made to one known rural Fenland Anglo-Saxon assemblage from Littleport, Cambridgeshire. This not only allowed potential differences and similarities to be drawn between 'urban' and 'rural' Fenland skeletal populations but similarly allowed an insight, albeit brief, to be gained between Roman and Anglo-Saxon assemblages.

### *3.1.3 Reasons for the Analysis*

Osteological analysis was carried out to ascertain:

- Condition of bone present
- Completeness of the skeleton
- Inventory of the skeletal material
- Sex Determination
- Age Assessment
- Non-metric Traits

- Stature
  
- Skeletal Pathology
  
- Dental Pathology

### *3.1.4 The Physical Evidence in Summary*

A total number of 54 inhumated articulated individuals were excavated from the Roman cemetery site at The Hoplands, Sleaford.

### *3.1.5 Condition of the skeletal material*

The condition of the skeletal material was analysed macroscopically assessed and graded according to those guidelines set out by Brickley and McKinley (eds) (2004). Since most of the skeletons exhibited more than one grade of state of preservation, these categories were simplified into 4 main groups of preservation: Good (grades 0-2), Fair (grades 2-4), Poor (grades 4-5+) and Varied (more than 4 grades of condition).

Overall, 68.5% (n = 37) of the skeletons analysed were classified as being of 'good' condition and the remaining 31.5% (n = 17) were considered to be in a 'fair' state of preservation. Some skeletons, however, were observed to exhibit surface peeling of the outer cortices of the skeletal elements, particularly in the long bones, despite the remainder of the bone present being well preserved. This meant that conditions affecting purely the outer surface of the bone, such as periostitis, may be under-represented in this population. Fisher's exact test was conducted to assess whether there was any bias present in the preservation of the bone according to sex and age. No statistically significant association was found with sex ( $p = 0.7003$ ) or with age (adult v subadult) ( $p = 0.4667$ ). The statistical analysis and the 'good' bone condition observed for the majority of the individuals in the Hoplands assemblage suggests that the osteological analysis of the remains has a high potential to yield informative data that is not subject to bias on the basis of the condition of individuals according to age or sex.

### *3.1.6 Completeness of the Individuals*

This is a guide to the overall completeness of the individual's skeletal remains and is calculated according to the percentage of the bones present in relation the total number of bones in a complete human skeleton. Completeness of remains is gauged through an assessment of the amount of material representing different areas of the body. A complete skeleton comprises of:

Skull = 20%

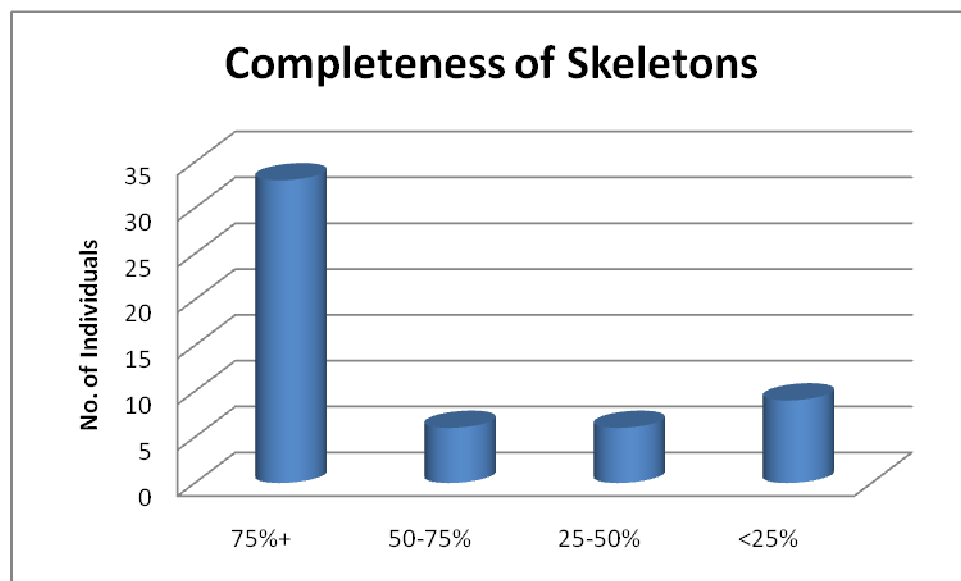
Torso = 40%

Arms = 20%

Legs = 20%

Each area of the skeleton was assessed and then placed into the following four categories of completeness: 75%+, 50-75%, 25-50%, <25% (Buikstra and Ubelaker 1994).

Recording the completeness of the individual can allow an insight to be gained into how much post-depositional activity has occurred as well as to assess how much information can potentially be gained from the remains. Figure 1 below illustrates that 61.1% (n = 33) of the skeletons excavated from The Hoplands, Sleaford were more than 75% complete.



**Figure 1:** *Completeness of skeletons at The Hoplands*

Intercutting of graves at The Hoplands was rare, so it is likely that the incompleteness of some of the skeletons is the result of truncation from post-depositional activity as a result of the subsequent re-allocation of the land for other purposes after the cemetery fell out of use.

Fisher's exact test was conducted to assess the completeness of skeletons according to age and sex. No significant correlation was found between either completeness and age ( $p = 0.4376$ ) or completeness and sex ( $p = 1.0000$ ). As with bone condition, there is, therefore, no bias in the

sample regarding completeness of the individuals present according to age and sex and thus the population should provide reliable data for analysis.

### 3.1.7 *Age and Sex Assessment*

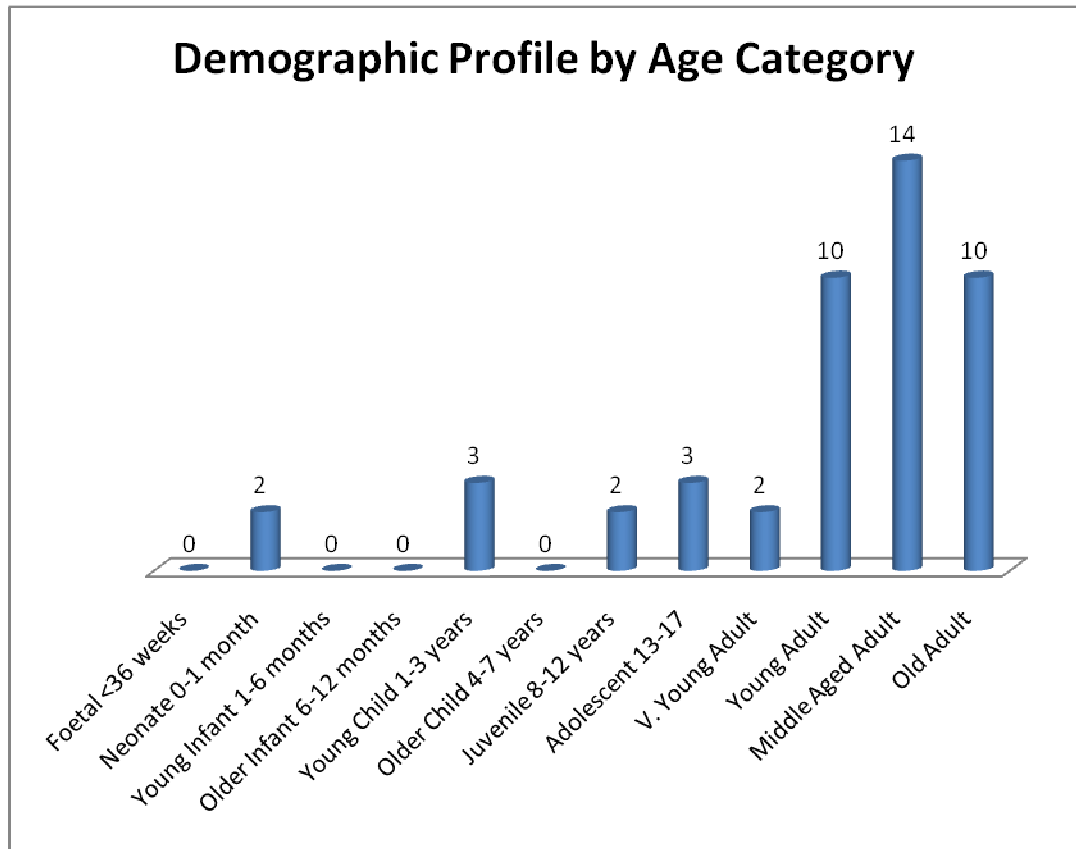
Establishing the age and sex of individuals in an archaeological assemblage not only provides an insight into the demographic profile of the population but can also be used to inform us of patterns in pathological distributions in the group. Sex was assessed using the criteria laid out by Buikstra and Ubelaker (1984) in the analysis of morphological features of the skull and pelvis. In addition, metric data was also used where possible, taking measurements of sexually dimorphic elements such as the femoral and humeral head (Bass 1995). Categories ascribed to individuals on the basis of this data were 'Male', 'Possible Male', 'Indeterminate', 'Possible Female', 'Female' and 'Unobservable'. Sex was not ascribed on the basis of metrics alone and where no sexually dimorphic traits were observable, sex was recorded as 'Unobservable'. No sexing of sub-adult material was attempted due to the lack of reliable criteria available. Age of sub-adults was assessed, however, using both dental development (Smith 1991) and eruption (Ubelaker 1989) as well as long bone lengths (Schaefer *et al.* 2009) and epiphyseal fusion (Scheuer & Black 2004). These methods can usually provide a reasonably accurate age estimation due to a relatively narrow range of variation in normal subadult development. Thus, sub-adults can be placed into the following age categories: Foetal (<36 weeks), Neonate (0-1 month), Young Infant (1-6 months), Older Infant (6-12 months), Young Child (1-3 years), Older Child (4-7 years), Juvenile (8-12 years) and Adolescent (13-17 years).

Assessment of adult age at death, unfortunately, results in much less specific age estimates due to a much greater individual variation in the features exhibited by the examined elements at particular ages. Age estimation of adults was assessed from analysis of the auricular surface (Lovejoy *et al.* 1985) and the pubic symphysis (Brookes and Suchey 1990). Each of these methods examines the deterioration of these surfaces and categorises them accordingly. This deterioration is due in part to the health status of the individual but can also be influenced by life-style and so the variation produced by these factors results in much wider age categories: Very Young Adult (18-24), Young Adult (25-34), Middle Adult (35-49) and Old Adult (50+) (adapted from Buikstra and Ubelaker 1984). Grading of dental attrition was also used as a supplementary age assessment technique using the Miles method (1963) where dentition sets were complete enough to allow fair observation.

#### **Demographic Profile**

Of all the 54 individuals examined, 18.5% ( $n = 10$ ) were found to be subadult and 81.5% ( $n = 44$ ) to be adult. As can be seen from Figure 2 below, there are several subadult age groups represented, ranging from neonate, young child, juvenile to adolescent. This is fairly typical of archaeological assemblages where much higher mortality rates are observed amongst sub-adults than in modern populations although in part it the presence of subadults at the Hoplands is due to conditions on site ensuring the survival of their more fragile bones.

Most of the adults present belong to the 'middle-age' category i.e. 35-49 years of age at death.. This may reflect a systematic ageing bias often seen in the results of the analysis of skeletal remains, where old adults are under-aged (Cox 2000), although epigraphic information from a small number of tombstones of soldiers found in Lincoln indicated that the age at death of these individuals ranged from 20-40 years (Whitwell 1992).

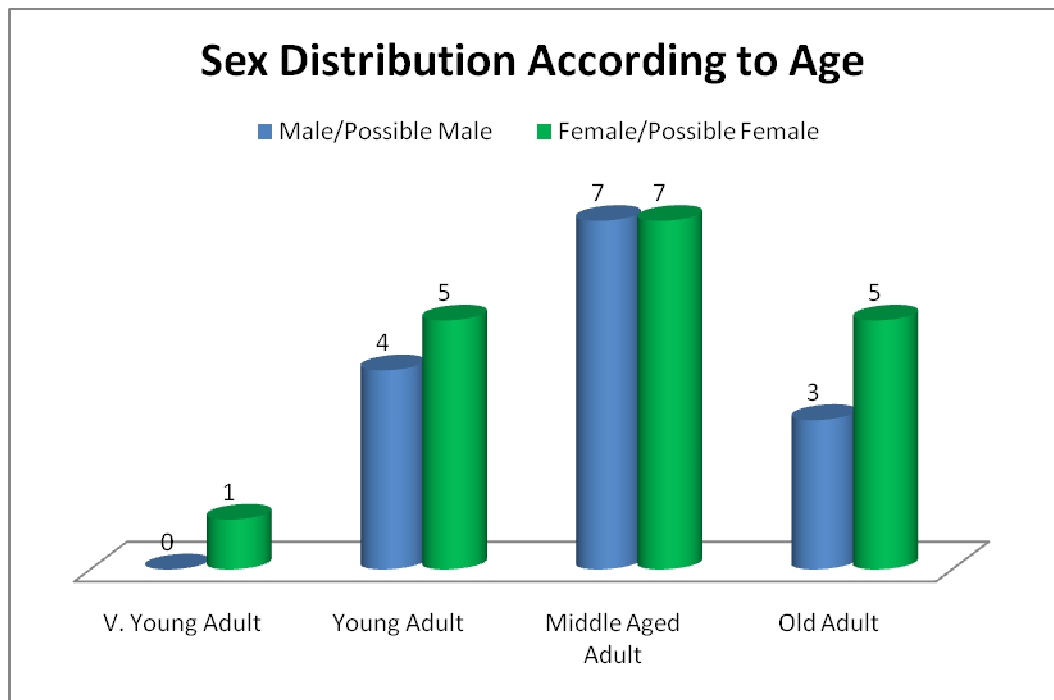


**Figure 2:** Mortality profile of the skeletal assemblage from The Hoplands by age category

Sex distribution amongst a population may vary with age and migration but generally populations are found to have a ratio of 1.05 Male: 1 Female, males having a slightly higher mortality rate in all age categories in modern populations (Chamberlain 2006). At The Hoplands, 57.1% (n = 20) of the skeletons for which sex could be assigned were observed to be female or possible females, with 42.9% (n = 15) being assessed as male or possible male, giving a sex ratio of 0.75 Male: 1 Female. Males, therefore, appear to be under-represented in this population. This suggests that only a sample of the whole population interred at The Hoplands was recovered at excavation. Given that males are under-represented in this sample, it is difficult to draw any firm inferences from the distribution of ages at death according to sex in the population, illustrated by Figure 3 below. Although it appears that there may be a higher mortality risk amongst very young and young adult females, often interpreted as reflecting higher rates of death in childbirth, caution should be exercised in drawing that conclusion here.



This is also true of the higher number of females in the old age category, possibly indicating that more females reached old age than males.

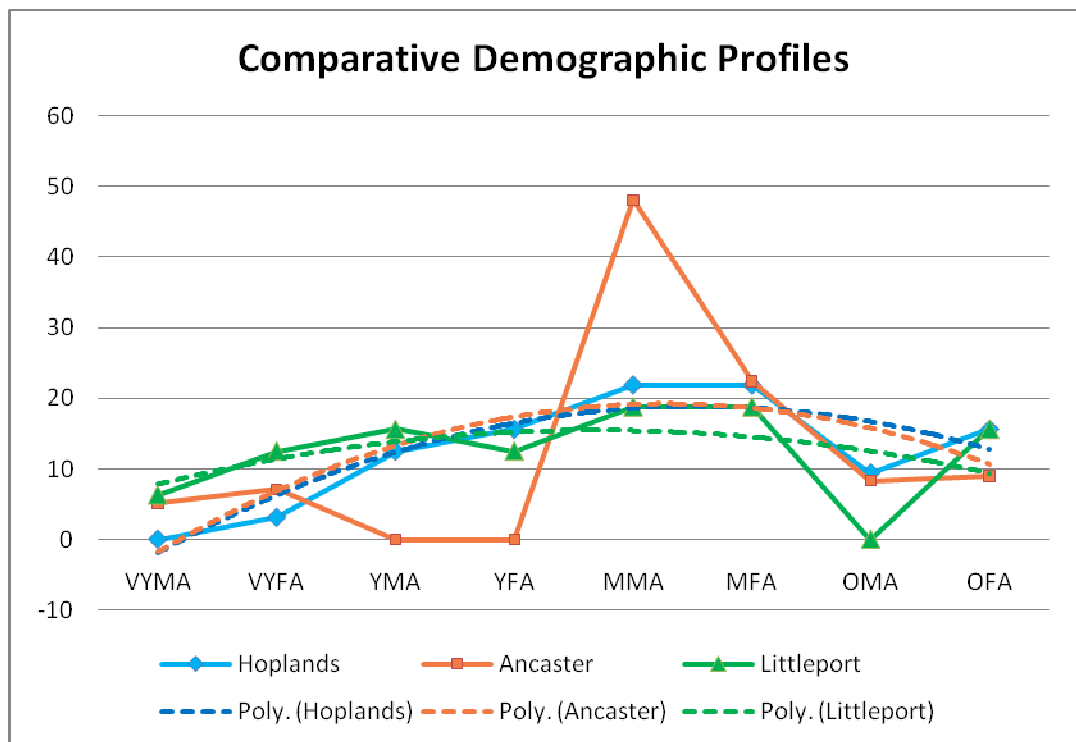


**Figure 3:** Sex distribution amongst adults according to age

A comparison between The Hoplands and two other local sites, one a large Roman assemblage from Ancaster and the other a rural Anglo-Saxon population from Littleport, Cambridgeshire shows that all three assemblages show similarities in their demographic profile (See Figure 4 below). Polynomial trendlines have been added due to the fact that the actual ages used to define the age categories for the Ancaster population differ slightly from those used at The Hoplands and Littleport, so that no individuals would be recorded as 'Young Adults' as categorised here. These trend lines help to show that, as with many archaeological skeletal populations, there is a gradual rise in mortality with increasing age but that there is a peak of mortality at middle age. This is representative of many skeletal populations in contrast to modern population mortality profiles where the peak number of deaths is at old age i.e. 50+ years. Additionally, it is generally expected that mortality rates amongst neonates and infants in archaeological populations predating the 'antibiotic era' would have been higher than modern populations, reaching up to 40% in infants (Coale and Demeny 1983) and mortality rates remaining high for all children under the age of 5 years in historically documented populations (Weiss 1973). Conversely, however, it has been observed that often these age-groups are frequently under-represented in the archaeological record (Chamberlain 2006: 89) and there has been much debate as to whether this is taphonomically induced (Henderson 1987) or is a product of funerary practices or, indeed, both. Whilst there are neonates and young children present at The Hoplands, it may be the case that that they are under-represented in this sample.

All the populations show a higher number of 'Very Young' or 'Young' females in their profile than males and there is a tendency towards females being more numerous in the 'Old Adult'

category. Ancaster appears, in contrast to The Hoplands and to the rural Anglo-Saxon population, to exhibit an excess of 'Middle Age' males (25-45 years). This could be due to an excess of migration of males into the population or an excess of females out but could also indicate that males inhabiting Ancaster were at higher mortality risk than their counterpart females. It is difficult to draw a fair comparison to The Hoplands and Littleport since these samples are much smaller and subject to issues caused therein, especially considering the under-representation of males at The Hoplands; however, the data present tentatively suggests no such bias towards middle-aged males in either group.



**Figure 4:** Comparative mortality profiles for The Hoplands, Ancaster and Littleport skeletal populations (VYMA = Very Young Male Adult, VYFA = Very Young Female Adult, YMA = Young Male Adult, YFA = Young Female Adult, MMA = Middle Male Adult, MFA = Middle Female Adult, OMA = Old Male Adult and OFA = Old Female Adult).

### 3.1.8 Non-metric Traits

Non-metric traits are morphological features that occur both in bone and dentition. These features have no specific functional purpose and occur in some individuals and not in others. The origins of non-metric traits have now been shown to be highly complex, each having its own aetiology and each being influenced to differing extents by genetics, the environment and by physical activity. A review of the current literature suggests that the undetermined specific origins of these traits and the fact that there is more genetic variation within populations than

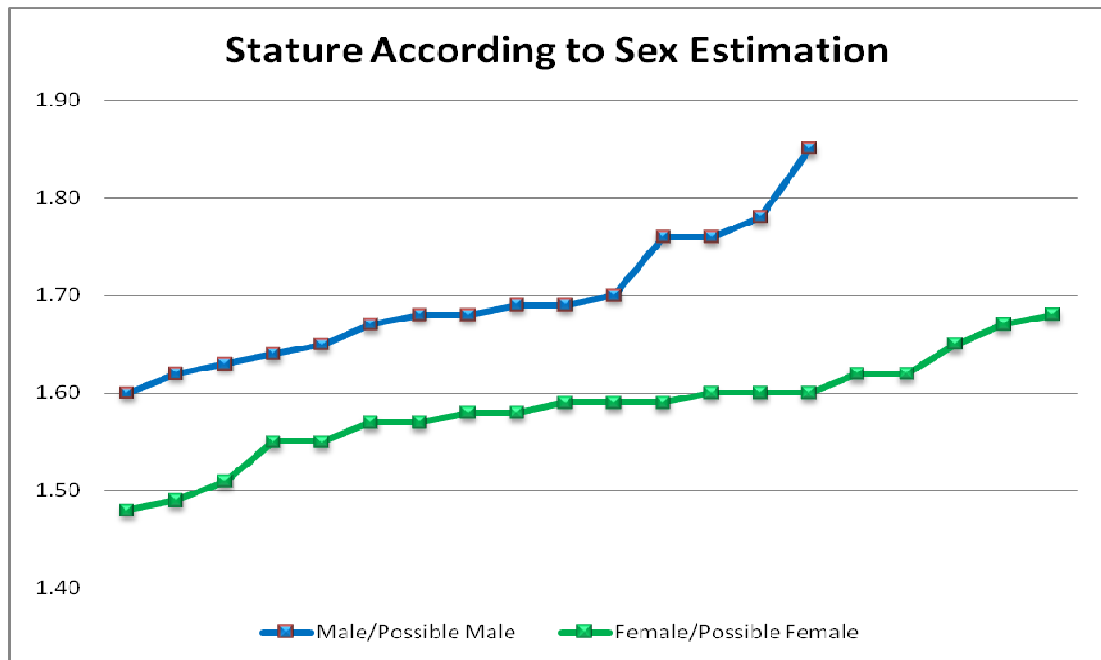
between them can prevent useful conclusions regarding their presence or absence in skeletal remains from being drawn (Tyrell 2000).

The observability and presence of any non-metric traits observed in the assemblage have been recorded in the database provided on the enclosed CD-Rom. The small sample size limited the analysis of these results. Non-metric traits have been recorded for these skeletons in order to allow future comparisons with findings from other Roman burial grounds.

### *3.1.9 Stature and Metric Analysis*

Stature of adult individuals can be reconstructed from measurements of long bones of the skeleton. Since the long bones of sub-adults have not yet fully developed it is not possible to provide an estimate of stature for immature remains. Stature is the result of many factors including genetics and environmental influences, such as malnutrition and poor health. Height can be used as an indicator of health status and there is a wide range of literature on the relationships between height, health and social status. Estimated stature was calculated by taking the measurements of the individual long bones and using the formula provided by Trotter (1970). Variation in estimated stature can be up to 3cm.

The analysis of stature here was restricted to those individuals for whom sex had been allocated, as overall height is known to vary slightly between males and females with long bones of the same length. The results can be seen in Figure 5 below. The overall average stature estimate is 1.61m, with an average for males/possible males of 1.69m ( $n = 15$ ; St. Dev. 6.8cm) and 1.54m ( $n = 20$ ; St. Dev. 5.2cm) for females/possible females.



**Figure 5:** *Stature according to sex estimation*

Roberts and Cox (2003) report that the average height for males from this period in Britain is 1.69m for males and 1.59m for females. The males from The Hoplands are, therefore, average height for this period, whereas the average height for females is 5cm shorter. This may be due to polygenic differences in local populations (potential for height has a genetic component but there is no single gene for height; rather, according to Floud *et al.* (1990), final stature is attained through the individual interaction between many genes and the environment) or could indicate that nutritional or health differences in childhood have prevented the females from attaining their potential height. It is also a possibility that the sample of females recovered from the cemetery happens not to include the taller females.

Craniometric data was also recorded and is available on the CD-Rom enclosed.

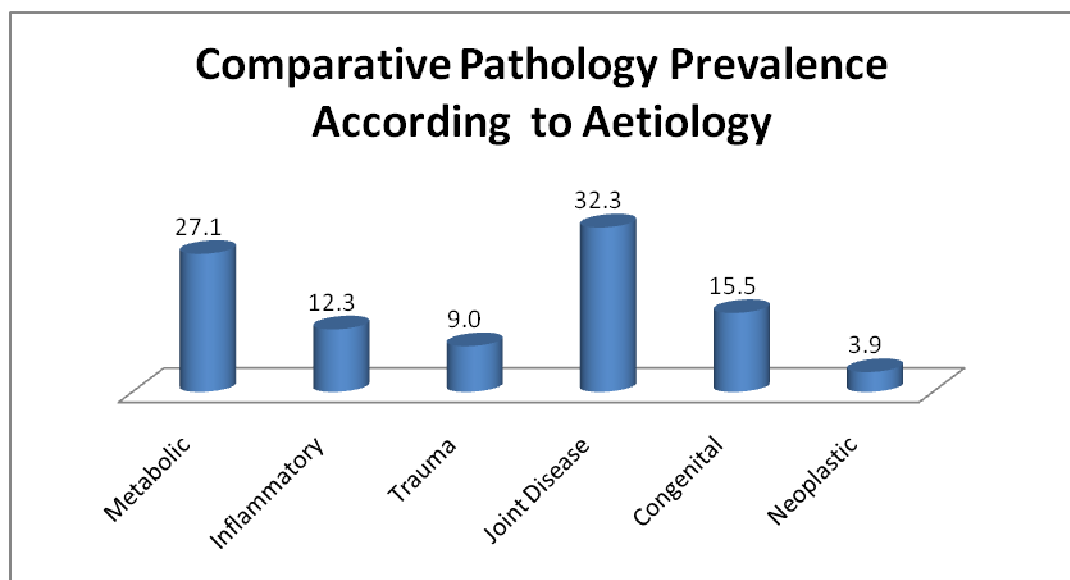
### 3.1.10 *Skeletal Pathology*

Palaeopathology is the study of diseases of past peoples and can be used to infer the health status of groups of individuals within a population as well as indicate the overall success of the adaptation of a population to its surrounding environment. Pathologies are categorised according to their aetiologies; e.g. congenital, metabolic, infectious, traumatic, neoplastic etc. Any pathological modifications to the bone are described. The size and location of any lesion is also noted. Distribution of lesions about the skeleton should be noted to allow diagnosis. A differential diagnosis for any pathological lesions should also be provided. This report presents a

summary and discussion of the pathological changes observed; detailed observations of each pathology recorded can be found on the CD-ROM included.

The demographic profile of the population under examination also indicates that the remains of several older adults are present. These individuals would have been exposed for a greater length of time to their surrounding environment and, therefore, are likely exhibit more diseases affecting the skeleton than younger individuals. This relates to the phenomenon known as the 'osteological paradox' whereby those exhibiting skeletal lesions are thought, in actual fact, to represent comparatively 'healthier' individuals in life than those individuals exhibiting no lesions who may well have succumbed to either more virulent diseases that leave no trace in the skeleton or to have died before a potentially observable disease affected the skeleton (Wood *et al.* 1992). Additionally, those skeletons represented by a greater number of skeletal elements and in a better state of preservation are more likely to exhibit observable pathological changes to the bone.

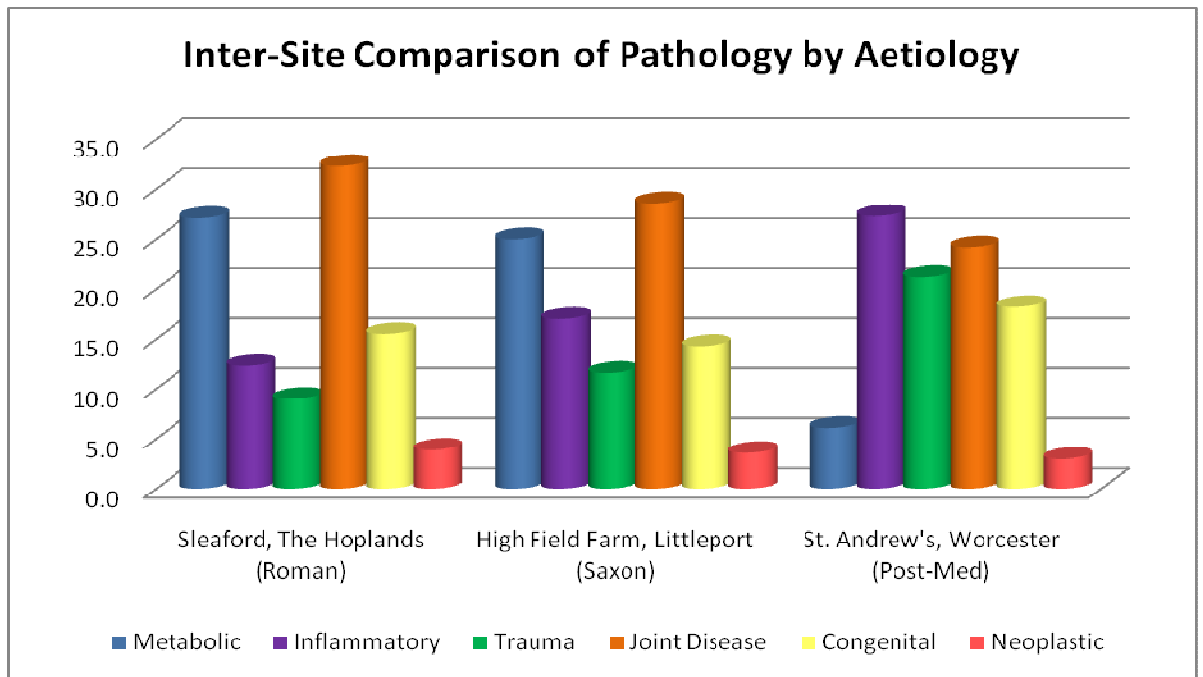
The pathologies recorded fell into the following aetiological categories: Metabolic, Inflammatory (including Infection), Trauma, Joint Disease, Congenital (including Developmental Disorders) and Neoplastic. A summary of the results of the relative percentages of skeletal pathology according to aetiology in adults are illustrated in Figure 6.



**Figure 6:** Proportional comparison of pathology present according to aetiology at The Hoplands.

As can be seen, the most common disorder was joint disease followed by metabolic diseases and the least common was neoplastic disease. A moderate level of trauma (i.e. fractures) and inflammation (possibly associated with infection) was also recorded. Overall, a general

comparison with a Fen rural Anglo-Saxon site and a post-medieval urban assemblage reveals that the lifestyle and impact on health of the population at Sleaford has most in common with the rural Anglo-Saxon site, as is illustrated in Figure 7 below.



**Figure 7:** *Inter-site comparison of pathology according to aetiology (NB Joint Disease is extra-spinal)*

Here we can see that the cramped living conditions and increased exposure to mechanised technology in the workplace as well as to more frequent road traffic has led to a rise in trauma and infections in the post-medieval urban assemblage (Western 2006). It is clear, then, that the lifestyle of the population at Sleaford appears more 'rural' compared to the more modern 'urban' population as exhibited by skeletal disease. There are some subtle differences between the rural Anglo-Saxon population and the Hoplands assemblage however; for example, there is relatively more joint disease at the Hoplands and a different pattern of infection and trauma than amongst the Anglo-Saxon population, which will be explored in more detail below.

A better insight into the nature of skeletal disease present in a population can be gained through examination of the actual prevalence rates of each type of disease. Prevalence rates can be calculated as a percentage of the count of each case of pathology recorded in relation to the number of individuals present, known as the Crude Prevalence Rate (CPR) or in relation to the number of the same observable skeletal elements present that could have potentially been affected by the condition, known as the True Prevalence Rate (TPR). The TPR of a disease is much more accurate and representative of the rate of pathology since this method implicitly controls for the condition and completeness of the skeletal material under analysis. The CPR rate only gives a crude estimate of the disease prevalence rate and where skeletal assemblages have undergone a high level of post-depositional disturbance, the CPR can be misleading. However, CPRs are perhaps more representative in the calculation of prevalence rates of diseases which

result in pathological changes that are disseminated or generalised throughout the skeleton where lesions are interrelated. Additionally, CPR's are commonly the only comparative data available from many skeletal reports. Where possible and appropriate, both types of rates will be presented here, though it should be remembered that the TPR rates for small assemblages are still only approximate indications of the true rate of each disease.

### **Congenital and Developmental Conditions**

A disease classified as 'Congenital' is defined as a disease that was present at birth. Several diseases that were considered 'Congenital' are now considered 'Developmental'; For example, Congenital Hip Dysplasia is now better understood and is thought to be a result of trauma at birth, such as the common practice of holding newborns upside by the legs and subsequently dislocating the hip, rather than being an inherent condition; to reflect this aetiology this condition is now clinically referred to as Developmental Dysplasia of the Hip. Most of the diseases considered to be 'congenital' have an underlying genetic component in their aetiology although some are due to environmental factors present prior to birth i.e. diseases transmitted from mother to foetus of a non-genetic origin.

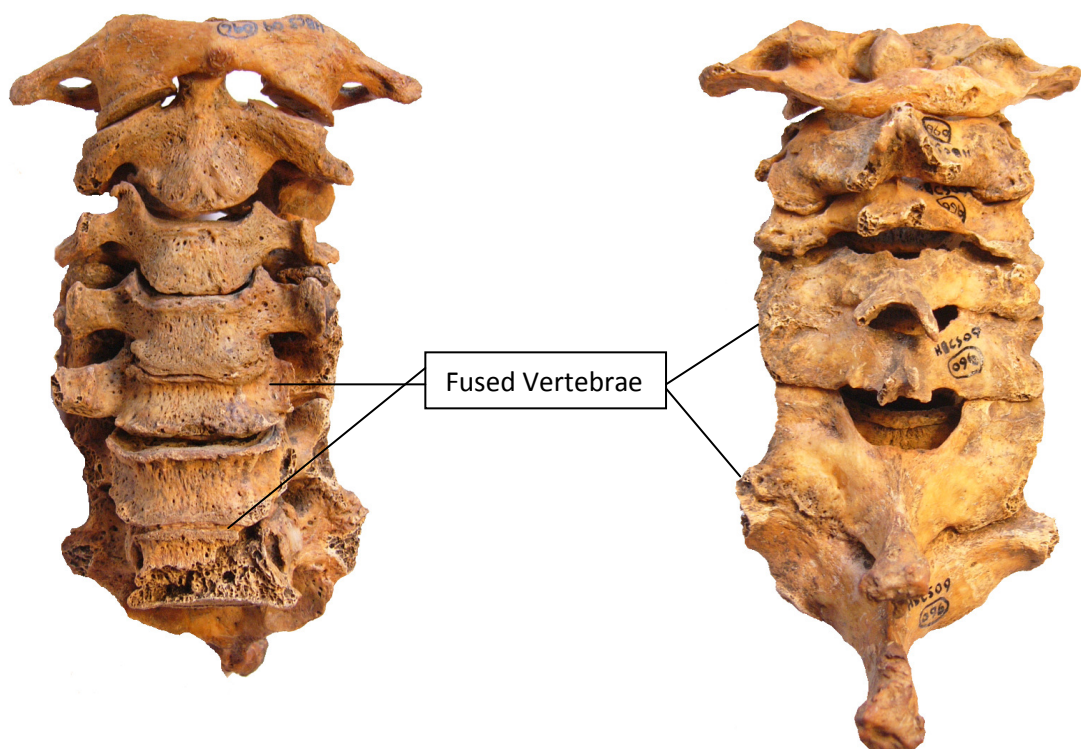
Table 1 below records a summary of the congenital and developmental pathologies observed amongst this population.

<b>Pathology</b>	<b>No. of cases</b>	<b>No. of observable elements</b>	<b>TPR (%)</b>
Coxa Vara	2	70	2.9
Synostosis of the Cervical Spine	3	33	9.1
Possible Sprengels Deformity	1	31	3.2
Scoliosis	2	34	5.9
Spondylolysis	5	72	6.9
Developmental Border Shift Spine	7	33	21.2
Lumbar Ribs	1	33	3.0
Os Odontoideum	1	32	3.1
Lumbarisation	1	22	4.5
Sacralisation	2	22	9.1

**Table 1:** *Summary of Congenital and Developmental Conditions*

Congenital or developmental conditions were most commonly observed in the spine. The correct development of the spine generally depends on the growth and ossification of the

individual vertebral elements occurring at particular time limits known as critical threshold events. For example, synostosis or a failure of spinal elements to separate into the conventional individual vertebrae, results from the failure of the fissure to develop between two sclerotomic developmental units that are the precursor of two developed vertebrae (Barnes 1994:66). Without the development of a fissure by the critical threshold of this stage of development, the units remains as a continuous block of tissue and thereby develop into a block of vertebrae. The condition of the presence of block vertebrae amongst the cervical vertebrae (those in the neck) is known as Klippel-Feil Syndrome (Salter 1999: 170). This condition can be associated clinically with a shortened neck that is stiff, with the head held tilted to one side. This had occurred in three individuals in the Hoptlands assemblage, SK096, SK117 and SK234. All of these individuals exhibited Type II segmental errors with only 2 vertebrae fused together (Barnes 1994: 67). However SK096, a middle adult male, exhibited two blocks of two cervical vertebrae in his neck (See Plate 1), making it very likely that this individual suffered the clinical symptoms described above. In addition, the scapulae in this individual, illustrated in Plate 2, appeared asymmetric in shape and may well represent a condition known as Sprengel's deformity, often associated with Klippel-Feil syndrome (Aufderheide and Rodriguez-Martin 1998:72). In this condition, the scapula fails to descend and develops abnormally so that it is wider and with its vertebral (medial) border being more concave (Choo *et al.* 2000: 712). The shoulder is held in a high and adducted position as the scapula is high and rotated downwards.



**Plate 1:** Double block vertebrae in SK096 (anterior and posterior views)





**Plate 2:** Possible Sprengel's Deformity of the Scapula in SK096 associated with Klippel-Feil Syndrome (the left scapula is broader and its medial border is more concave).

Clinically, the left scapula is observed to be more affected than the right in Sprengel's condition as is seen here in SK096 and 25% of cases are associated with Klippel-Feil syndrome (Aufderheider and Rodriguez-Martin 1998: 72). This individual also exhibited other developmental anomalies in the spine, such as developmental border shifts and scoliosis, all contributing to a severe secondary osteoarthritis throughout the vertebral column.

Scoliosis or lateral curvature of the spinal column can also be caused by failure of full development by the time of a critical threshold event. Lateral wedging observed in one or more vertebrae is caused by hypoplasia or under-development of one half of the body. Vertebral bodies form out of two developmental units lying side by side known as hemimetameres (Barnes 1994: 62). If one of these halves is under-developed at the time of fusion, the fused unit will be laterally wedge shaped, causing the spine as a whole to curve to one side. Alternatively, scoliosis may occur as an idiopathic and progressive disorder of growth commonly occurring during adolescence (Salter 1999: 368). Two cases were observed at The Hoplands and evidence of secondary joint disease as a result of the excess stresses placed on the spine due to this curvature was present in both cases. SK096 exhibited a double curve to the right-hand side in L3-L6 and to the left-hand side in T12-L2. In SK046, lateral wedging of L3-L5 was observed with some evidence of possible disc herniation, so for this individual the curvature may well have contributed to some subsequent degeneration of the spinal joints.

Other spinal developmental disorders observed in The Hoplands population relate to developmental border shifts. The spine generally consists of three groups of vertebrae (7 cervical, 12 thoracic and 5 lumbar vertebrae), classified according to their morphology which develops according to the area of spine they are in; hypothetical 'borders' separate the spine into these groups of vertebrae. If the border shifts either cranially (towards the top) or caudally (towards the bottom) a vertebra that would normally belong in one group will, as a consequence of this border shifting, be in a different one. The vertebra affected, known as a transitional vertebra, will take on the morphological characteristics of this group and so an individual can have 6 lumbar vertebrae, 11 thoracic vertebrae rather than the usual 5 or 12 respectively. Barnes (1994: 80) suggests that there is a highly genetic component to the border shifting and that patterns of shifting may vary considerably between populations. It should be noted, however, that developmental border shifting in the spine is a fairly common phenomenon. Nonetheless, 21.2% of the population from the Hoplands exhibited a developmental border shift in the spine (n = 7). As a consequence of the border shifting, one individual, SK5657, exhibited Os odontoideum, a rare condition where the dens of the axis (C2) remains as a separate ossicle from the main body of the axis (See Plate 3) as a result of cranial shifting of the developmental border (Barnes 1994: 86). Although the dens itself was not recovered, the degenerative changes indicated by the macroporosity on the surface of its base on the axis suggest that the dens was in articulation during life. Another individual, SK046, was found to exhibit aplasia of transverse processes of T12 and L1 accompanied by a lumbar rib due to a caudal shift in the developmental border. Additionally, SK205 was observed to have undergone a cranial shift at the cervico-thoracic border leading to a developmental anomaly of C7. Bony tubercles protrude from the transverse processes and represent underdeveloped cervical ribs (Barnes 1994: 103. Type A). One case of lumbarisation of the 1<sup>st</sup> sacral vertebra as well as two cases of sacralisation of the fifth or sixth lumbar vertebra were also noted, again associated with developmental border shifting.

Five cases of spondylolysis were observed in the population from The Hoplands. Generally, spondylolysis is believed to result from repeated stress to the affected lumbar vertebra, usually the fourth or fifth, which has a predisposing congenital weakness, causing fracture (Roberts and Manchester 1997: 78) although more recent research has shown that incidence of the defect, which consists of fibrous tissue, increases with age and can be found radiographically in up to 10% of adults (Salter 1999: 372-3). The pars interarticularis, which forms the inferior part of the neural arch of the vertebra, is separated from the main vertebra (See Plate 4). Spondylolysis causes no signs or symptoms in the majority of individuals though it may be an indicator of a lifestyle involving excessive stresses being placed on the lower spine. Only one case of spondylolysis was observed at Ancaster (Cox 1989: 70), producing a CPR rate of 0.3%, much lower than that of 9.3% from The Hoplands. Three of the individuals affected were female, one was male and the other was of indeterminate sex.

Only one developmental condition was observed in the extra-spinal skeleton. SK048 was observed to exhibit bilateral coxa vara (See Plate 5). This is manifest in the femoral neck being more acute angled at 90° than the usual 130°. No sign of avascular necrosis of the femoral heads was noted nor were any indications of other conditions that might lead to coxa vara such as osteomalacia. This case appears to be of a developmental or congenital aetiology rather than of the adolescent type occurring secondary to a slipped femoral epiphysis. This individual also

exhibited secondary degenerative joint disease in the hips caused as result of the ensuing additional stresses on these joints.



**Plate 3:** *Os Odontoideum in SK5657*



**Plate 4:** *Spondylolysis with ante-mortem separation of the pars interarcularis (SK036)*



**Plate 5:** *Coxa Vara* in SK048. (Normal on left for comparison for comparison)

### **Generalised and Disseminated Conditions**

There are a number of diseases that are classified as generalised and disseminated condition and many of these are associated with metabolic or endocrine disorders.

Metabolic disorders are generally associated with a lack of a particular vitamin in the diet or an imbalance of a hormone that is essential to maintaining normal functions of organs in the body and an adequate health status. A lack of intake of vitamins can occur for several reasons. It may be that the individual simply has insufficient access to a particular vitamin in their diet, such as a lack of Vitamin C arising from a lack of fresh fruit. It may also be the case that an individual has acquired or inherited a condition preventing the body from absorbing a particular vitamin, even if it is in plentiful supply in the diet. For example, anaemia can be caused by a high intake of lead into the body or by a number of genetic disorders, such as thalassaemia or sickle-cell anaemia. Other metabolic and endocrine conditions, such as osteoporosis, are very often caused by a change in the level of the production of hormones vital for producing or maintaining bone. The majority of diseases seen in the skeleton that have an underlying metabolic aetiology are generalised conditions, in that the mechanism for producing and maintaining bone is abnormal and, therefore, all bones are affected. Disseminated conditions such as Paget's disease, on the other hand, display pathological changes in discrete localised areas and unaffected bones are normal. Examples of these diseases are recorded in the archaeological record but are much rarer than the majority of the metabolic conditions. Although metabolic disease as a whole was less

frequent than other types of disease recorded from The Hoplands, one type of metabolic disease known as cribra orbitalia, had a high prevalence amongst individuals.

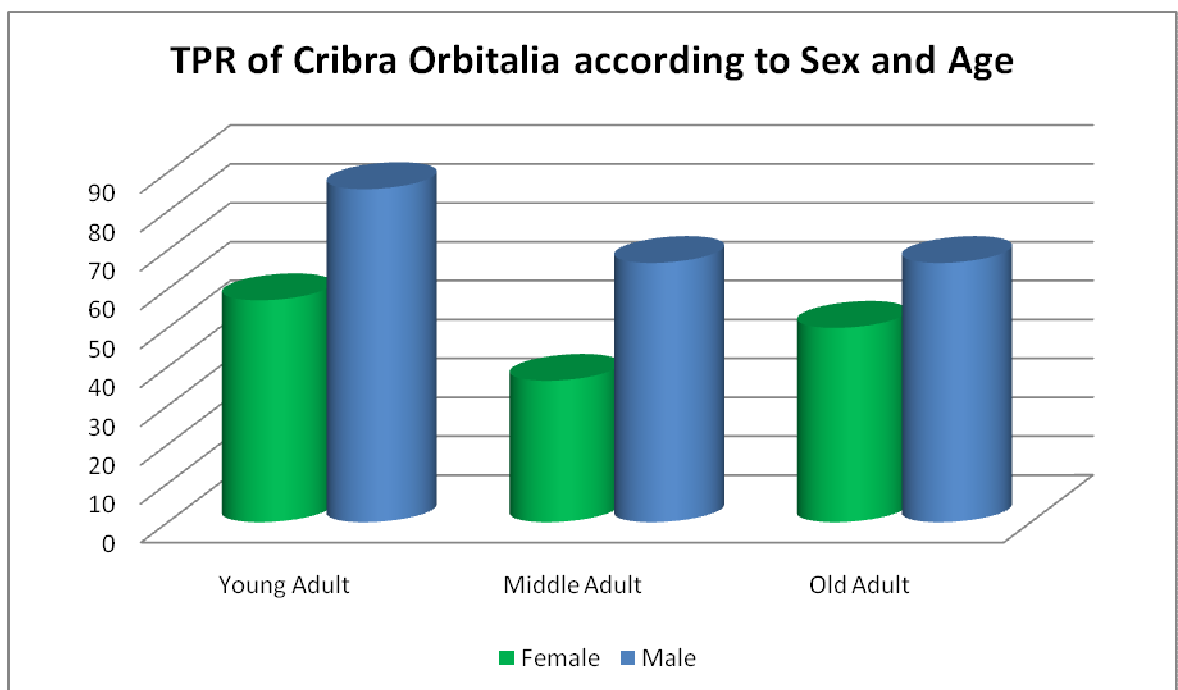
Cribra orbitalia (recorded here according to categories set out by Stuart-Macadam 1991), commonly the result of anaemia, is denoted by the presence of porosity in the eye orbits (see Plate 5 below) resulting from the expansion of the trabeculae in the bone produced by the body's expansion of the marrow to increase production of red blood cells (Roberts and Manchester, 1997). This response to anaemia that occurs during childhood; with onset in adulthood, the body responds by increasing the expansion of marrow in the long bones but is accompanied by extramedullary hematopoiesis (formation of blood cells) in soft-tissue organs (Aufderheide and Rodriguez-Martin 1998). A recent review of the clinical literature highlights that only megaloblastic or haemolytic anaemias directly result in erythropoietic hyperplasia, associated with a dietary lack of vitamin B or specific parasitic infections such as giardiasis, diphyllbothriasis (Walker 2009:115) or possibly malaria. Some authors suggest that an increase in the use of lead by the Romans resulted in an increase in lead intoxication (Roberts and Cox: 140), which can also cause anaemia through hemolysis. It is generally accepted that lesions located in the skull vault or orbits observed in both adult and juvenile skeletal material are actually lesions incurred during childhood. Lesions are typically, although not always, bilateral. The extent to which lesions are active or healed in adult material is difficult to ascertain and no attempt at distinguishing between the two was made here. Any lesions observed that could not categorically be associated with a specific aetiology, i.e. where there may have been other causes of the lesion, were not recorded as cribra orbitalia.

Pathology	No. of Cases	No. of Observabile Elements	TPR
Cribra Orbitalia	40	65	61.5
Rickets	1	45	2.2
Osteoporosis	1	33	3.0
Hyperostosis Frontalis Interna	1	32	3.1

**Table 2:** Summary of Generalised and Disseminated Conditions

As can be seen from Table 2, cribra orbitalia was noted in 61.5% of all the observable eye orbits with a crude prevalence of 37.0% in all individuals. Two subadults exhibited bilateral cribra orbitalia (CPR = 20%, TPR = 40%), one adolescent and one young child. This compared to a CPR of 38.6% of adult individuals exhibiting cribra orbitalia (n = 17) with 61.8% (n = 34) of all adult observable adult eye orbits being affected. The crude rate of 37.0% is high compared to neighbouring Ancaster where the rate was 12.2% (TPR = 25.8%), although high levels have been found at Barrat, Baldock (31.6%) and Newarke Street, Leicester (23.5%). The rate for The

Hoplands is much higher than the national average of 9.64% (Roberts and Cox: 141). Rates of cribra orbitalia were also very high in the Fenland Anglo-Saxon rural population (TPR 71.4%). Interestingly, analysis of the rates of cribra orbitalia according to age and sex revealed that, when taking the number of observable eye orbits into account for each category, males had a much higher prevalence rate of cribra orbitalia than females. Of all the individuals for whom sex could be assigned, a TPR of 80% was found of cribra orbitalia (n = 20, N = 25) amongst males compared to 45.8% of females (n = 11, N=24). As can be seen in Figure 8 below, males have a higher prevalence rate in all age categories. Although the sample is small, these results may indicate that the males from The Hoplands population had a greater risk of a combination of parasitic infection, lack of intake of vitamin B or possibly even lead intake. At Ancaster, 23.0% of males and 19.0% of females observable for the condition exhibited changes, so here there appears to have been no significant difference according to sex.



**Figure 8:** Comparison of TPR rates for cribra orbitalia according to age and sex

Only two other cases of metabolic disease were observed. SK063, an old adult of indeterminate sex, exhibited some anterior wedging of thoracic bodies that may have been related to osteoporosis, although no pathognomic changes were observable macroscopically. It is likely that without radiographic analysis the cases of osteoporosis in the population are under-represented.

Interestingly, one case of rickets was observed in a young child aged between 19 and 24 months old at death (SK104). Bowing was present in the tibiae and observable femur. The tibiae exhibited lateral bowing and medial tilting of the distal epiphyses, a hall mark of the condition (Brickley and Ives, 2008: 98). Bowing was particularly evident in the distal third, mirrored by the observable fibula (See Plate 6). The femur exhibited an anterior bowing throughout. Some parts of the metaphyses were coarsened this may, at least in part, have been due to post-depositional

changes as some areas appeared to be preserved intact with no coarsening. The medial aspects of the tibial diaphyses also exhibited striated and porotic woven bone formation. This did not appear as a separate layer as in the case of periostitis but may have been related to growth stimulated by biomechanical stress on these elements. The arm bones present, unfortunately, were too poorly preserved to examine any involvement.

Rickets is primarily a childhood disease resulting from the incomplete mineralisation of the developing bone (osteoid) due to a lack of vitamin D, a pro-hormone that plays a critical role in the regulation of calcium in the body (Brickley and Ives 2008: 75). Bones are, therefore, comparatively 'soft' and bend under normal biomechanical stresses of crawling and walking. Peak incidence of the disease occurs between 3 and 18 months in modern cases, though historically it has been noted to occur between the ages of 6 months and 2.5 years (Brickley and Ives, 2008: 91-92). Although a number of hereditary conditions exist that result in rickets, ethnographic studies show that infantile rickets is associated with maternal malnutrition and inadequate vitamin D in the diet of infants that are low in calcium and high in cereals. Many cases are associated with a lack of exposure to sunlight where swaddling or excessive time spent indoors prevents exposure of the skin to ultra-violet rays, an extremely important mode of vitamin D synthesis (Brickley and Ives 2008: 93). Lewis (2010: 411-2) notes that rates of cribra orbitalia and rickets were high amongst the subadults in the Roman population at Poundbury Camp, Dorset, suggesting that the urban lifestyle there had a serious impact on the health of juveniles, comparable in fact to that of some assemblages dating to the post-medieval period. Unfortunately, the sample from The Hoplands was too small to draw any such inferences from but it is noteworthy that rickets and cribra orbitalia were present here too.



**Plate 6:** *Rickets in a young child (SK104)*

One case of hyperostosis frontalis interna was recorded in an old aged female (SK088). This is signified by relatively dense and nodular bone deposits on the endocranial surface of the frontal bone. The condition is related to disturbances in hormones, likely to be associated with post-menopausal oestrogen deficiency. Therefore, it is found almost exclusively in women, 90% of which are over the age of 30, more than half being in the post-menopausal age group (Aufderheide and Rodriguez-Martin 1998: 419).

#### **Disorders of the Epiphyses and Epiphyseal Growth**



This category of diseases relates on the whole (though not exclusively) to circulatory problems, often secondary to trauma, occurring during childhood and adolescence that impede the development of the epiphyses. The impact of epiphyseal growth development can have a wide variety of sequellae for the individual. For example, since any epiphysis that is defective will result in abnormal stresses being placed on the affected joint, the disorder may lead to secondary chronic osteoarthritic changes and some joints may rendered completely dysfunctional. Some disorders, however, may spontaneously heal as the bone and joint continues to develop and be asymptomatic in adulthood.

One case of an epiphyseal dysplasia was noted in The Hoplands population. SK071 was found to have suffered an avulsion of the medial epicondyle of the left humerus (n = 1, N = 77, TPR = 1.3%). In the case observed, the medial epicondyle was present merely as a reduced stump or protrusion (See Plate 7). Likely to have been the result of trauma during early childhood, an avulsion of the medial epicondyle results from a sudden traction force through the medial ligament. It is usually associated with either posterior dislocation or more commonly a transient lateral dislocation of the elbow (Salter 1999:523). Once the epiphysis has been torn away from the main bone, its blood supply becomes compromised and avascular necrosis ensues and only a bony stump remains where the epicondyle would have attached.



**Plate 7:** *Avulsion of the medial epicondyle (shown here on the right)*

### **Inflammatory Disease**

Inflammation occurring to the bones can be observed at three levels; one involving the outer surface of the bone, known as periostitis, a second called osteitis where the inner cortex is involved and thirdly, when the whole transverse section of the bone is involved to the extent of the development of a draining sinus (*cloaca*), known as osteomyelitis. Inflammation can occur as a result of many causes; for the most part, inflammation is associated with infection. It should be remembered, however, that whilst infection will always create an inflammatory reaction, conversely inflammation does not necessarily indicate the presence of an infection; many pathological processes can potentially result in inflammation. Some infections produce a particular distribution of lesions around the skeleton allowing a specific diagnosis to be given to certain infectious conditions, such as syphilis and tuberculosis. Most infections resulting in an inflammatory reaction are, however, non-specific. The presence of woven bone deposits indicate that a lesion was active at the time of death whereas remodelling lamellar bone suggests the lesion was active prior to death.

Pathology	No. of Cases (n)	No. of Observable Elements (N)	TPR (%)
Non-specific Rib Lesion	7	45	15.6%
Maxillary Sinusitis	3	30	10.0%
Endocranial Lesions	3	35	8.6%
Septic Arthritis?	1	33	3.0%
Periostitis Humerus	1	91	1.1%
Periostitis Tibia	1	81	1.2%
Periostitis Manubrium	1	26	3.8%
Periostitis Calcaneii/Foot	2	67	3.0%
Periostitis Mandible	1	69	1.4%

**Table 3:** Summary of Inflammatory Pathology (Note that the TPR for Rib Lesions is calculated according to the number of individuals with at least one observable rib).

A variety of elements about the body exhibited non-specific periostitis (See Table 3) and these lesions are likely to relate to localised areas of infection or trauma. Since many skeletal elements were subject to post-depositional surface peeling from water damage in the ground, it is likely that periostitis is under-represented in The Hoplands sample. Interestingly, however, one individual, SK211, a middle adult female, exhibited bilateral woven bone periostitis in the feet, involving the calcaneii and the first metatarsals. The bilateral distribution of the lesions may

suggest a systemic condition. Also present in the this individual were woven bone on the visceral surfaces of 4 rib lesions, indicating inflammation of the pleura of the lungs, woven bone present along the submandibular fossa of the left side of the mandible (See Plate 10) and expansion of the frontal bone with an increase in cancellous bone associated with capillary-like impressions on the endocranial surface (See Plates 8 and 9). It is unclear if these lesions are directly linked but it would seem likely that this individual suffered a systemic inflammatory condition.



**Plate 8:** Intra-cortical *Expansion of the Frontal Bone in SK211*



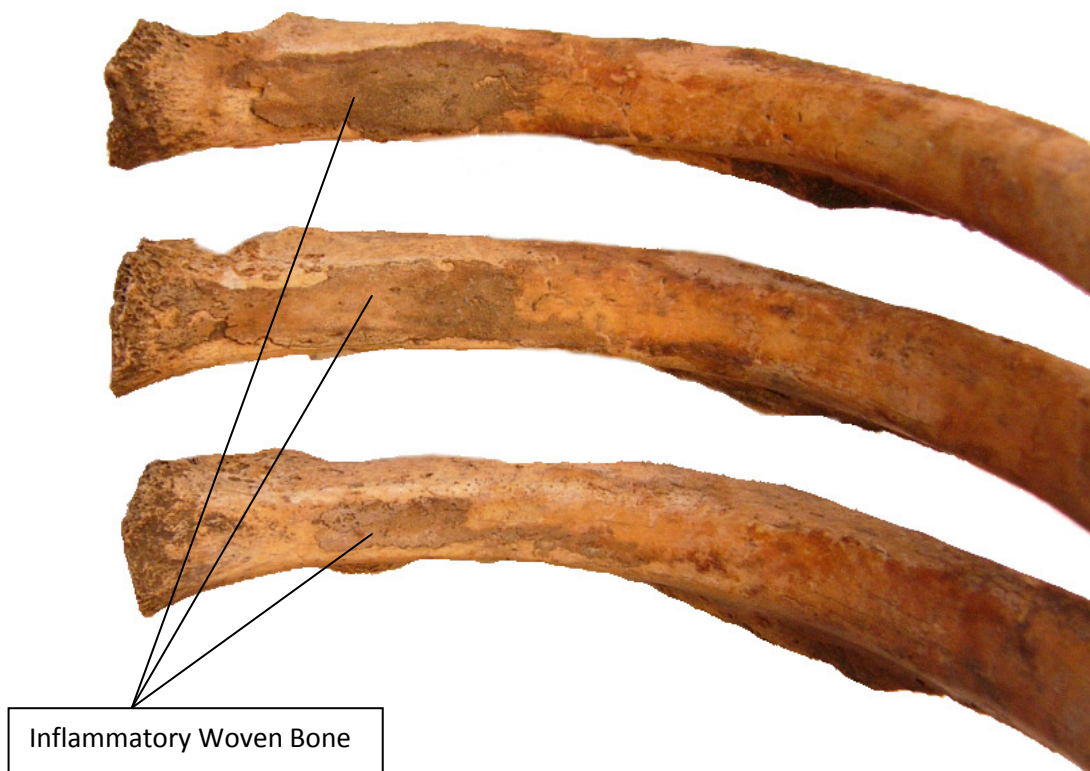
**Plate 9:** *Intra-Cortical Bone Expansion of the Frontal Bone and Associated Endocranial Lesions (SK211)*



**Plate 10:** *Periostitic woven bone deposit on the mandible (SK211)*

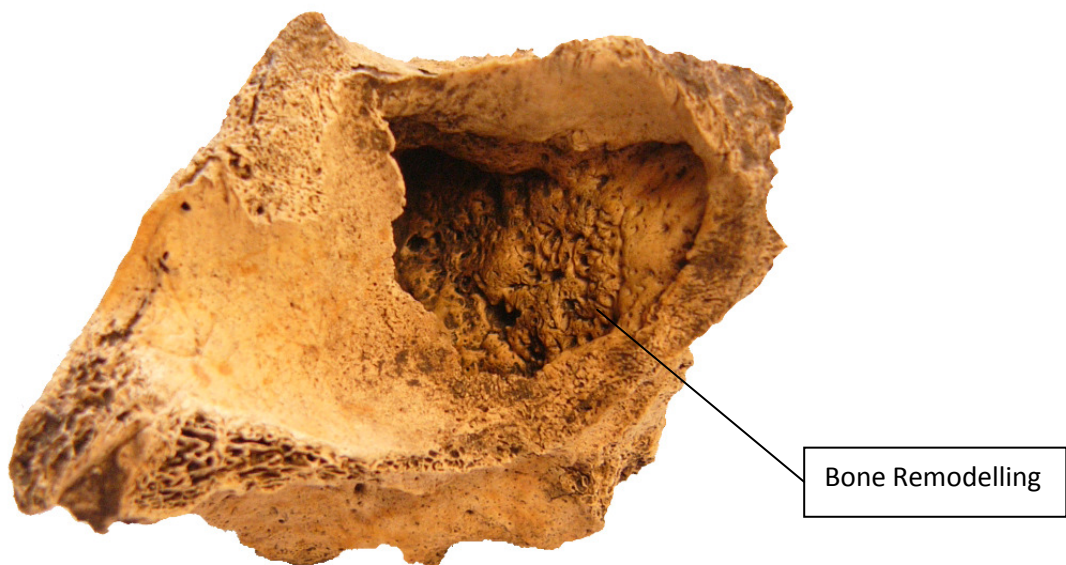
Rib lesions were found in a total of seven individuals (TPR = 15.6%, CPR 13%) and the majority of these consisted of woven bone formation (See Plate 11), indicating that the lesions were active at the time of death. Two of the individuals affected were subadults, one aged around 2.5 years at death and the second aged between 15 and 17 years old. Rib lesions are located on the

visceral surfaces of the ribs at the attachment site of the pleura of the lungs and thus indicate an inflammation of the pleura during life. This could be due to a lung infection, such as tuberculosis (Santos and Roberts 2000), other diseases of the chest, such as chronic bronchitis and pneumonia (Mays *et al.* 2002) or inflammation from smoke inhalation (Roberts and Cox 2003: 112). Whilst many lesions of this nature have been strongly associated clinically with individuals who have died from tuberculosis The changes are non-specific in aetiology and can only be linked to a specific disease if other pathognomic changes are found in the body. No rib lesions were reported from the Ancaster population and rib lesions were also rare at Gloucester, London Road (TPR 1.6%) (Loe 2008: 51). In fact, the inhabitants at The Hoplands exhibit the highest CPR of rib lesions reported to date from Roman populations in Britain, the average being on 2.1% (Roberts and Cox 2003: 113). This indicates that The Hoplands population endured a much higher level of respiratory infections than other contemporary sites likely to be due to environmental causes such as damp, crowded or smoky living conditions. Interestingly, no cases of periostitis rib lesions were reported from Ancaster (Cox 1989) and a TPR of only 3.5% was reported from the Fen rural Anglo-Saxon population at Littleport.



**Plate 11:** *Inflammatory Pleural Rib Lesions (SK078)*

Maxillary sinusitis, like pleural inflammation, is also linked to smoke, environmental pollution, upper respiratory tract infections and house dust (Roberts and Manchester 1997: 131). Three individuals were observed to exhibit the new bone formation situated in the maxillary sinuses that indicates the presence of the condition, 10% of all those individuals with maxillae present. The disease is likely to be underestimated in The Hoplands population as if maxillae are complete the sinuses cannot be observed except through endoscopic analysis. The crude prevalence rate of 5.6% is, like the rib lesions, well above the average (1.8% CPR, Roberts and Cox: 113). One individual, SK063, exhibited changes associated with a chronic sinus infection, where the whole surface of left maxillary sinus was crenulated and trabecular in appearance with smooth and porotic lamellar bone (See Plate 12). Additionally, posterior and lateral aspect of the nasal cavity appeared porotic and trabecular and although edges are not particularly rounded, the colouration and bony reaction around the edges of the maxillary hiatus and sinus indicates that it may have become enlarged through resorption. The infra temporal surface also appeared denser, irregular with porotic voids. Thus, rather than simply new bone formation on the surface of the sinus, a large portion of the whole maxilla has become infected. No cases of maxillary sinusitis were reported at Ancaster and the TPR at Littleport was also lower (3.5%).



**Plate 12:** *Maxillary Sinusitis with Chronic Infection (SK063)*

Three individuals exhibited lesions consisting of bone changes to the endocranial surface of the cranium; SK211 (discussed earlier), SK214 and SK237. In SK237, hypervascularity was indicated by deposition of capillary like impressions and blastic bony formation along the groove for the superior sagittal sinus, along the parietal bones as well as the occipital bone in addition to the

groove for the transverse sinus (See Plate 13). Most marked changes were noted in the occipital bone. Similar lesions were observed in the cranium of SK214 but in this case the changes were located on the frontal bone. Unfortunately, a large portion of the cranium of this individual had been damaged through post-depositional erosion so it wasn't possible to evaluate changes that may have occurred to other cranial bones. Endocranial lesions such as these are non-specific and are usually associated with inflammation of the meninges or a reaction to adjacent soft tissue lesions in the literature (Ortner 2003: 250). Thus, lesions can arise from a number of causes, such as epidural haematoma, meningitis, meningoencephalitis and tuberculous meningitis (Ortner 2003: 93). It is interesting to note that all the cases, the individuals also exhibited rib lesions indicating a simultaneous inflammation of the ribs. Additionally, both SK214 and SK237 were young adults: SK214 was very young adult aged between 18 and 20 years at death and SK237, a young adult aged between 22 and 27 years. Unfortunately, it is not possible to say that the lesions were directly linked but it appears that whatever the cause of these lesions in these cases, they may have contributed to an early demise.



**Plate 13:** *Endocranial Lesions in SK234*

One further case possibly related to inflammation was recorded. Destruction of 3 zygapophyseal joints in thoracic vertebrae T4-T6 were observed in the spine of SK048. These changes were thought to be atypical of osteoarthritis, since the lesions were highly destructive and there were

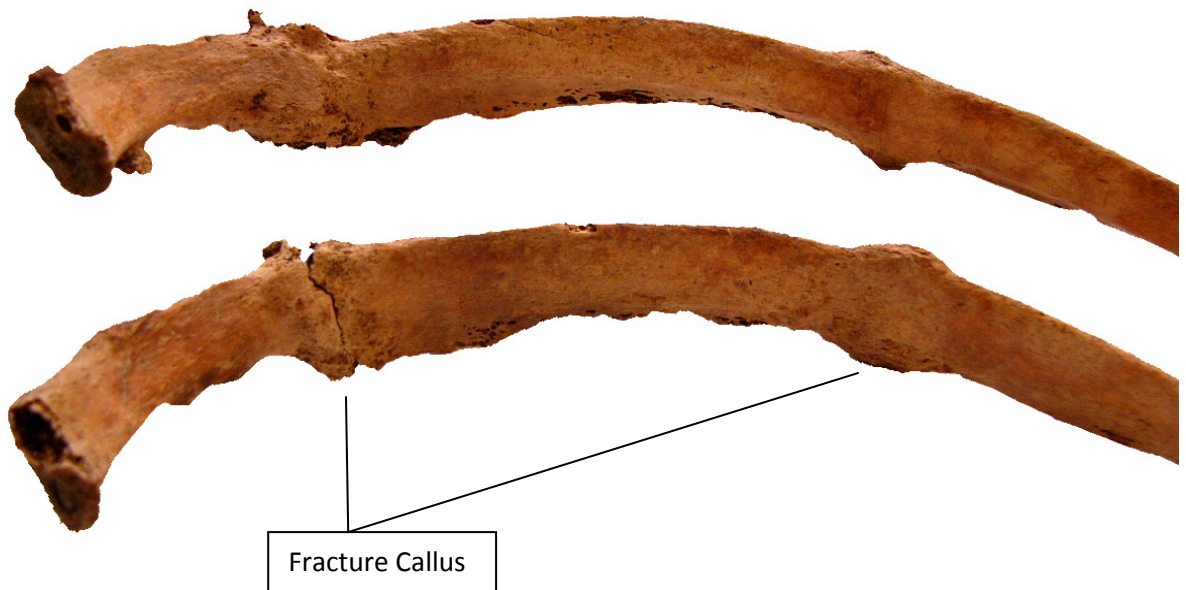
no other changes relating to degenerative joint disease in the spine. These changes may, therefore, represent a localised trauma or infection, or possibly could be a pauciarticular seronegative condition.

## Trauma

Several cases of trauma were observed amongst The Hoplands population (See Table 4). Whilst each type of trauma was only observed once for the majority, rib fractures were relatively common, being present in 15.6% of those individuals with one or more observable ribs present ( $n = 7$ , CPR = 13.0%). All the injuries were well healed with lamellar bone calluses and, therefore, were likely to be old injuries sustained well before death. Three individuals exhibited fractures to both sides of the ribs, three to the left and one to the right hand side. All cases involved the fracture of multiple ribs, the number involved ranging from two to ten ribs. Whilst fractures represent incidences of trauma to the torso by either striking or being struck by a hard object, in some cases an underlying condition that weakens the structure of the bone can predispose some individuals to fractures of the ribs and so clinically, it is common to see fractures in the elderly who have osteoporosis or osteomalacia (Salter 1999:200).

Four of the individuals affected were male, two were female and one was of indeterminate sex. Both the females were middle adult, whereas two of the males were middle-aged adults and two were old adults. Overall, Roberts and Cox (2003: 154) report that there is a much higher prevalence of rib fractures amongst males in Roman populations from Britain and this is also the case at Ancaster, where seven males exhibited rib fractures (CPR = 2.1%). The 13.0% CPR of rib fractures at The Hoplands is high in comparison to Ancaster and Gloucester, London Road (CPR = 3.2% (Loe 2008: 55), though similar to CPR ribs Jesus Lane, Cambridge of 9.4% (Alexander 2004: 82). One individual at The Hoplands, SK117, a middle adult male, had two sets of fractures in the same ribs, presumably representing two separate incidences of trauma to the torso (See Plate 14). Two left ribs were present both exhibiting two sets of healed fractures. One set of fractures were located in the midshaft and the other set were located approximately 8cm distant to the heads. Those near the heads are well healed with lamellar bone callus but displacement of the rib shaft inferior to the head portion slightly on one rib with a large irregular callus. Two midshaft fractures consist of smooth lamellar bone callus with no substantial displacement. Injury recidivism, where several injuries occur in the same individual over a period of time, has been associated with young adults, especially males of lower socio-economic status, and can be associated with interpersonal violence (Judd 2002).





**Plate 14:** *Double Rib Fractures in SK117*

One individual, SK202, had suffered a major fracture to the right humerus (See Plate 15). Fractures of the shaft of the humerus are sustained more commonly by adults than children and frequently as a result of a direct blow resulting in a transverse and comminuted break (Salter 1999: 584). The fracture can also occur indirectly, however, by a fall onto the hand, though this tends to result in a spiral break. The fracture in SK202 was healed but poorly aligned. The superior portion has been displaced laterally and inferiorly and was rotated up to 20° laterally. Any outline of the break was obscured macroscopically by the huge lamellar bone callus present but was probably oblique although may have been transverse. There may well be an overlap of 2-3cm. No sign of secondary degenerative joint disease nor infection was present, indicating that the fracture was simple or closed. SK202 was a middle adult, possibly female and was also observed to have three rib fractures, one of which was to the left hand side of the rib cage, the others being of unisided rib shaft.

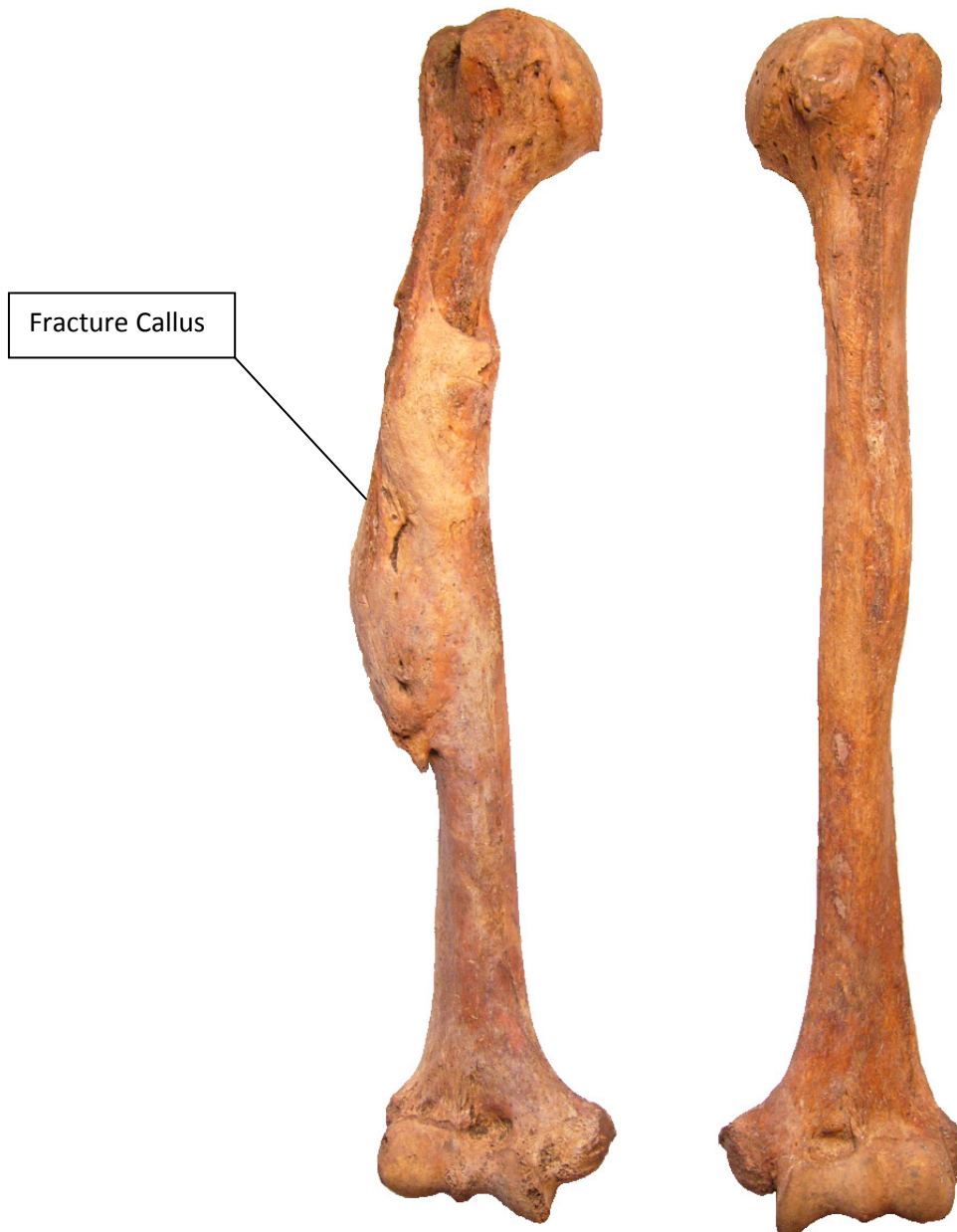
Pathology	No. of Cases (n)	No. of Observable Elements (N)	TPR (%)
Fracture of the Ulnar Styloid Process	1	66	1.5%
Fracture of Ribs	7	45	15.6%
Fracture of Humerus	1	91	1.1%
Fracture of Tibia	1	81	1.2%
Fracture of Fibula	1	83	1.2%
Fracture of Foot (Talus/Calcaneus)	1	67	1.5%
Fracture of 1st Metacarpal (Bennetts)	1	49	2.0%
Myositis Ossificans/Haematoma	1	520	0.2%
Cranial Blunt Force Trauma	1	35	2.9%

**Table 4:** Summary of Trauma Prevalence

One further arm bone, a left ulna, was observed to have been fractured at the styloid process, at the wrist of SK173, an adult male. The healed fracture reduced the process to a flattened plateau. There was no evidence of any secondary joint disease or other sequellae to this event. The plateau was smooth and well formed with just a small amount of microporosity, so this trauma may well have occurred in childhood or many years prior to death. The unilateral change indicated an underlying traumatic origin rather than a developmental condition.

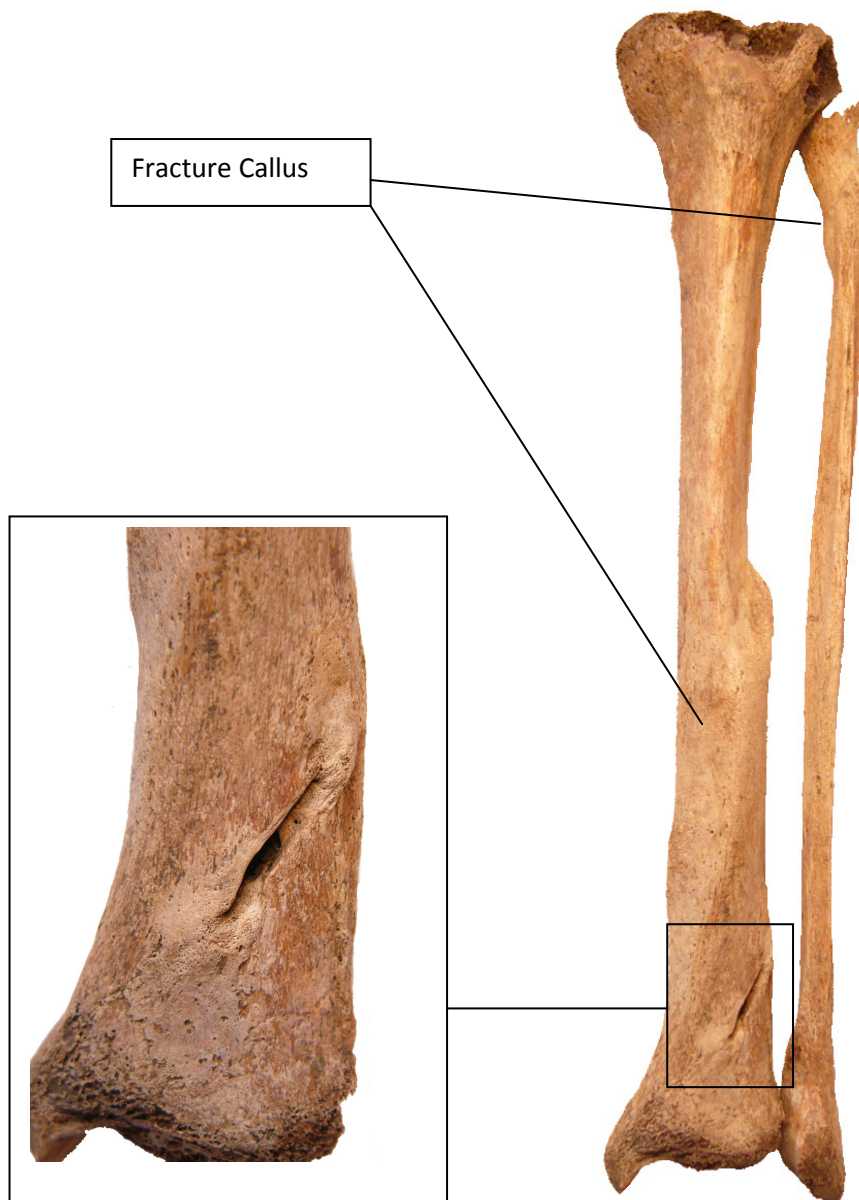
SK234, a middle adult female, exhibited a fracture to the lower leg, simultaneously affecting both the left tibia and fibula (See Plate 16). The fracture to the tibia located in the distal third and an oblique fracture line, likely to represent part of a healed spiral fracture, running superior lateral to inferior medial was observed. Distal portion appeared to be displaced laterally and showed a slight anterior deviation. It was estimated that there was likely to be an overlap of up to 10mm. The callus consisted of striated and porotic lamellar bone. Inferior to the callus (c. 15cm distal) approx 4cm superior to the distal articular surface on the anterior surface a linear void was also noted. The lesion runs obliquely across the diaphysis superior laterally to inferior medially and is approx 2.5cm long x 0.4cm wide. At each end a deposit of porotic lamellar bone was present. One clear margin was observable on the exterior surface that appears to represent an unhealed fracture edge. However, there was bone formation with a rounded perforation on the inner cortex. This may be a rounded cloaca at the inner cortex preventing the fracture to

heal at this site and indicating that an infection was present. Associated with this is a healed fracture of the proximal fibula sub-adjacent to the head. Head has been displaced posteriorly and inferiorly. The bone had healed in a poorly aligned position.



**Plate 15:** *Fracture of the Humerus with Large Callus and Poor Alignment (SK202)*

Other trauma of note was an intra-articular fractures of the hind-foot involving the left talus and calcaneus of SK063. In this case the inferior aspect of the lateral tubercle of the talus was fractured as well as the articular surface of the sustentaculum talus of the calcaneum. Although the fracture was healed, secondary arthritis was noted and so movement of the foot was affected in a chronic manner. Similar fractures of the foot are observed clinically to occur after landing flat on the heels after a fall from a height (Salter 1999: 606).



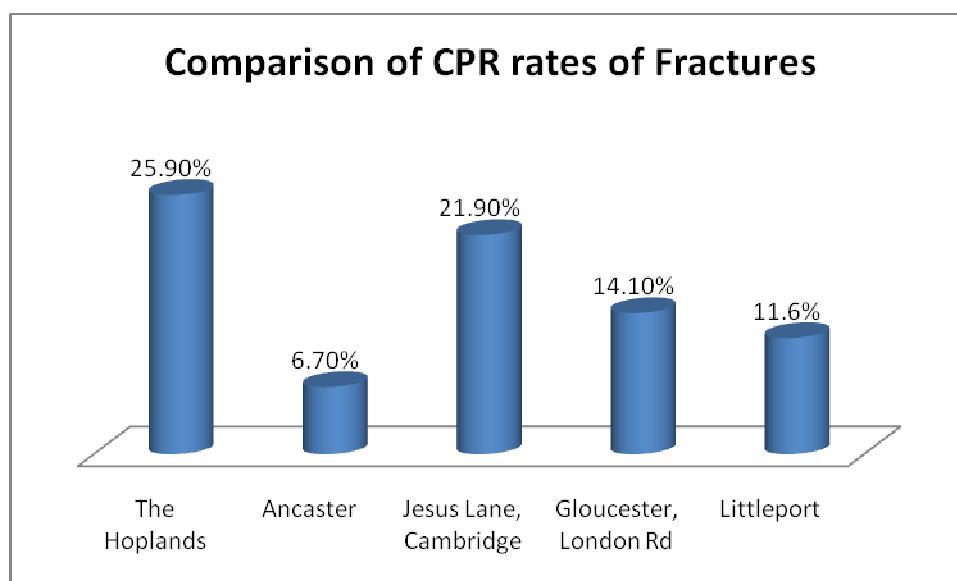
**Plate 16:** *A Fracture of the Tibia and Fibula of SK234 with Complications*

One case of a Bennett's fracture of left 1st metacarpal was observed in SK096, a middle adult male. A residual fracture line was present. The articular surface was porotic and irregular at the lateral aspect of the base. This fracture occurs when a longitudinal force is experienced along the axis of the 1<sup>st</sup> metacarpal with the thumb flexed (Salter 1999: 567). For this reason it is sometimes associated with boxing although it also occurs after a fall onto a hand with a flexed thumb.

In addition, one case of cranial head trauma was present. SK5657, an old adult female, exhibited a well healed cranial trauma to the superior and postero-lateral lateral aspect of the right parietal at the site of the eminence (See Plate 17). The presence of a large smooth indentation was noted, roughly ovoid in shape but slightly irregular, with a small amount of porosity on the surface. No observations could be made of the endocranial surface. The depression measures 40.39mm by 51.89 mm. It is likely that this lesion was the result of a blunt force trauma as a result of a fall or blow to the head. The large size of the lesion suggests that the impact was of low velocity, involved a large surface area and a longer period of contact (Batalis 2010). Although parietal atrophy can create similar lesions in osteoporotic individuals or can be associated with developmental origins, this condition is bilateral (Ortner 2003: 415, Barnes 1994: 146-148) and also extremely rare.



**Plate 17:** *Healed cranial trauma in SK5657*



**Figure 9:** Comparison of crude prevalence rates of fractures with Roman ‘urban’ assemblages and the Anglo-Saxon rural population at Littleport.

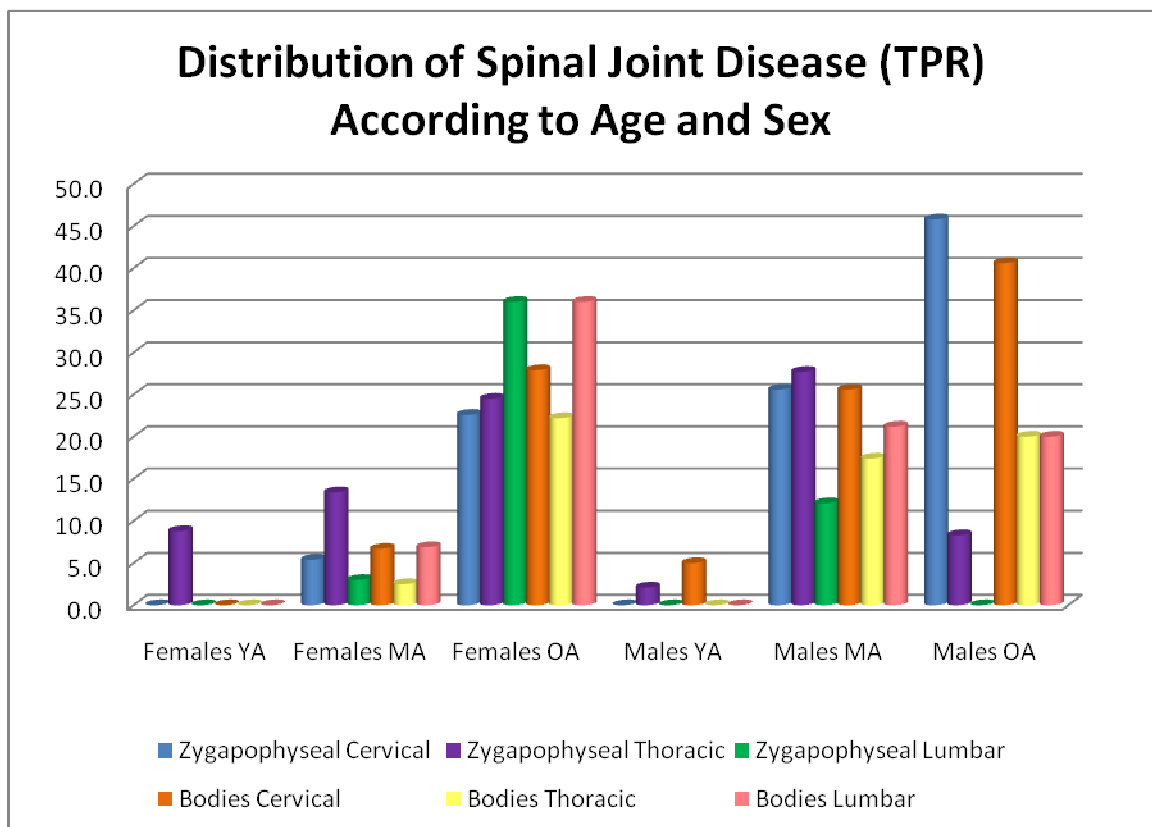
An overall comparison of the CPR of fractures present at The Hoplands compared to other urban Roman sites at Ancaster, Jesus Lane (Cambridge) and Gloucester (London Road) indicates that the rate of fractures is higher although is similar to Jesus Lane, Cambridge (See Figure 9 above). Not only are the number of fractures in the Anglo-Saxon rural assemblage at Littleport lower than most of the Roman assemblages, there is a strikingly different pattern in the elements affected. At Littleport, the majority of the elements affected are those of the fingers, hands and toes (Western 2007). In contrast, many of the fractures found amongst the Roman assemblages affected the more robust major elements, generally observed clinically to involve a high velocity impact, whether through a fall or being struck at high speed. The pattern of fractures found at The Hoplands, therefore, reflects that commonly found in other Roman ‘urban’ populations.

### Joint Disease

Primary osteoarthritis and degenerative joint disease (DJD) are undoubtedly an inevitable consequence of old age when the body’s tissues begin to break down and are unable to repair themselves adequately (Salter 1999). Clinically, this condition is most common in adult women, though it occurs in 80% of women and men over the age of 75 years (Salter 1999). This is diagnosed through the appearance of osteophytes round the periphery of the vertebral body, increased porosity of articulating surfaces and additionally subchondral cysts due to the breakdown of the subchondral bone surface. In the most severe cases, eburnation of the articulating surfaces created as the bones’ surfaces abrade each other is present and this is feature is pathognomic of osteoarthritis.

Primary joint disease occurs without associated trauma or pathological conditions and is associated mainly with abnormal stress on the joint or age. Degenerative joint disease is characterised by the presence of macro- or microporosity to the joint and osteophyte formation around the joint surface. Osteoarthritis has only been diagnosed if eburnation was present. This is the result of the complete destruction of the cartilage lining the joint, allowing the bone surfaces to abrade against each other (See Plate 18). It is difficult to assess which conditions would have had the greatest impact on the individual, as in some clinical cases patients present with joint pains where little bony change has occurred, yet others exhibit quite advanced skeletal changes and experience little discomfort (Rogers and Waldron 1995). Joint diseases such as osteoarthritis, however, can be a debilitating disorder.

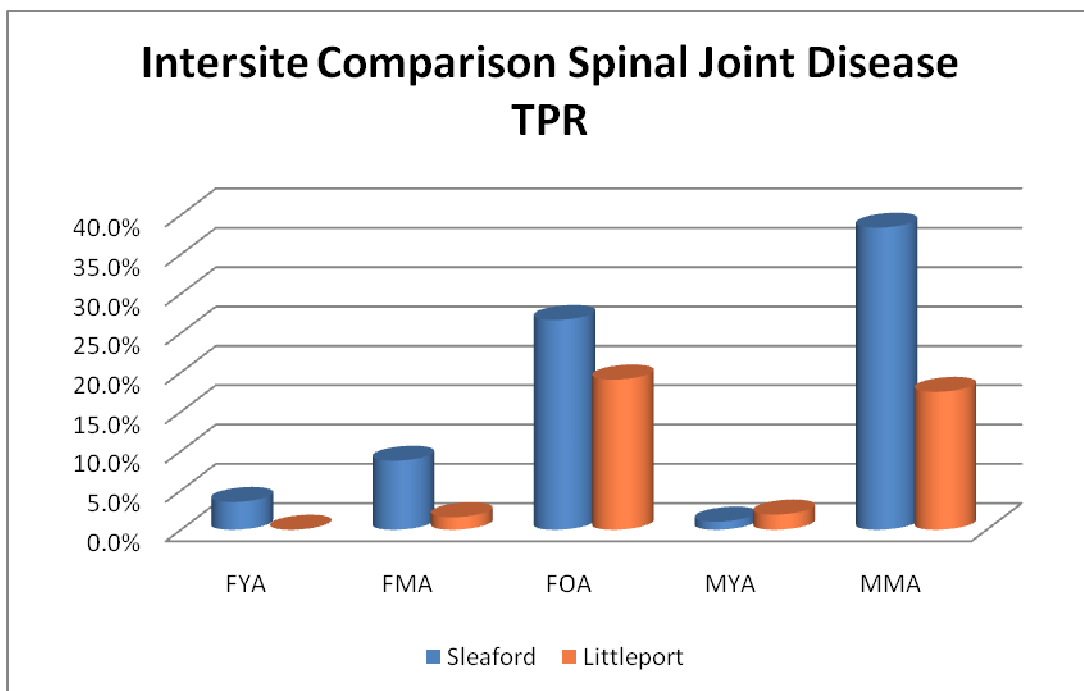
Spinal joint disease had a high prevalence amongst old adults and low prevalence amongst young adults, as would be expected of a condition that more often than not relates to a combination of the natural aging process and a higher length of time that an older individual has been exposed to the risk of trauma to the spine that might result in joint disease.



**Figure 10:** Spinal Joint Disease Prevalence rates according to age and sex categories

Interestingly, however, patterns of spinal joint disease also vary according to sex, especially for the middle aged adults. As Figure 10 illustrates, male middle adults exhibit a far higher prevalence rates of degenerative joint diseases of both the zygapophyseal joint and of the vertebral bodies in the cervical, thoracic and lumbar regions of the spine than their female counter-parts. There is

clearly evidence in the skeletal assemblage that the lifestyles undertaken by males in The Hoplands population results is far more deleterious to the spine than in females, manifesting itself in spinal joint disease in middle adulthood. Cox (1989:57) also reports a higher prevalence rate of spinal joint disease amongst the males at Ancaster, though there is not data for the age groups affected. Although a similar trend was noted from the Anglo-Saxon population at Highfield Farm, Littleport (Western 2007), closer analysis reveals that 22.2% of observable zygapophyseal joints of young adult males were found to exhibit degenerative joint disease, in contrast to The Hoplands population, where the rate is only 2.1%. This suggests some difference in lifestyle between the two populations for young adult males. Moreover, a comparison of the TPR of spinal joint disease according to age and sex reveals that the rate of the condition between all age groups of males and females is much higher at The Hoplands with the exception of young adult males, where it is lower (see Figure 11 below), again pointing to differences in lifestyle between the two groups.



**Figure 11:** *Inter-site comparison of prevalence rates of spinal joint disease (no old adult males were present in the Littleport assemblage.)*

Observations of extra-spinal joint disease are recorded below in Table 5. It was noted to be most common in the acromio-clavicular joints (part of the shoulder girdle), followed by the right shoulder joint, hips, right hand and right sterno-clavicular joint (also part of the shoulder girdle).

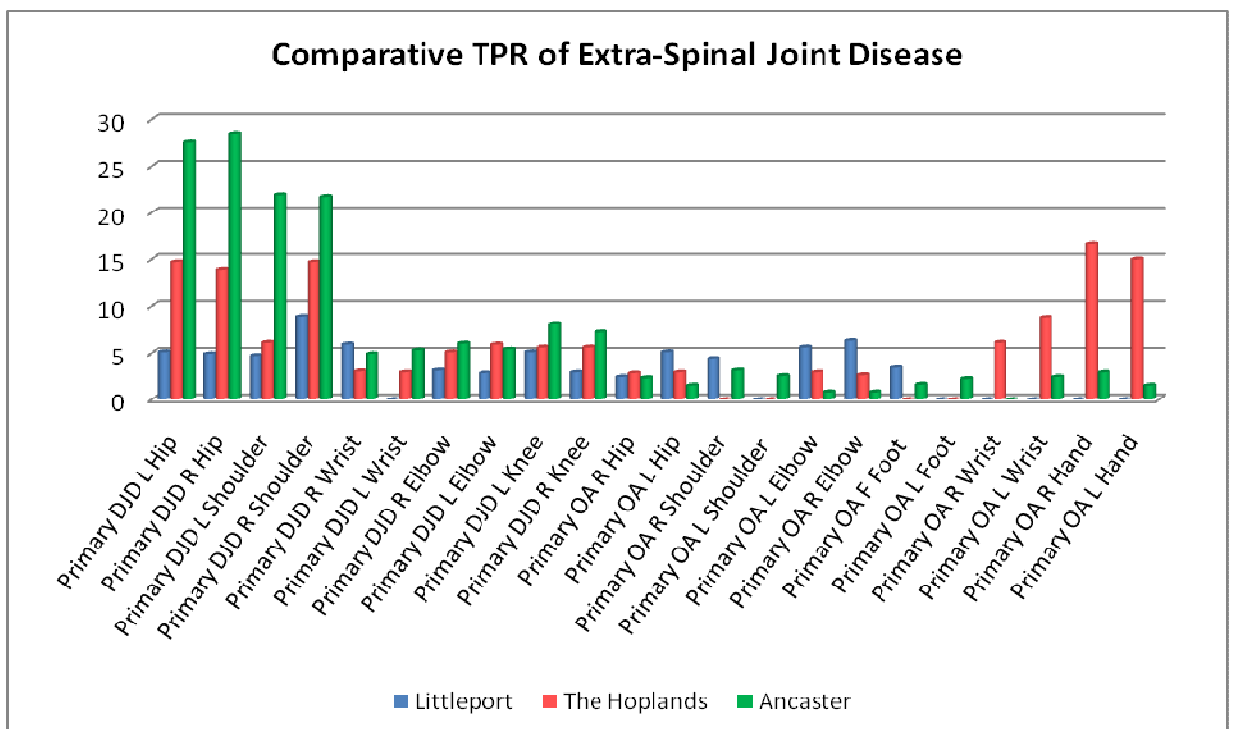


<b>Pathology</b>	<b>No. of Cases</b>	<b>No. of Observable Elements</b>	<b>TPR (%)</b>
Primary DJD R Shoulder	5	34	14.7%
Primary DJD L Shoulder	2	33	6.1%
Primary DJD R Elbow	2	39	5.1%
Primary DJD L Elbow	2	34	5.9%
Primary DJD R Wrist	1	33	3.0%
Primary DJD L Wrist	1	34	2.9%
Primary DJD R Hip	5	36	13.9%
Primary DJD L Hip	5	34	14.7%
Primary DJD R Knee	2	36	5.6%
Primary DJD L Knee	2	36	5.6%
Primary DJD R A-C Joint	9	34	26.5%
Primary DJD L A-C Joint	9	33	27.3%
Primary DJD R S-C Joint	4	34	11.8%
Primary DJD L S-C Joint	2	33	6.1%
Sacroiliitis	2	33	6.1%
Primary OA R Elbow	1	39	2.6%
Primary OA L Elbow	1	34	2.9%
Primary OA R Wrist	2	33	6.1%
Primary OA L Wrist	3	34	8.8%
Primary OA R Hand	4	24	16.7%
Primary OA L Hand	3	20	15.0%
Primary OA R Hip	1	36	2.8%
Primary OA L Hip	1	34	2.9%
			Cont.
Cont.			

Primary OA R Knee	2	36	5.6%
Primary OA R A-C Joint	2	34	5.9%
Primary OA L A-C Joint	1	33	3.0%
Primary OA R S-C Joint	2	34	5.9%
Primary OA L S-C Joint	1	33	3.0%
Secondary DJD R Hip	1	36	2.8%
Secondary DJD L Hip	1	34	2.9%
Secondary OA L Hand	1	20	5.0%
Secondary OA L Foot	1	35	2.9%
DISH	2	33	6.1%

**Table 5:** Summary of Joint Disease

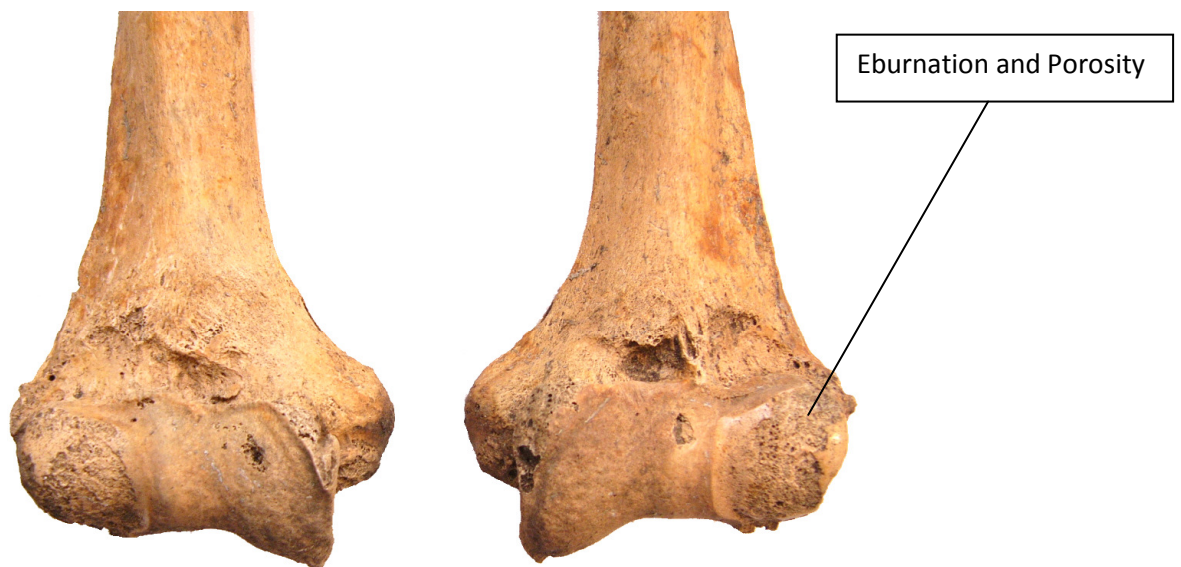
This pattern of distribution of extra-spinal joint disease about the body is similar to that found at Ancaster (Cox 1989: 52-3) (See Figure 12 below).



**Figure 12:** Comparative Rates of Extra-Spinal Joint Disease according to Anatomical Location

At Ancaster, however, a much higher prevalence of joint disease was noted in the hips and shoulders compared to The Hoplands, where, conversely, more osteoarthritis was observed amongst the hands and wrists. Rates of extra-spinal degenerative joint disease and osteoarthritis

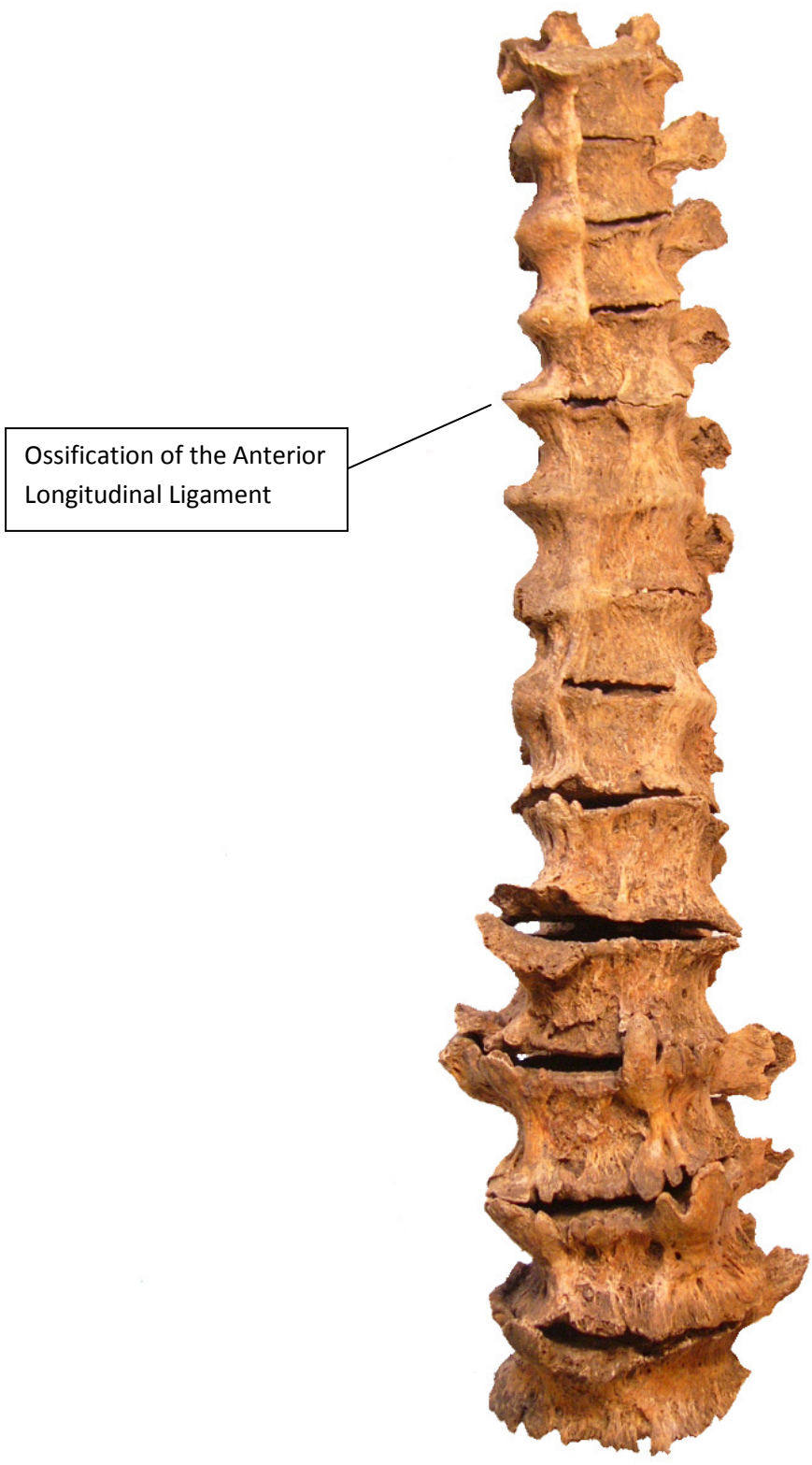
in the shoulder girdles, hips, wrists and hands were higher in both assemblages compared to the rural Anglo-Saxon population. Whilst age would undoubtedly play a role in the aetiology of degenerative the joint disease, the differences in distribution about the body of the condition between sites and the similarity of the demographic profiles between the sites suggest that differences in lifestyles between not only the populations but between the sexes within each population also contributed a significant risk factor in developing joint disease.



**Plate 18:** *SK068 Displaying Bilateral Erosive Joint Disease Lesions at the Elbow Joints Typical of Osteoarthritis*

One specific joint disease noted that The Hoplands that is worthy of note was diffuse idiopathic joint disease (DISH). Two definite cases were observed in SK052, an old adult female, and SK164, the remains of a middle adult male. A further suspected case was also noted in SK083, and old adult male. Including the latter, the CPR of DISH amongst the adults at The Hoplands is 6.8%. Typically, DISH is represented by large flowing osteophytes along the front of the vertebral bodies, usually on the right hand side in the lower thoracic region, formed through ossification of the anterior longitudinal ligament of the spine. In addition, further ossification of ligaments is seen typically at the joints and muscle attachment sites, such as at the olecranon process of the ulna, the greater trochanter of the femur, the ischium and the patella, amongst others, known as enthesophytes. Pathognomic of the condition is the fusing together of at least 3 of the vertebrae through the ossified ligament, which had occurred in SK052 and SK164. Although SK083 exhibited large vertebral osteophytes and extensive enthesophyte formation, none of the vertebrae were actually fused together. Generally the condition occurs in older adults over the age of 50 and 25% of individuals with DISH are with obese and suffering from adult-onset diabetes (Roberts and Manchester 1997:120, Rogers and Waldron 1995: 48). Very often, it is interpreted that individuals with DISH may have had a diet rich in meat or other proteins. Interestingly, a recent study of stable isotopes of a cemetery containing a lay and monastic

population from medieval York found that nitrogen and carbon isotopes of individuals with DISH differed from the remainder of the sample (Müldner and Richards 2007: 169). Although it wasn't clear if the nitrogen results were affected by physiological changes in these individuals through the condition itself, the evidence suggested that those individuals with DISH may have had a dietary intake high in animal protein. The rate of DISH at The Hoplands is higher than most Roman sites reported by Roberts and Cox (2003: 138-9) and higher than the 1.2% definite cases noted amongst the adults at Ancaster, although this rises to a CPR of 11.5% when suspected early cases are taken into account (Cox 1989: 63). One definite case was also reported from Jesus Lane, Cambridge (Alexander *et al.* 2004: 82) (CPR = 3.1%). It is interesting to note that no cases of DISH were found in the population from the rural Anglo-Saxon site, suggesting that there may have been increased access to animal proteins for some individuals from the Roman populations.



**Plate 19:** *Extensive Large Flowing Osteophytes Indicative of DISH (SK164)*

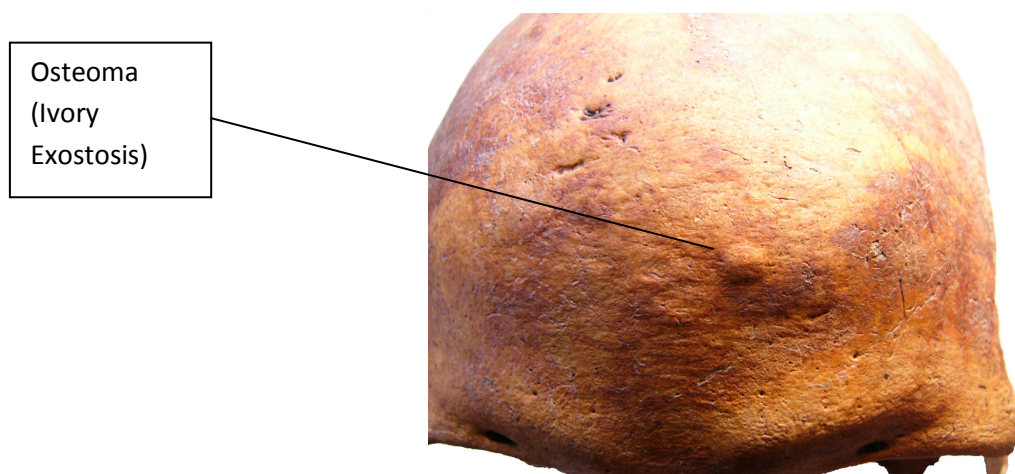
**Neoplastic Disease**

Neoplastic disease is rarely observed in the archaeological record mainly due to the fact that few neoplastic diseases result in pathognomic changes in the skeleton that are easily diagnosed macroscopically (Roberts and Manchester 1997). All the cases noted at The Hoplands are recorded in Table 6 below.

Pathology	No. of Cases	No. of Observable Elements	TPR (%)
Osteoma (Ivory Exostosis)	4	35	11.4%
Single Osteochondroma	1	40	2.5%
Hemangiomatosis / Metastatic Neoplasm	1	33	3.0%

**Table 6:** Summary of Neoplastic Disease

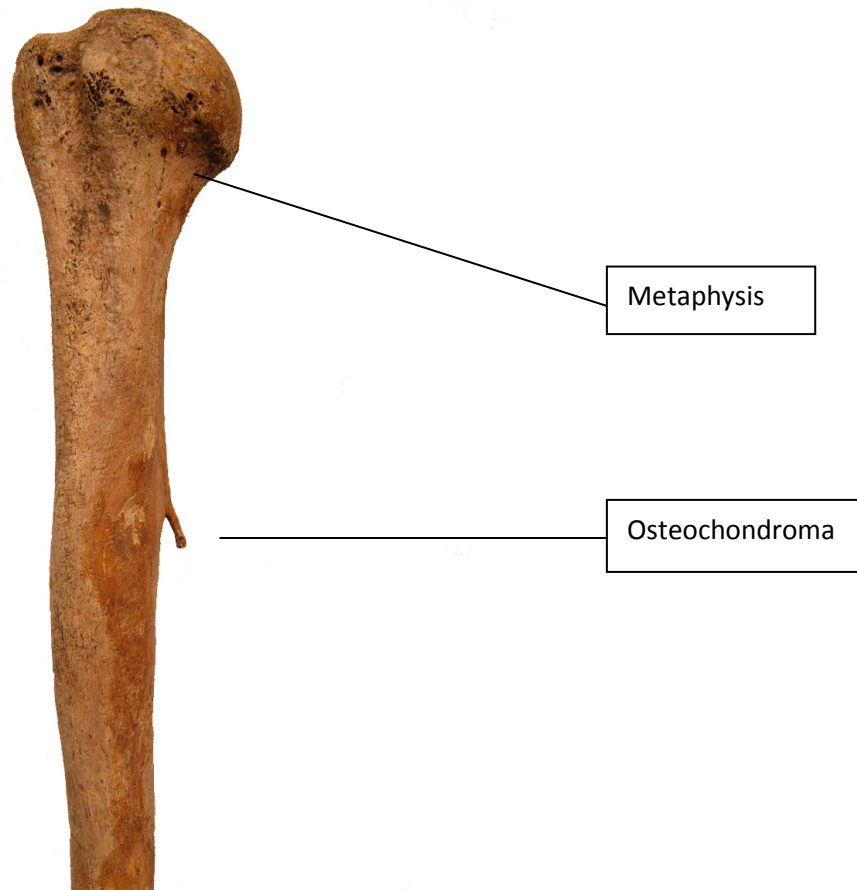
Four osteomas (or ivory exostoses) were recorded on the cranial vaults of three individuals, SK202 exhibiting two osteomas. These neoplasms are commonly reported in archaeological populations. They consist of a small (c.5mm diameter), rounded growth of dense bone that is well demarcated and self-limiting (See Plate 20). They are most frequently found on the ecto-cranial surface of the frontal and parietal bones have no sequella for the patient (Salter 1999: 392).



**Plate 20:** Osteoma or Ivory Exostosis on the Frontal Bone of SK202

A single osteochondroma was observed on the medial side of the right humerus of SK157 (See Plate 21). In this case the osteochondroma was pedunculated, arising in the metaphyseal area of

the proximal humerus where there has been an issue with remodelling and ossification during growth. In individuals with osteochondroma, some of the cartilage grows out and away from the metaphysis prior to ossification. As the long bone continues to grow, the outgrowth is left behind on the shaft and therefore, always points away from the metaphysis of origin. Whilst these growths in themselves are not harmful to the individual, the growth can impinge on neighbouring soft tissue and nerves causing discomfort (Salter 1999: 393).



**Plate 21:** *Osteochondroma on the Right Humerus (SK157)*

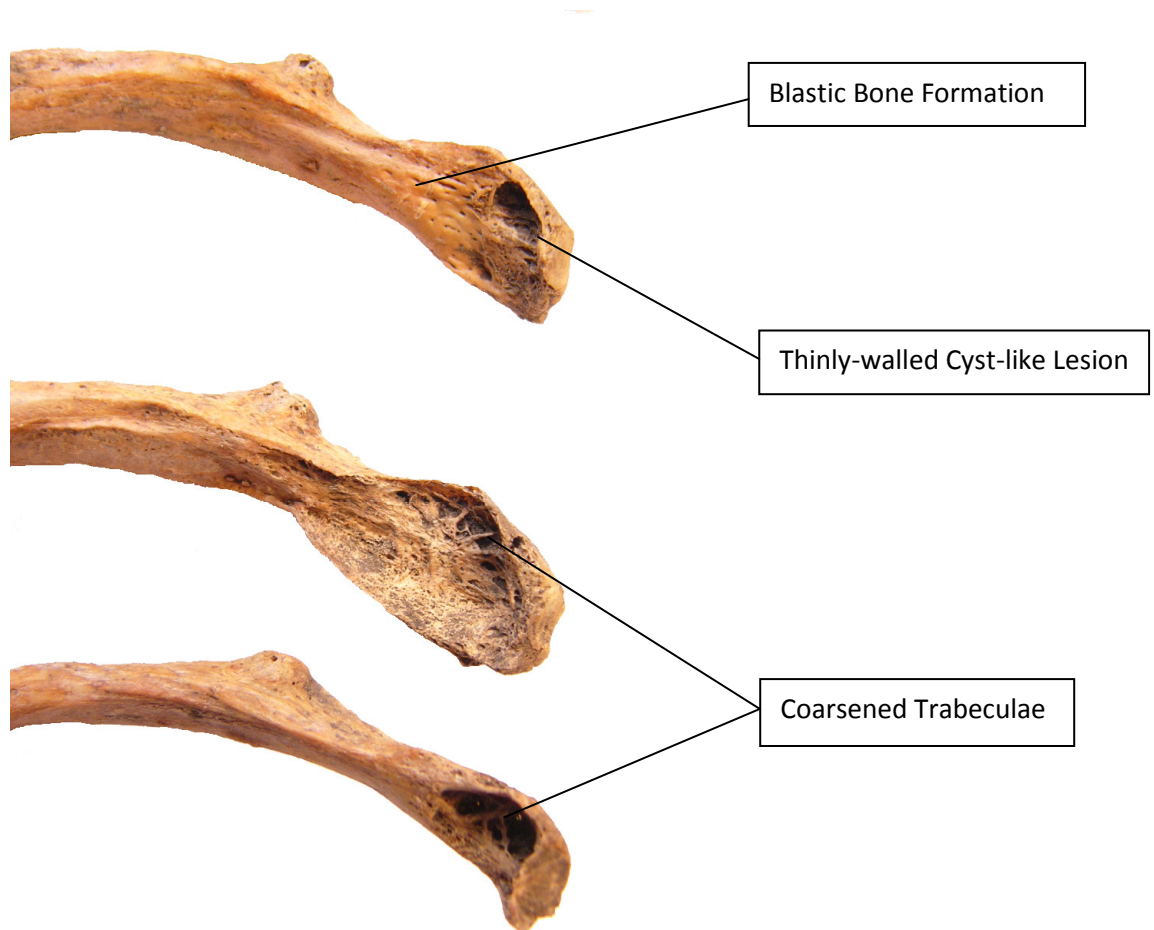
The most noteworthy pathology of possible neoplastic origin was found in SK217, a young adult female. Lytic and blastic lesions of the vertebral bodies were present throughout all the observable thoracic vertebrae, accompanied by some changes in some lumbar vertebrae also (See Plate 22). Those affected were T1-T5 and T9-T12 and what were presumed to be the contiguous rib heads. Pathological changes are predominantly lytic and are formed of cyst-like lesions to the anterior and lateral areas of the bodies. Most severely affected were the upper thoracic vertebrae. Lesions measured 2-8mm in diameter. Trabecular bone in the vicinity of the cyst-like lesions is coarsened though the lesions themselves were well defined. Some blastic reaction was also present in the form of localised projecting bony spicule outgrowths, projecting transversely from the anterior and lateral body surfaces. L1-L3 were similarly affected also but to a lesser extent. None of the end plates of any of the vertebrae were involved.

The rib heads were also extensively involved bilaterally (See Plate 23). Large crater like lesions with small cyst like lesions were present and coarsened trabecular structure was also observable. The heads were, in some cases, completely resorbed in parts or consisted of only thin-walled bony shells. The rib shafts themselves are not involved macroscopically. One rib head had an osteoblastic formation consisting of porotic lamellar bone adjacent to an elongated well defined lytic lesion, which has a floor of spiculated bone and also next to an ill defined lytic lesion of coarsened trabecular bone. Some of the changes present at the rib heads seemed more aggressive and ill-defined compared to the vertebrae. Overall, 9 right ribs and 6 left ribs exhibited changes. None of these were ribs 1 or 2.



**Plate 22:** *Extensive Lytic (Destructive) and Blastic (Formative) Lesions in the Spine of SK217*





**Plate 23:** *Blastic and Lytic Lesions in the Associated Ribs of SK217*

A review of the current literature reveals that the changes could result from a condition known as hemangioma (Ortner 2003: 512) or skeletal hemangiomatosis (Vigorita 2008: 438). The disease, caused by a proliferation of blood vessels, results in lesions that are described as consisting of multiple cyst-like lesions with bone destruction sometimes accompanied by a fine peripheral rim of increased density and areas of bone coarsening. The disease occurs within the first three decade of life, and is twice as common in females than in males. It is also noted in hemangiomatosis that when confined to bones, tends to affect a region, such as multiple vertebrae and contiguous ribs (Pitcher and Walker 2010). A diagnosis of metastatic neoplasm is also suggested, where involvement of the bone is particularly common in breast (73%) and lung cancers (33%) (Vigorita 2008: 529). Metastatic cancers have a predilection for red marrow and, thus, in adults vertebral bodies and ribs are some of the most commonly affected skeletal elements (Vigorita 2008: 527). Prognosis is poor with both conditions. Brucellosis (Ortner 2003: 219) should also be considered as a differential diagnosis as well as other infectious conditions affecting multiple elements with blastic and lytic lesions, such as osteomyelitis. It should be noted that SK217 also exhibited an ill defined intracortical bony protuberance on the anterior surface of the left tibia, mid shaft. The lesion appeared as a subtly defined localised 'swelling' with a slightly porotic surface and measured approximately 36mm S-I x 15mm A-P. This may be a blastic neoplasm relating to changes in the spine described previously or could represent local trauma.

### 3.1.11 Dental Disease

Dental diseases include conditions that not only directly affect the teeth but also the soft tissue surrounding them, sometimes observable in changes to the underlying alveolar bone. Each condition can give an indication of different aspects of lifestyle and health of the individual. For example, caries is associated with diets high in sucrose content. The presence of calculus can inform us about dental hygiene whilst enamel hypoplastic defects testify to developmental stresses that an individual has undergone in childhood. The analysis of dental disease, therefore, not only informs us of specific oral conditions but provides complimentary data regarding overall health status and cultural practices.

Prevalence rates of dental diseases are presented here as a percentage of the number of observable teeth present or number of observable sockets. In total, 734 teeth were recorded as observable, 725 of which were permanent dentition and 9 of which were deciduous. Seventy of the permanent teeth were observed in subadults. The prevalence rate of antemortem loss and the prevalence rates of abscesses was calculated according to total number of observable tooth sockets ( $n = 1087$ ). Of these, 1067 sockets were associated with permanent dentition and 20 were associated with deciduous dentition. Sockets observable in the subadult population totalled 116, with 971 sockets observable amongst the adults.

True prevalence rates for dental diseases present are shown below in Table 7:

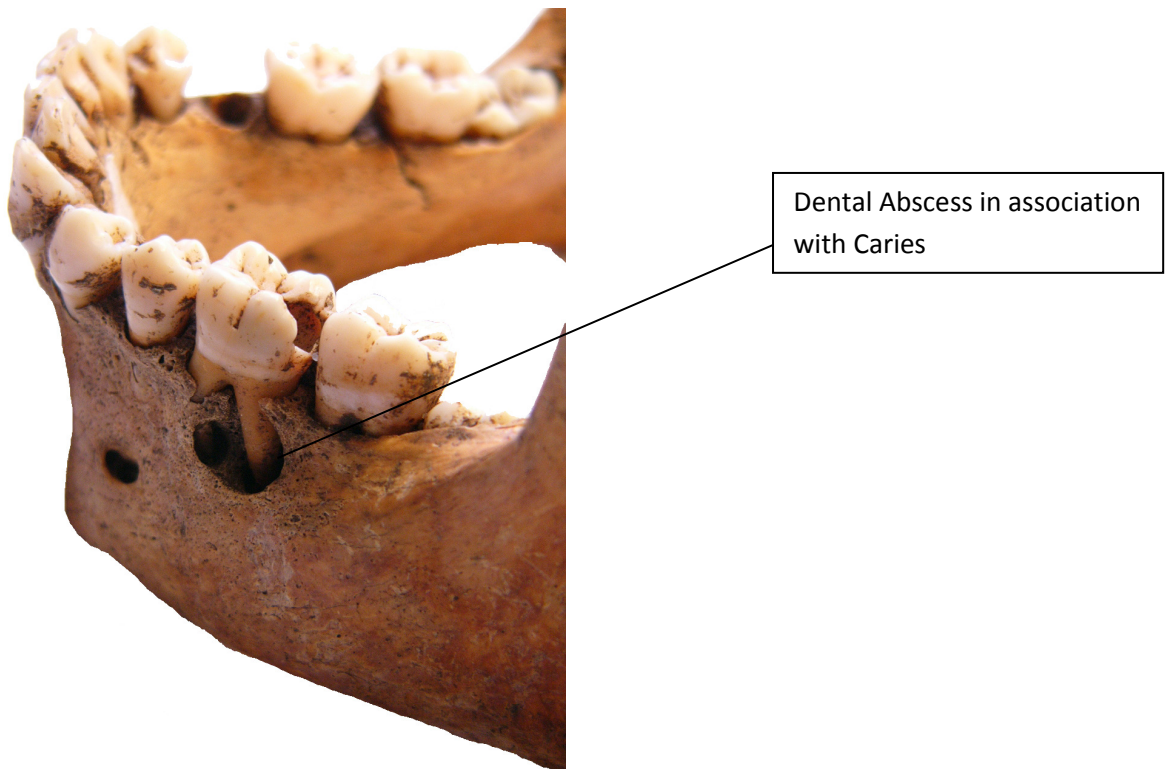
Dental Disease	Adult ( <i>n</i> )	Adult TPR (%)	Subadult ( <i>n</i> )	Subadult TPR (%)	Whole Pop TPR (%)
Caries	45	6.9	0	0	6.1
Calculus	565	86.3	75	95.0	87.2
Ante-Mortem Loss	171	17.6	0	0	15.7
Abscess	27	2.8	0	0	2.5
Enamel Hypoplasia	127	19.4	27	34.2	14.2
Periodontal Disease	410	42.2	4	3.5	56.4

**Table 7:** Prevalence rates of Dental Disease

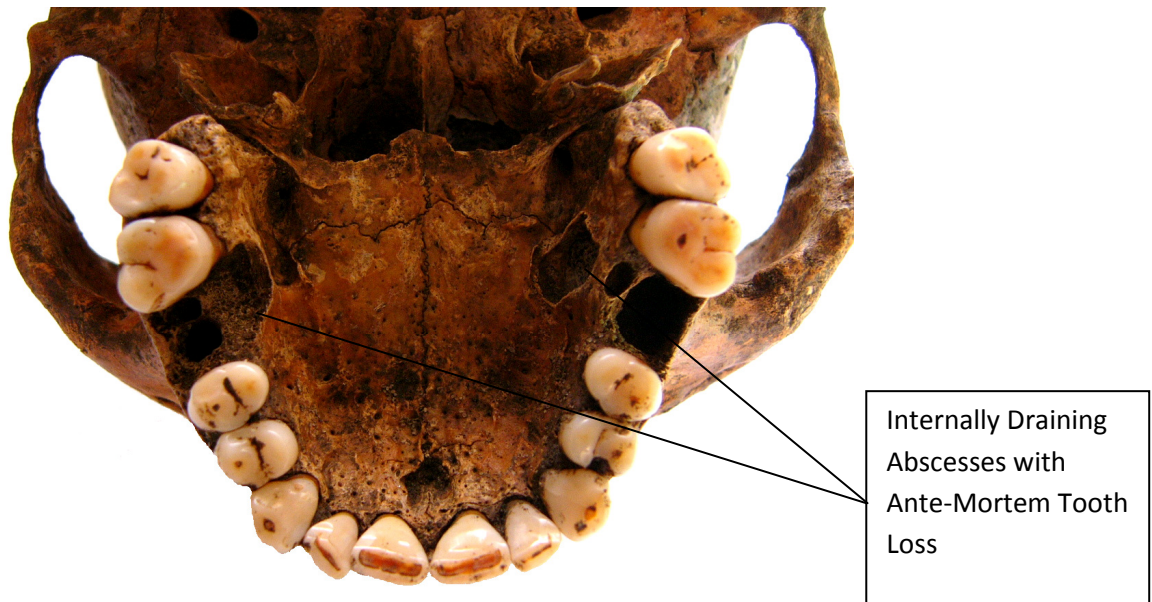
The 6.1% TPR of caries, linked to diets high in sucrose and poor oral hygiene, was just below the national average TPR of 7.5% for Roman sites (Roberts and Cox: 132). Roberts and Manchester (1997: 48) note that a general increase in caries is during the Roman period which then declines

in the Anglo-Saxon period. Comparison to the Anglo-Saxon population at Littleport, for example, shows that The Hoplands population had a higher rate of caries. However, the rate is only marginally higher, indicating that the sucrose content in the diets of the two populations did not differ significantly on the whole. This is also true at Ancaster, where the TPR of caries for the whole population is 7.1%, again slightly below the national average. At The Hoplands, 46.7% of males and 50.0% of females had caries. Similar rates between the sexes were also observed at Ancaster (57.9% of males and 57.1% of females)(Cox 1989: 173).

Severe caries and attrition are both linked to abscess formation, where bacteria from the tooth infection spread through the pulp to the jaw. Again, the TPR of 2.5% at The Hoplands is below the national average, reported by Roberts and Cox (2003: 137) as 3.9%, in part related to the inter-dependent aetiology of this pathology and caries. It is still higher than the rate observed amongst the Anglo-Saxon assemblage at Littleport (1.7%). Unfortunately, the TPR of abscesses at Ancaster was not reported, although it appears that 16.9% of adults exhibited abscesses (25% of males and 29% of females) compared to 34.1% at The Hoplands, (40% of males and 35% of females). The differences observed may be at least in part due to sample size although the results tentatively suggest that more individuals at The Hoplands suffered more abscesses despite the similar, if not slightly lower, levels of caries.



**Plate 24:** *Dental Abscess and Carious Lesion in SK214*



**Plate 25:** Extensive Abscess Formation around the 1<sup>st</sup> Maxillary Molars of SK078

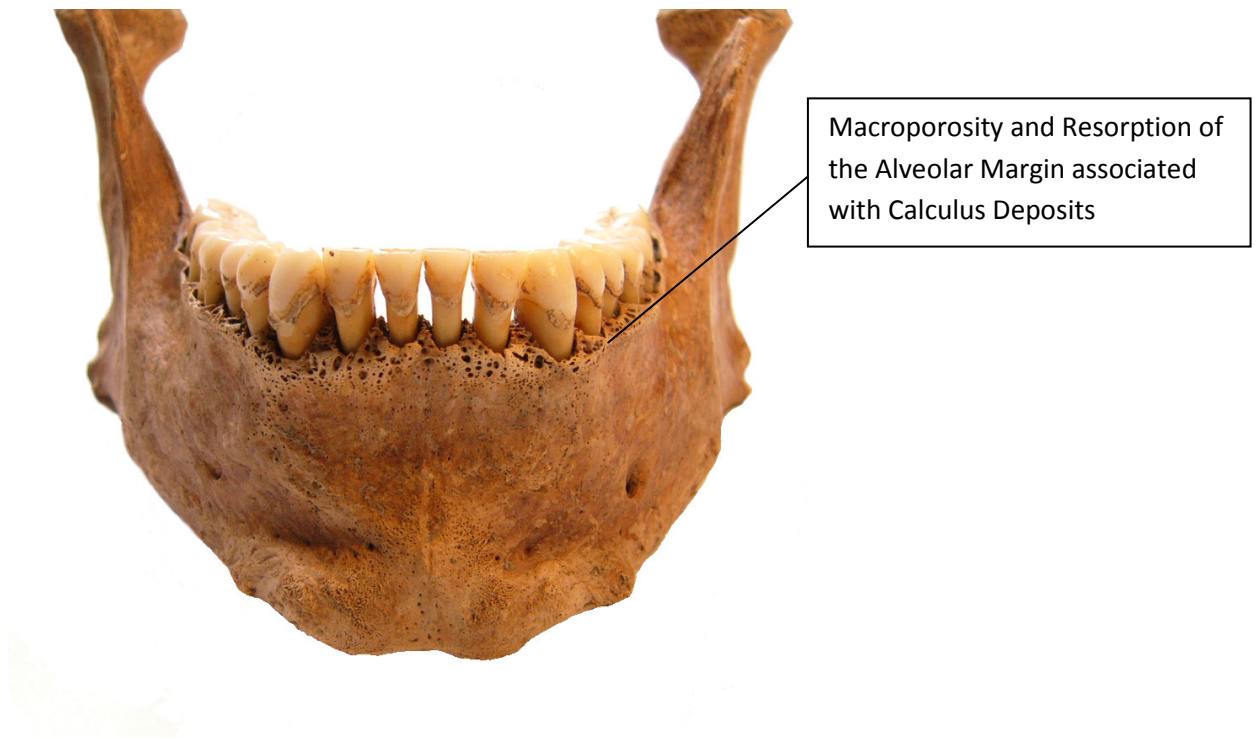
Some individuals, such as SK078, illustrated above in Plate 25, show evidence of severe abscesses which have led to ante-mortem loss of the associated teeth. Although not all teeth are lost during life because of abscesses, it is likely to be an important factor. Ante-mortem tooth loss was seen affecting 15.7% of all the observable tooth sockets, very similar to the level at Ancaster where a TPR of 15.5% was reported, both sites being just above the national average of 14.1% (Roberts and Cox 2003: 136). This compares with only 7.5% observed amongst the Anglo-Saxon population from Littleport, indicating that as with abscesses caries, rates of ante-mortem tooth loss seem to be higher amongst Roman populations. This reflects also reflects the data reported nationally (Roberts and Cox 2003). It should, of course, be remembered that increased ante-mortem tooth loss is associated with age.

Caries and abscesses would have caused individuals great discomfort. No reference to dental fillings as a therapeutic procedure exists in Roman literature but there is other medical advice on how to treat painful teeth and gums with herbal poultices and rinses, such as washes of parietal root cooked in wine, pellitory and cypress berries, hyoscyamus root or seed, and purslane held or chewed in the mouth amongst other suggestions. Cautery and surgery were only recommended as a last resort (Cruse 2006:182). Caries were believed to be caused by 'little worms' and their removal required fumigation. Although prosthetic teeth have been found amongst Estrucan assemblages, little evidence of such modifications or fillings have been found amongst Roman populations in Britain (Cruse 2006: 183).

Evidence of whether dental care was employed regularly can be inferred from the relative presence of calculus or mineralised plaque in an archaeological population. Although, as Roberts and Cox (2003: 131) point out, calculus can relate to a diet high in protein it is generally assumed that high levels of calculus relate to poor oral hygiene. Results of the analysis of the presence of calculus at The Hoplands shows that 87.2% of observable teeth present exhibited calculus deposits. This rate is twice the national average of 43.4% (Roberts and Cox: 132) for Roman

populations, although it should be noted that much of the calculus observed here was minimal (Grade 1). No comparative TPR of calculus is given for Ancaster, although Cox does report that 70.9% of males and female adults examined for the presence of calculus exhibited some deposit, similar to the 80% of males and females at The Hoplands (Females = 15, Males = 13). The youngest individual to exhibit calculus was SK118, a 'young child' aged between 1-3 years at death; in addition three adolescent individuals also had calculus deposits, so this was clearly prevalent in individuals from a young age at The Hoplands. A higher amount of plaque and mineralised calculus, like caries, is found in those individuals with greater sucrose in their diets (Roberts and Manchester 1997: 55). Given that the rate at The Hoplands is very similar to that of the rural Anglo-Saxon population, where caries and abscesses are lower, the accumulation of calculus may well be more the result of a lack of dental hygiene in this case.

Calculus builds up as a deposit on the teeth along the lines of the gums and when sufficient is present, irritation to the neighbouring gums is caused. This irritation is known as gingivitis, or gum disease, which can lead to changes observed in the underlying alveolar bone, known as periodontal disease (See Plate 26). Eventually, the gum and the underlying bone may recede, causing teeth to become loose. Of all the observable teeth with tooth sockets, 56.4% exhibited some of the changes associated with alveolar inflammation and resorption. Overall 57.4% of all individuals were affected (n = 31).



**Plate 26:** *Skeletal Evidence of Periodontal Disease (SK132)*

Again, CPR rates for periodontal disease were almost twice that of the 29.3% reported as the average for contemporary sites in Britain (Roberts and Cox 2003: 137) and as with the similarity

of rates in caries and abscesses, probably reflects the association of the aetiology of periodontal disease with calculus. Accordingly, as with the similarity in calculus rates from Anglo-Saxon Littleport, the periodontal disease CPR is identical at 57.4% in both populations. Cox (1989: 75) reports that slight periodontal disease was widespread amongst the adults from Ancaster and that 6.7% of individuals exhibited moderate or severe forms.

The prevalence rate of enamel hypoplasia was also recorded and is interpreted in many archaeological analyses to indicate physiological stress during development. Hypoplastic defects in the teeth, usually more common in the anterior dentition, are caused by bouts of childhood illness or severe malnutrition and are often used as an indicator of stress to health in childhood (Goodman and Armelagos 1985). These defects appear to occur around the age of three years (Dobney and Goodman 1991) and it is believed that only one person in 14,000 is affected by a hereditary hypoplastic condition (Hillson 1986). Many ethnographic studies have found correlations between low socio-economic status and a higher rate of hypoplastic defects (eg Dobney and Goodman 1991) and diachronic increases in observations of such defects have also been observed in archaeological populations thought to be related to lifestyle changes and increased stress following colonisation (Hutchinson and Larsen 1988). It should be borne in mind, however, that many of the people who are subjects in ethnographic studies live in conditions of the extreme poverty where there is little scope for social mobility and that we should expect to see more variance and less of a clear-cut picture in populations where the nutritional standard is over the critical nutritional threshold and where social mobility is more likely.

Enamel hypoplasia was recorded in 14.2% of observable dentition and had a CPR rate of 42.6% in the whole population. In contrast a crude rate of only 6.7% was recorded at Ancaster (Cox: 1989: 65) and Roberts and Cox (2003: 140) report an average of 9.64% for Roman assemblages from Britain. The rate from The Hoplands, therefore seems high in comparison although similar levels have been recorded from Bletsoe, Boscombe Down and Kingsholm, Gloucester (Roberts and Cox 2003: 140). The TPR of enamel hypoplasia, conversely, is lower than that seen at rural Littleport (21.2%). Although it is difficult to draw firm conclusions from prevalence rates according to age due to the disparate sample sizes, it is interesting to note that the TPR rate amongst subadults is almost twice that of the adults, perhaps reflecting that those subadults exhibiting hypoplastic defects were at a higher risk of mortality. No significant difference was noted in the numbers of males (n = 9) and females (n = 11) with enamel hypoplasia.

### *3.1.12 The Articulated Material: Conclusions*

The remains of a total of 54 individuals were excavated from 53 graves at a Roman cemetery site at The Hoplands, Sleaford. The majority of the skeletal remains were 75%+ complete and in a good state of preservation. The remains of 44 adults and 10 subadults were recorded. The demographic profile of the assemblage was typical of other archaeological populations, with a possible under-representation of neonates and infants as well as old adults. Males were under-represented overall. An overall average stature estimate of 1.61m was recorded, with males being an average of 1.69m (the same as the national average for Roman males) and females averaging 1.54m, 5cm shorter than average. A range of skeletal diseases have been recorded,

suggesting that numerous conditions were encountered within the population during both childhood and adulthood. High rates of stress indicators, such as cribra orbitalia and dental hypoplasia were present, as well as the presence of other inflammatory pathology in subadults, indicate that health during childhood may have been poorer than other contemporary populations. Rickets was also present in one young child, a further case of physiological stress from a lack of vitamin D. Adults suffered particularly from joints disease, which was found to be much higher in middle adult males than in their younger counterparts and both the young and middle adult female groups, indicating different lifestyles, possibly relating to occupation, between males and females. No difference in sex was noted amongst the distribution of fractures the group, which interestingly included one case of a healed blunt force cranial trauma to an old female adult. Fractures tended to involve the major elements such as the long bones, suggesting fracture mechanisms involving high velocity. Repeated rib fractures were found in one male who might have been involved in some act of inter-personal violence. Although preservation of the outer surfaces of the bone made it likely that periostitis was under-recorded, a high rate of such lesions were present on the ribs. This, and the presence of maxillary sinusitis, is indicative of a combination of damp, smoky living conditions and a high level of inter-personal contact. One rare case of a possible skeletal hemangiomas or metastatic neoplastic disease was noted in a young adult female. Access to a diet rich in animal proteins was suggested by the presence of two cases of DISH. Dental disease was noted to be average for most conditions with the exception of calculus and periodontal disease, which was of a high rate, characteristic of poor oral hygiene. No evidence of surgical intervention was recorded.

## **3.2 Part 2: The Disarticulated Assemblage**

### *3.2.1 Methods and Process*

The disarticulated assemblage was analysed macroscopically and recorded using a Microsoft Access database, which can be found on the CD-Rom enclosed. Each element recorded was given a unique identification number and recorded by context. In each instance, the identification, side and portion of the bone was noted, along with completeness, taphonomy and observable joint surfaces. Any metrics that would provide an estimation of sex or of stature were taken where possible. The pelvic or skull bones were also analysed for sexually dimorphic traits where preservation allowed, using the criteria set out by Buikstra and Ubelaker (1994). Age determination was carried out using epiphyseal fusion, analysis of the pubic symphysis and of the auricular surface, where appropriate, and classified according to Brookes and Suchey (1990) and Lovejoy *et al.* (1985). Grading of dental attrition was also used as a supplementary age assessment technique using the Miles method (1963) where dentition sets were complete enough to allow fair observation. Age of sub-adults was assessed using both dental development (Smith 1991) and eruption (Ubelaker 1989) as well as long bone lengths (Schaefer *et al.* 2009) and epiphyseal fusion (Scheuer & Black 2004). The same methods of assessment were applied to

the disarticulated as to the articulated assemblage so that fair comparisons could be made between the two samples.

The minimum number of individuals (MNI) represented by the assemblage was calculated according to the number of repeated elements or parts of elements in tandem with observations of age at death according to development.

### 3.2.2 *Observations*

A total number of 207 bone fragments and 2 loose teeth were recovered as disarticulated elements from 29 contexts. Some contexts appear to have contained discrete anatomical regions, such as foot or arm. It was not possible to re-associate any skeletal elements that were recovered from separate contexts. The majority of the bone present was observed to be of 'good' condition (N = 168), or 'fair' condition (N = 36), allowing elements presenting the epiphyseal areas of bone to be assessed for age, fused epiphyses being classified as 'adult' and unfused as 'subadult'.

### 3.2.3 *Results*

A total of 85 skeletal fragments were recorded as 'adult' according to observations of epiphyseal fusion and a further 31 were classified as 'subadult'. A total of 25 elements were unobservable for age. Some elements were present that allowed for a more specific estimation of age at death to be made. One pubic symphysis (Bone ID No. 13) was present which was classified as an 'Old Adult'. Four elements were clearly neonate by their small size and stage of development. Three of these elements were contained in context 084, recovered from discrete area in the grave fill of SK083, an old male adult. The femur (159), right radius (160) and unisided fibula (161) present in this context were all found to be between 38 and 40 weeks at death by metric analysis and are, therefore, likely to represent one individual. Similarly a right humerus (5), right ulna (7) and a right scapula (6) present in context 038 were all subadult. Metric analysis of the humerus and ulna length both suggested an age of 10 years whereas the glenoid length scapula indicated this element may have belonged to a 12 year old, although this particular metric test is based upon a very small reference population and is probably not entirely accurate. It is likely, therefore, that these elements may also belong to one juvenile.

The number of individuals identified by age and the number of repeated skeletal elements or parts by context is presented below in Table 8. Assuming contexts represent discrete deposition of elements from different individuals, the disarticulated assemblage was found to contain a minimum of 35 individuals, 22 adults, 8 subadults, 2 neonates and 3 individuals that could not be assigned to either 'adult' or 'subadult' categories. However, it is not possible to categorically demonstrate that the remains recovered from discrete contexts in actual fact represent different individuals. It is possible through several different episodes of post-depositional truncation and disturbance that one set of remains could be dispersed in several contexts about the site. Therefore, it is probably more cautious that the minimum number of individuals be estimated on the disarticulated assemblage as a whole. On this basis, there were at least seven



individuals represented by the disarticulated remains; 4 adults, 1 neonate, 1 juvenile and 1 other subadult.

Three elements amongst the disarticulated remains were noted to exhibit pathology. Two rib fragments (99 and 100) with woven bone periostitic lesions were present in context 135 and one 3<sup>rd</sup> cuneiform (147) was observed with an enthesophyte on its superior side, probably relating to a soft tissue trauma in the foot, from context 51.

<b>Context</b>	<b>Adults</b>	<b>Subadults</b>	<b>Unobservable</b>	<b>Neonate</b>	<b>Total</b>
33	1	0	0	0	<b>1</b>
37	1	0	0	0	<b>1</b>
38	2	2	0	0	<b>4</b>
47	0	0	1	0	<b>1</b>
50	1	0	0	0	<b>1</b>
51	1	0	0	0	<b>1</b>
70	1	0	0	0	<b>1</b>
76	1	0	0	0	<b>1</b>
84	0	0	0	1	<b>1</b>
89	1	0	0	0	<b>1</b>
95	1	0	0	0	<b>1</b>
102	1	0	0	0	<b>1</b>
110	1	0	0	0	<b>1</b>
116	1	0	0	1	<b>2</b>
120	1	0	0	0	<b>1</b>
					Cont.
Cont.					
129	0	1	0	0	<b>1</b>
135	0	1	0	0	<b>1</b>

142	1	0	0	0	1
145	0	0	1	0	1
153	1	0	0	0	1
158	1	0	0	0	1
175	0	0	1	0	1
190	1	1	0	0	2
196	0	1	0	0	1
198	1	0	0	0	1
205	2	0	0	0	2
213	0	1	0	0	1
221	1	0	0	0	1
237	0	1	0	0	1
<b>Total</b>	<b>22</b>	<b>8</b>	<b>3</b>	<b>2</b>	<b>35</b>

**Table 8:** Summary of the MNI by context

### 3.2.4 Discussion

Analysis of the disarticulated skeletal material revealed the remains of at least 7 individuals based upon assessment of the whole assemblage. By context, the remains of least 35 individuals were recovered. Given that skeletal remains are likely to have been scattered across site due to post-depositional disturbance but that some elements have clearly been recovered as articulated remains, a realistic estimate probably lies somewhere between the two figures. The majority of the remains were adult, though a significant quantity of subadult material was present including the remains of neonates. This confirms that the original assemblage may have contained more subadults and neonates, which appear to be under-represented amongst the articulated assemblage.

## 4. Conclusion: Roman Life at The Hoplands, Sleaford

Osteological analysis of the inhumated remains from The Hoplands has given a unique insight into the health and lifestyle of the Roman population inhabiting Old Sleaford as well providing an informed understanding into contemporary funerary rites. Fifty-three graves were excavated that were aligned on an East-West axis in ground that appears to have been re-allocated

agricultural land, a common practice at sites of Roman urban and small town settlements (Cleary 2000: 129). None of the graves excavated contained the remains of individuals who had been interred in a prone position nor was there any evidence of decapitation. No ostentatious or conspicuous grave goods were recorded and interment seems to have been a very uniform practice for all ages and sexes, including some neonates. Thus, there is little evidence for what would be considered 'pagan' or 'highly Romanized' funerary ritual and it may be that the rites were predominantly Christian. Little evidence of inter-cutting between graves was recorded and graves are roughly aligned in NW-SE rows, indicating that the cemetery was formally managed. Tumble of skeletal elements, especially around the torso area, was noted in many burials and corroborates the physical evidence of coffin burial.

The osteological data reveals that amongst the adult population, joint disease was commonplace, especially in middle adult males, suggesting a lifestyle for this group that placed great stresses on the spine. Extra-spinal joint disease was also common in the hands, shoulders and hips, suggestive of intense manual labour or physical activity. Fractures present in several long bones, in contrast to the Anglo-Saxon rural population at Littleport, indicate an increased exposure of this population to accidents. A higher rate of rib fractures may also support such an interpretation and the presence of repeated rib trauma to one individual could suggest inter-personal violence. Rates of chest infections and maxillary sinusitis were also higher than amongst the Anglo-Saxon rural population, so the population at The Hoplands may have lived in damper or smokier conditions, possibly involving more frequent inter-personal contact. Also, since no cases were recorded at Littleport, the two cases of DISH observed may indicate a diet richer in animal proteins for some individuals at The Hoplands. Observations of dental disease suggested that rates of caries, abscesses and ante-mortem loss were average for a Roman population whilst calculus and periodontal disease were higher, associated with poorer oral hygiene. General patterns of dental disease, trauma and joint disease at The Hoplands mirrored those at Ancaster, a neighbouring Roman settlement, as well as other Roman populations in the region, although rates of inflammation and metabolic disease appear to be higher. Additionally, a high rate of cribra orbitalia and dental enamel hypoplasia suggests that a significant proportion of the individuals were exposed to periods of physiological stress and possibly bouts of febrile illness during growth. Rib lesions amongst the subadults denote that some children at The Hoplands suffered severe chest infections. One young child also presented with rickets. Fractures amongst subadults, however, were not observed.

Overall, individuals from The Hoplands were at greatest risk from joint disease and metabolic disorders (i.e. cribra orbitalia relating to hemolytic and megaloblastic anaemia) similar to the Fenland rural Anglo-Saxon population. This is in contrast to the relatively higher levels of inflammation and trauma seen in the urban post-medieval assemblage, so in this sense, the assemblage could be understood to be more rural. However, a more detailed analysis suggests that there were striking differences in the types of trauma and infections between the Hoplands assemblage and that of the rural Anglo-Saxon population. In addition, these patterns were also observed in some local Roman urban populations. It can, therefore, be inferred from the skeletal

evidence that the population for its time was actually more 'urban' but that the impact of this lifestyle upon the health of individuals at The Hoplands settlement was still quite reduced in terms of trauma and inflammation compared to more modern urban areas. It is clear that further discussion of the skeletal data within the context of settlement analysis would clarify the relevance of definitions of 'urban' and 'rural' in the Roman period.

It is clear that the palaeopathological evidence observed in the skeletal remains reflects, at least in part, the varying degrees of exposure to diseases an individual faced in Roman Sleaford, according to its physical surroundings as mediated through a range of biocultural determinants. The age, sex and health status of an individual are mutually inclusive factors in lifestyle and their influence emphasises the role the individual plays in the striving of a population to adapt to the unique set of circumstances posed by local environments in terms of, for example, access to adequate food and water resources , occupation and trade and health care. Osteological data provides a unique insight into the bio-social aspects of how people in the past adapted to their local surroundings. It is hoped that the integration of the skeletal data presented here with archaeological information already established will enable a better understanding of life in Sleaford during the Roman period.

## **5. Future Recommendations**

Further specialist analysis is recommended to enhance the data currently recorded for the human remains:

- ❑ Radiographic analysis of skeletal elements that exhibit fractures
- ❑ Radiographic analysis to record the true prevalence of osteoporosis
- ❑ Stable isotope analysis of the dentition to establish the origins of the individuals
- ❑ Stable isotope analysis to identify diet and any correlating patterns with age and sex or the presence of DISH
- ❑ Radiocarbon dating of the burials to confirm the date of the assemblage

## **6. Acknowledgements**

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## THE ARCHIVE

Type	No	Type	No
Skeleton Recording Form A	54	Skeleton Recording Form L	1
Skeleton Recording Form B	44	Skeleton Recording Form P	10
Skeleton Recording Form D	43	Skeleton Recording Form Q	12
Skeleton Recording Form E	40	Skeleton Recording Form R	10
Skeleton Recording Form F	1	Skeleton Recording Form V	7
Skeleton Recording Form G	5	Skeleton Recording Form W	34
Skeleton Recording Form H	43	Articulated Inhumated Skeletons Db	1

Skeleton Recording Form I	43	Disarticulated Inhumated Skeletons Db	1
Skeleton Recording Form J	36		
Skeleton Recording Form K	37		

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## Appendix 5

### GLOSSARY

<b>Alluvium</b>	Deposits laid down by water. Marine alluvium is deposited by the sea, and fresh water alluvium is laid down by rivers and in lakes.
<b>Anglo-Saxon</b>	Pertaining to the period when Britain was occupied by peoples from northern Germany, Denmark and adjacent areas. The period dates from approximately AD 450-1066.
<b>Bronze Age</b>	A period characterised by the introduction of bronze into the country for tools, between 2250 and 800 BC.
<b>Context</b>	An archaeological context represents a distinct archaeological event or process. For example, the action of digging a pit creates a context (the cut) as does the process of its subsequent backfill (the fill). Each context encountered during an archaeological investigation is allocated a unique number by the archaeologist and a record sheet detailing the description and interpretation of the context (the context sheet) is created and placed in the site archive. Context numbers are identified within the report text by brackets, e.g. [004].
<b>Cropmark</b>	A mark that is produced by the effect of underlying archaeological or geological features influencing the growth of a particular crop.
<b>Cut</b>	A cut refers to the physical action of digging a posthole, pit, ditch, foundation trench, etc. Once the fills of these features are removed during an archaeological investigation the original 'cut' is therefore exposed and subsequently recorded.
<b>Fill</b>	Once a feature has been dug it begins to silt up (either slowly or rapidly) or it can be back-filled manually. The soil(s) that become contained by the 'cut' are referred to as its fill(s).
<b>Geophysical Survey</b>	Essentially non-invasive methods of examining below the ground surface by measuring deviations in the physical properties and characteristics of the earth. Techniques include magnetometry and resistivity survey.
<b>Iron Age</b>	A period characterised by the introduction of Iron into the country for tools, between 800 BC and AD 50.
<b>Layer</b>	A layer is a term used to describe an accumulation of soil or other material that is not contained within a cut.
<b>Medieval</b>	The Middle Ages, dating from approximately AD 1066-1500.
<b>Mesolithic</b>	The 'Middle Stone Age' period, part of the prehistoric era, dating from approximately 11000 - 4500 BC.
<b>Natural</b>	Undisturbed deposit(s) of soil or rock which have accumulated without the influence of human activity
<b>Neolithic</b>	The 'New Stone Age' period, part of the prehistoric era, dating from approximately 4500 - 2250 BC.
<b>Palaeolithic</b>	The 'Old Stone Age' period, part of the prehistoric era, dating from approximately 500000 - 11000 BC in Britain.
<b>Post-medieval</b>	The period following the Middle Ages, dating from approximately AD 1500-1800.
<b>Prehistoric</b>	The period of human history prior to the introduction of writing. In Britain the prehistoric period lasts from the first evidence of human occupation about 500,000 BC, until the Roman invasion in the middle of the 1st century AD.
<b>Romano-British</b>	Pertaining to the period dating from AD 43-410 when the Romans occupied Britain.
<b>Saxon</b>	Pertaining to the period dating from AD 410-1066 when England was largely settled by tribes from northern Germany
<b>Transformed</b>	Soil deposits that have been changed. The agencies of such changes include natural processes, such as fluctuating water tables, worm or root action, and human activities such as gardening or agriculture. This transformation process serves to homogenise soil, erasing evidence of layering or features.



## Appendix 6

### THE ARCHIVE

The archive consists of:

272	Context records
5	Photographic record sheet
1	Section record sheet
3	Plan record sheet
28	Daily record sheet
1	Levels sheet
56	Sheets of scale drawings
1	Stratigraphic matrix

All primary records are currently kept at:

Archaeological Project Services  
The Old School  
Cameron Street  
Heckington  
Sleaford  
Lincolnshire  
NG34 9RW

The ultimate destination of the project archive is:

The Collection  
Art and Archaeology in Lincolnshire  
Danes Terrace  
Lincoln  
LN2 1LP

Accession Number: LCNCC:2009.9

Archaeological Project Services Site Code: HBCS09

The discussion and comments provided in this report are based on the archaeology revealed during the site investigations. Other archaeological finds and features may exist on the development site but away from the areas exposed during the course of this fieldwork. *Archaeological Project Services* cannot confirm that those areas unexposed are free from archaeology nor that any archaeology present there is of a similar character to that revealed during the current investigation.

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