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PRE-CONSTRUCT ARCHAEOLOGY

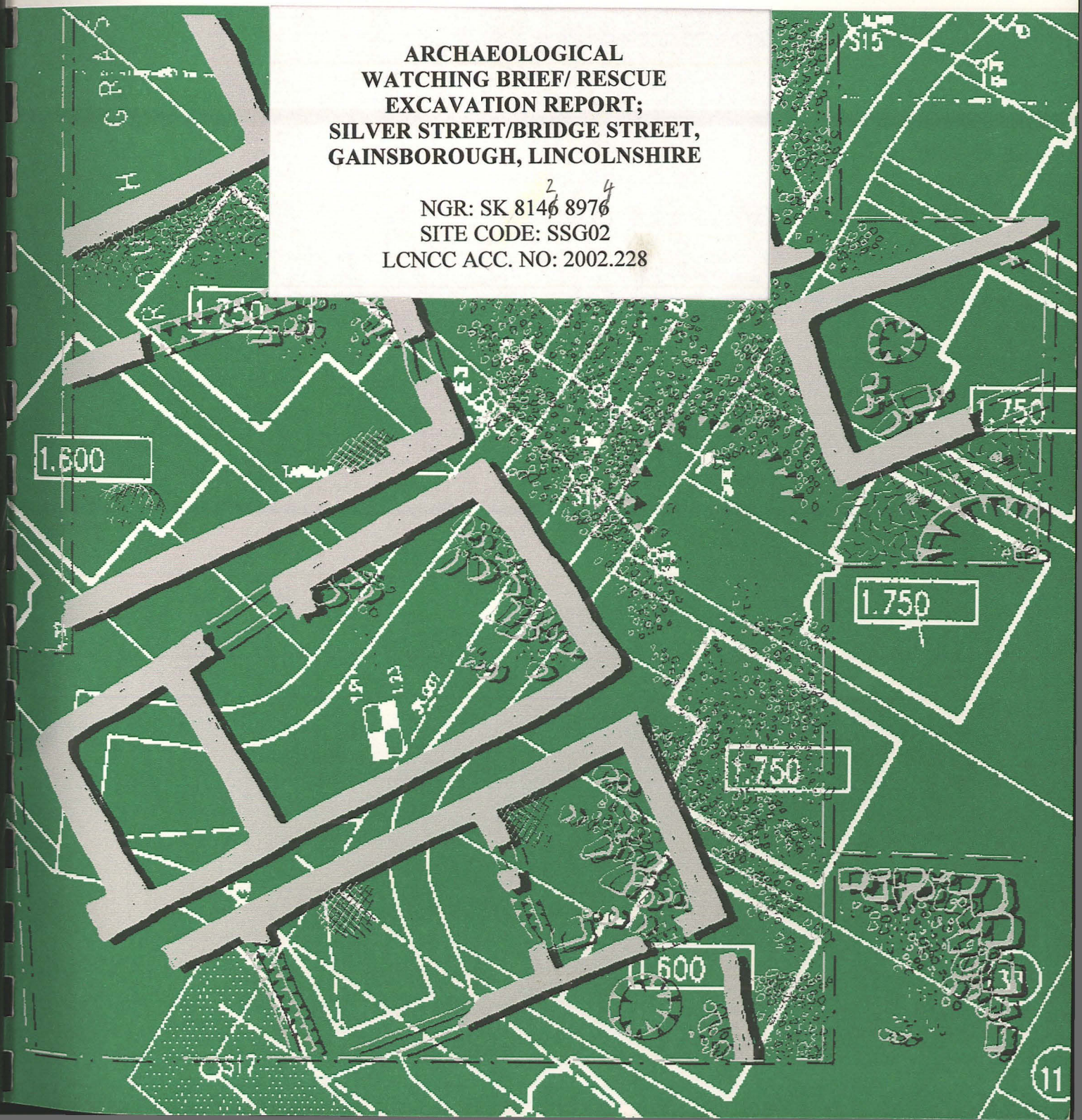
LINCOLN

ARCHAEOLOGICAL WATCHING BRIEF/ RESCUE EXCAVATION REPORT; SILVER STREET/BRIDGE STREET, GAINSBOROUGH, LINCOLNSHIRE

NGR: SK 8146 8976

SITE CODE: SSG02

LCNCC ACC. NO: 2002.228



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Report prepared for
Lincolnshire County Council Highways Division
by Chris Clay
September 2002

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- *An emergency watching brief/rescue excavation was carried out during the excavation of tree pits at the junction of Bridge Street and Silver Street in Gainsborough. The Senior Built Environment Officer of Lincolnshire County Council requested the programme of works when workmen discovered disarticulated human remains.*

- *A single fully articulated human skeleton was excavated at the base of one tree pit, and the disarticulated remains of approximately five further individuals were also retained. The remains of three further inhumations were exposed but were left in situ.*

- *The human remains are believed to belong to the formal graveyard of a medieval chapel that formerly stood on the east bank of the River Trent, and gave its name to Chapel Staithe. A single sherd of pottery associated with the burials suggests a broadly 12th century date.*

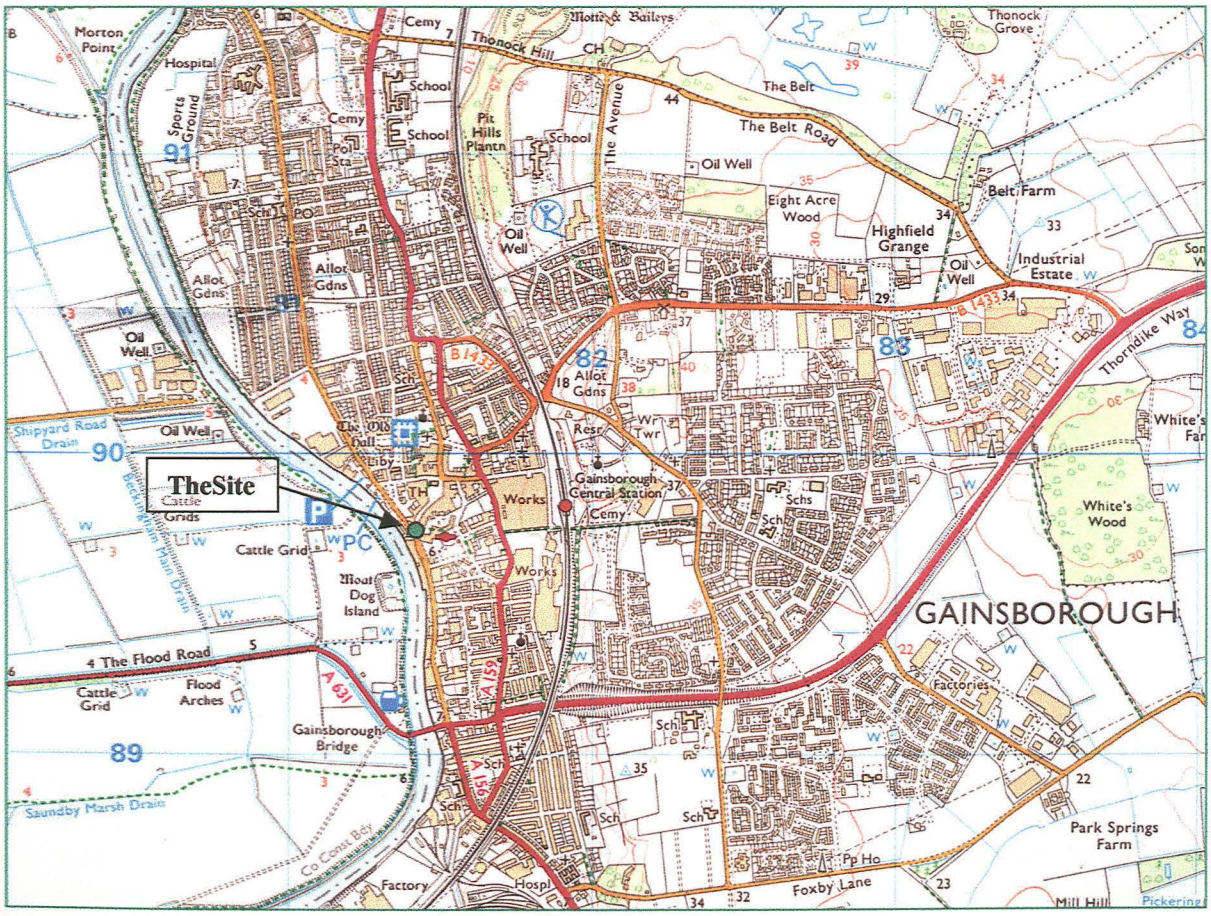

Fig.1: General site location (scale 1:25,000)
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1.0 Introduction

Pre-Construct Archaeology (Lincoln) was commissioned by Lincolnshire County Council Highways Division to undertake a programme of rescue excavation and archaeological monitoring during the excavation of tree pits at the junction of Bridge Street and Silver Street, Gainsborough, Lincolnshire.

The works were undertaken at the request of the Senior Built Environment Officer for Lincolnshire County Council. The fieldwork and reporting methodologies comply with the recommendations of *Archaeology & Planning: Planning Policy Guidance Note 16*, (Department of the Environment, 1990), *Management of Archaeological Projects* (English Heritage, 1991), *Standards and guidance for archaeological watching briefs*, (IFA, 1994), and the Lincolnshire County Council document *Lincolnshire Archaeological Handbook: a manual of archaeological practice* (LCC, 1998).

Copies of this report have been deposited with the commissioning body and the County Sites and Monuments Record for Lincolnshire. Reports will also be deposited at the City and County Museum, Lincoln, along with an ordered project archive for long-term storage and curation.

2.0 Site location and description

Gainsborough is in the administrative district of West Lindsey, on the Lincolnshire /Nottinghamshire border, approximately 23km north-west of Lincoln. The site comprises a series of circular tree pits on either side of Bridge Street, at its junction with Silver Street and Chapel Staithe. This is on the west side of the town, adjacent to the River Trent. Bridge Street runs broadly north to south, following the line of the river, and Silver Street is a pedestrianised area, branching north-east towards the market square. Chapel Staithe runs westwards from Bridge Street to the river.

The local geology consists of river terrace deposits of sand and gravel, with Mercia mudstone below and to the east (British Geological Survey, 1967).

The central National Grid Reference is SK 8146 8976.

3.0 Planning background

No archaeological condition was attached to this development, which formed part of an urban refurbishment scheme by Lincolnshire County and West Lindsey District Council. However, during the excavation of one of the tree pits on the east side of Bridge Street, disarticulated human remains were exposed. At this point, excavation was halted, and the Senior Built Environment Officer for Lincolnshire County Council was informed. Pre-Construct Archaeology (Lincoln) were then commissioned to carry out the archaeological monitoring on all subsequent groundworks, in order to minimise the damage to further human remains and record those that could not be avoided by the development.

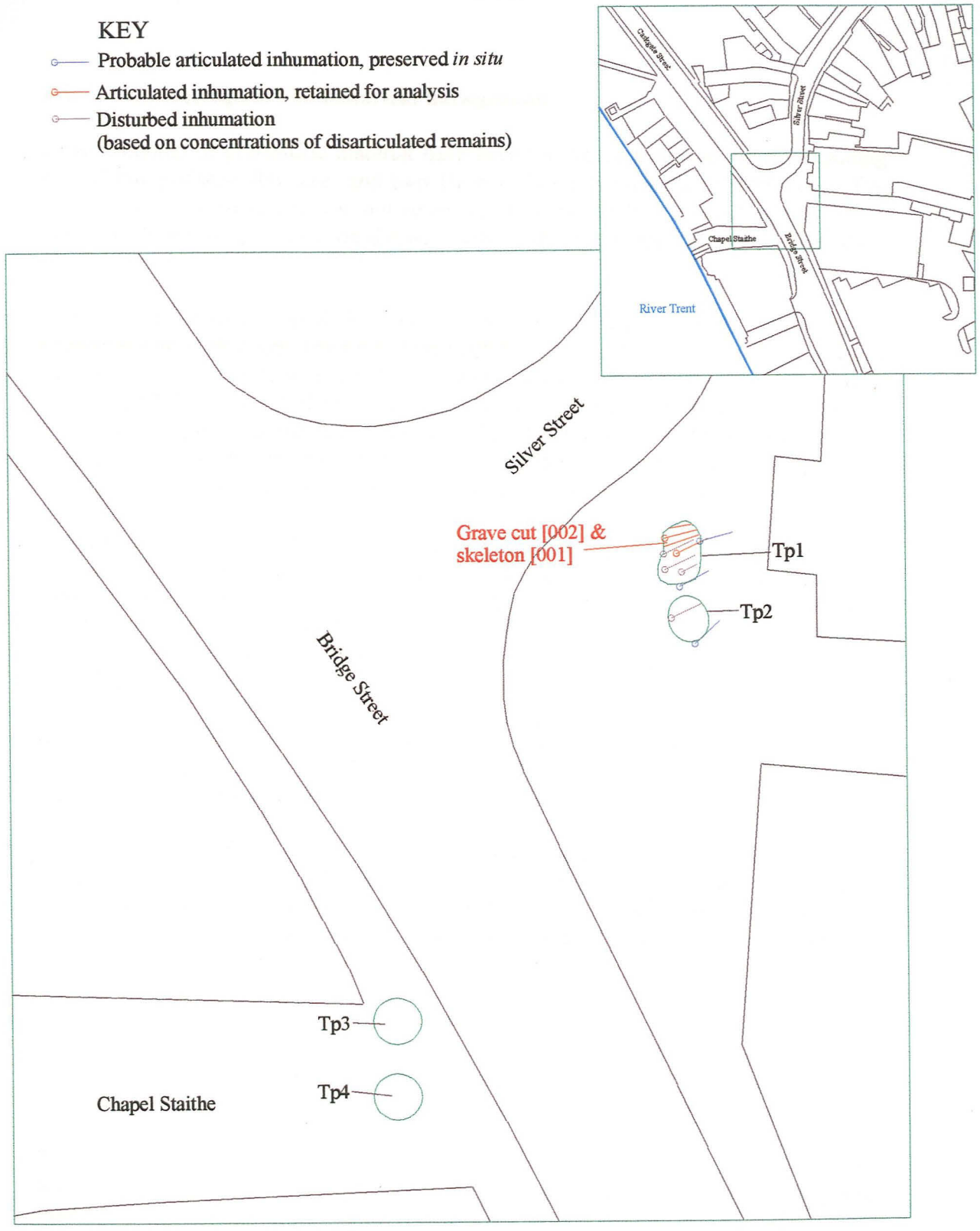


Fig. 2: Site location, showing the position of monitored tree pits in green, and the location of human remains (see key above). Main scale 1:250, inset 1:2,500.

4.0 Archaeological and historical background

Small amounts of prehistoric material have been recovered from the parish, including a Neolithic polished flint axe, and two Bronze Age socketed axes (SMR data). The exact location of these items is not recorded. The Nottinghamshire SMR also lists a scatter of Neolithic flint tools on the west side of the Trent, approximately 100m from the current site.

The Romano-British period is well represented in the parish. Excavations at Gainsborough Golf Club, Thonock, immediately to the north of the town, revealed a substantial settlement (Allen, 2002). A pottery kiln is known from east of the town, and the SMR for Lincolnshire records two unprovenanced Romano-British coins of 3rd century AD date. It has been suggested that the 'borough' suffix in Gainsborough pertains to a possible Romano-British fort controlling the River Trent at this point (Sawyer, 1998), although there is no archaeological evidence to support this.

Gainsborough was certainly occupied by the Later Saxon period, as it was here in 868 that Alfred the Great married Ealswitha, the daughter of the chief of the local Gaina tribe, that gives the town its name (Mee, 1970), i.e. 'the burh (fort or stronghold) of the Gaina'. The SMR also lists two coins belonging to this period: a styca of Aethelred II of Northumbria (840-8), and a lunette of Aethelred I of Wessex (866-871) (Blackburn, 1993).

By the time of the Domesday Survey, Gainsborough and the surrounding lands had passed into the hands of Geoffrey of la Guerche, a Norman knight who came to England with William in 1066 (Morgan & Thorne, 1986).

A major phase of settlement expansion began in the early 13th century when Gainsborough was re-established as a planned town, to replace the Late Anglo-Saxon trading centre at Torksey (Everson, Taylor & Dunn, 1991). However, very little of the medieval fabric of the town survives, other than the Old Hall, which was established in the first half of the 15th century (Pevsner & Harris, 1989).

The town saw much activity during the Civil War, despite an initial attempt to remain neutral. However, its strategic importance meant that it changed hands on a number of occasions. In 1643 a cavalry engagement took place to the south of the town, with victory going to the Parliamentarian force commanded by Cromwell (Allen, 2002).

The town continued to prosper throughout the medieval and post-medieval periods, and in the 17th and 18th centuries was a major port for the trans-shipment of goods from sea going to river going vessels (Pevsner & Harris, 1989).

The Sites and Monuments Record lists three separate discoveries of human remains in Gainsborough. In 1875, three skeletons were found together, each in stone coffins (SMR ref. 52054). Although no dating evidence is referenced in association with these skeletons, they were believed to be Anglo-Saxon in date. The exact provenance of these finds is not recorded.

Two further undated skeletons were found c. 1.0m below the pavement of Silver

Street (SMR ref. 52049), and a single skeleton was exposed at the junction of Bright Street and Lord Street (SMR ref. 52055), c.150m north of the current site.

5.0 Methodology

The groundworks entailed the excavation of seven tree pits, of which four were monitored, two on the Silver Street/Bridge Street junction, and two on the junction of Bridge Street and Chapel Staithe. Each of these pits was excavated to accommodate a circular concrete ring, 1.9m in diameter and 2.0m deep. The tree would then be placed within this ring and the pit backfilled. The groundworks were carried out using a JCB fiited with a 0.8m wide toothed bucket.

Following the initial discovery of disarticulated human remains, a watching brief methodology was established in consultation with the Senior Built Environment Officer for Lincolnshire County Council. This methodology allowed for the machine excavation of the upper road surfaces and associated layers. Subsequent machine excavation was carefully monitored to establish the presence/absence of archaeologically significant deposits; in particular, articulated human remains. Where possible, the tree pits would be moved to preserve the remains *in situ*.

Any human remains that were deemed to be at risk from the development were fully excavated and recorded in a relatively controlled environment, and were retained for further study. Records of archaeological deposits were made using standard watching brief record sheets and skeleton record sheets, and a colour photographic record was maintained throughout, selected frames from which have been included in this report.

6.0 Results

The first tree pit to be monitored (hereafter TP1) was located in Silver Street, on the east side of Bridge Street. It was this pit that produced the majority of the disarticulated human bone, and which led to the undertaking of a programme of archaeological monitoring.

The uppermost deposits in TP1 were a series of concrete surfaces and layers of hardcore bedding, (005-008), indicating phases of resurfacing of Silver Street, which extended to approximately 0.5m below the modern ground surface. Beneath these was a 0.4m deep loose dark brown sand, (004). It was this deposit that produced large quantities of disarticulated human bone. The cause of much of the disturbance was the presence of several modern services that ran through the pit, with further disturbance resulting from machine excavation of the tree pit itself.

Detailed analysis of the disarticulated material was carried out, in order to estimate the number of individuals represented, and, where possible, to estimate age at death and gender, and to observe any evidence of pathological disorders (see Appendix 2). The analysis of this material was fraught with difficulties caused by the extensive disturbance of the human remains. For example, there was no stratigraphic information available to allow the identification of discreet bone assemblages representing each individual. Nor was it possible to observe grave cuts for these

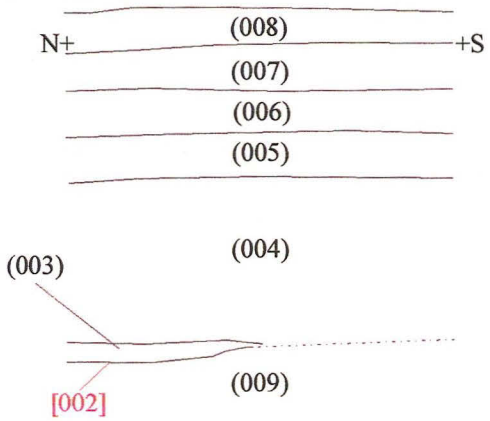
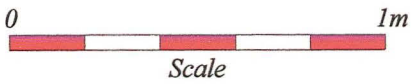


Fig.3: West facing section in Tree Pit 1, over grave cut [002] (scale 1:20)



interred remains.

The initial inspection of the remains rapidly isolated a group of much smaller bones, consisting of part of both arms both legs, as well as most of the pelvis and cranium. These bones represent the remains of a small child, aged 5-6 years.

The cranial remains of the adult bones were most useful for assessing the number of individuals represented, and suggested a minimum of three adult burials. The other bones recovered, including ribs, vertebrae, and fragments of long bones offer less interpretive potential. The only analysis of this material that could be carried out was to identify individual bones and to observe elements of pathology indicating joint disease, that was common on the recovered vertebrae. Very few of the bones exhibited any gender specific traits.

An almost complete, though fragmentary, skull was included in the bone assemblage, and was interpreted as being from a male, aged 45-60 years at the time of death. The only pathology noted was severe dental disease consistent with the age of the individual.

Another individual was represented by part of a mandible, which also exhibited considerable dental disease, and was estimated to have been 30-44 years at death, and was probably female, although the small quantity of material available could not confirm this in absolute terms.

Another almost complete and largely intact cranium and mandible were examined, and belonged to an adult male, who died aged 48-60. The dental health of this individual was relatively good, with only small amounts of calculus (mineralized plaque) visible.

Deposit (004) yielded a single sherd of Lincoln Glazed Ware pottery, which dates between the mid 12th and mid 13th century (Young, Appendix 2).

Approximately 1m below the modern ground surface, on the north side of TP1, it was possible to identify the edge of a grave, [002], which was on an east-west alignment, cut through a pale grey natural sand, (009). The grave contained an almost complete inhumation, although a concrete pipe running north to south had truncated the head, leaving only the mandible and fragments of skull. It was possible to establish that the skeleton was that of an adult male, around 5' 3" tall, aged approximately 25-40 years at time of death. The good preservation of the skeleton made it possible to determine several elements of pathology on the bones: joint disease was evident on both knees (particularly the right), and to a lesser extent in the wrists, evidencing a hard working life. The man had also suffered four rib fractures during his life, all of which had healed years before death.

Evidence for two further inhumations was exposed in the west facing section of TP1. Two adult femurs were disturbed during machine excavation and retained for analysis. Cleaning of the pit section exposed the proximal ends of two tibia, suggesting the articulated remains of the lower limbs associated with the two femurs extended eastwards beyond TP1. The two tibia were seen to be resting on an intact adult skull, representing another, possibly complete, inhumation extending to the east.

It was possible to preserve these remains *in situ*. Fragments of bone exposed in the north facing section of the pit indictaed a third burial, which was also preserved in situ.

A second tree pit was monitored (TP2), less than 1m to the south of TP1. The stratigraphic sequence in this pit was identical to that exposed in TP1, consisting of a series of former surfaces of Silver Street (005-008), overlying a 0.4m deep layer of dark brown sand, (004), that sealed natural sand, (009). An articulated human skeleton was observed in the south side of the tree pit, contained within deposit (004). However, it was possible to slightly realign the pit and preserve this inhumation *in situ*. (004) also yielded small quantities of disarticulated bone, consisting of eight fragments of lower leg bones, all believed to be from the same individual.

Two further tree pits were monitored on the opposite side of Bridge Street, at the junction with Chapel Staithe. In TP3, after the removal of the concrete road surface, a dark brown sand deposit, (010) was exposed, extending to the limit of excavation. This deposit contained large amounts of brick and tile fragments, as well as charcoal flecks, fragments of clay tobacco pipe, and 19th century pottery. This was interpreted as the backfilling of cellars associated with former buildings. No human remains were exposed in this pit.

TP4 also revealed backfill deposit (010). In this pit it was sealed by two layers of chalk rubble (011) and (012). Both of these layers were clean and devoid of other material, suggesting recent deposition, associated with the block paving surface of Chapel Staithe. Again, there was no evidence of human remains from this pit.

7.0 Discussion and conclusion

The programme of monitoring was requested due to the presence of human remains. These were exposed in pits TP1 and TP2, both on the north side of Bridge Street. In total, six articulated skeletons were exposed, and the disarticulated remains suggested that as many as nine individuals were represented, six of which were removed and three of which were preserved in situ. The only dating evidence for these burials derives from a single sherd of 12th/13th century pottery from deposit (004). This is a disturbed layer, which also yielded numerous fragments of disarticulated human bone. This suggests that the deposition of the pottery and the human bone was broadly contemporary. However, one pottery sherd is not necessarily reliable.

The archaeological investigation of skeleton [001] showed that it had been laid out with care in a clearly defined grave cut, a typical Christian burial, being aligned east to west in an extended supine posture, with the head facing west. The close association of other articulated east-west inhumations strongly suggests that they are part of the same formal burial area. The fact that all the inhumations were not at the same depth is an indication of an extended period of usage for the site.

How far this cemetery extends beyond the area of investigation is uncertain. Although no evidence was discovered in the tree pits on the south side of Bridge Street, it is possible that cellaring associated with 18th/19th century warehouses and other buildings along the river frontage has destroyed any trace of human burials that may

have existed in this area. The cemetery does appear to have extended to the north of the burials exposed in TP1 and TP2. The County Sites and Monuments Record lists two skeletons cut into sand 3'6" (1.05m) beneath the pavement of Silver Street. This accords well with the depth of the skeleton [001], investigated in TP1. This was cut into natural sand, approximately 1m below the modern ground surface, strongly suggesting that the two finds are part of the same burial area. Another skeleton was found approximately 150m further north, although the depth at which it was exposed is unknown. It is possible that this is also part of the same cemetery, although this would indicate an extensive area of burials, and the possibility cannot be discounted that this is either an isolated burial, not associated with the cemetery, or an outlier of the main core of the burial area.

The presence of a potentially substantial cemetery would point to an associated church or chapel in the immediate vicinity. The antiquary John Leland visited Gainsborough in 1538, and noted two possible candidates:

> 'In the southern part of Gainsborough is an old stone chapel, where the townspeople say that many Danes were buried. In the same part of the town beside the Trent is a wooden chapel which has now been abandoned' (Chandler, 1993).

Chapel Staithe is likely to refer to one of these chapels, 'Staithe' being an Old English name meaning 'landing place' (Mills, 1993). Further evidence of this comes from a document of the late 16th century: in 1587, an inquiry was held to define whether an area known as 'Chappell Garth' was 'chantry land'. It was the opinion of the five witnesses that the chapel owned an area of land defined by the Trent to the west, Caskgate Street to the north, Silver Street to the east and Chapel Staithe to the south (Moor, 1904).

As to whether this refers to Leland's stone chapel, or the wooden one is uncertain. Leland's visit was several centuries after the suggested date of these burials. Moor (1904) suggests, without citeing evidence, that it is the stone chapel that was located here. However, according to Leland, this stone chapel had numerous 'Danish' burials, which, if taken at face value, this comment would tend to suggest a much earlier (Viking period?) establishment, and that it was the wooden chapel that was associated with the medieval burials that are the subject of this report.

8.0 Effectiveness of methodology

The fieldwork methodology employed involved an emergency programme of archaeological rescue excavation and monitoring, initiated by the discovery of disarticulated human remains. This is, by definition, a somewhat *ad hoc* approach. The large amounts of disarticulated human remains within TP1, are indicative of considerable disturbance in the area. Much of this was the result of previous services running through the tree pits, although the current phase of groundwork caused a limited degree of damage in the first tree pit prior to the commencement of the archaeological watching brief. However, in negotiation with the site staff, it was possible to slightly alter the position of the tree pits to maximise preservation *in situ*, and minimise the damage to the archaeological resource.

9.0 Acknowledgements

Pre-Construct Archaeology (Lincoln) would like to thank Lincolnshire County Council Highways Division for this commission. Thanks also go to Matthew Fairweather (Technical Services Group) and the groundworkers for co-operation during the monitoring programme.

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11.0 Site archive

The documentary and physical archive for the site is currently in the possession of Pre-Construct Archaeology. This will be deposited at Lincoln City and County Museum within six months. Access to the archive may be gained by quoting the global accession number 2002.

Plate 1: View of the development area, looking west. Tree Pits 1 and 2 are in the foreground with Tree Pits 3 and 4 behind the JCB.

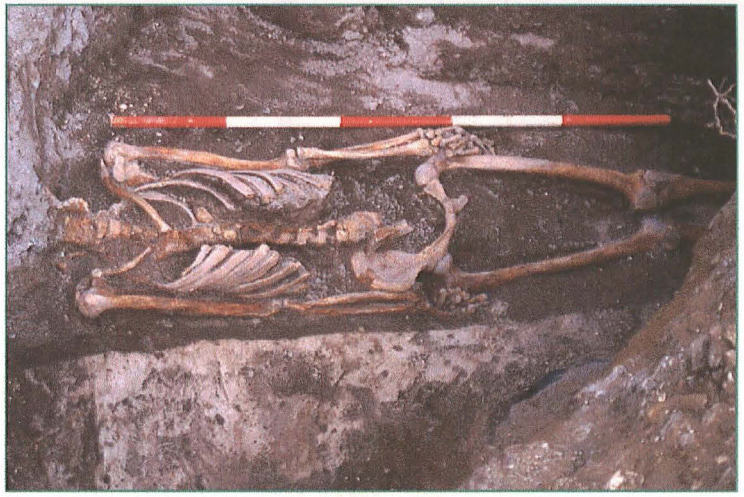

Plate 2: Skeleton [001], in the base of Tree Pit 1, looking north. Note the truncation of the skull by modern services.

Plate 3: Skull exposed in the west facing section of Tree Pit 1. The ends of two tibia can be seen resting on the top of the skull. Looking east.

Plate 4: Tree Pit 2, partially backfilled, looking south-east. The metre scale marks the position of an inhumation exposed in the section.

OSTEOLOGICAL ANALYSIS OF THE HUMAN REMAINS FROM EXCAVATIONS AT

BRIDGE STREET/SILVER STREET GAINSBOROUGH, LINCOLNSHIRE (SSG02)

AUGUST 2002

PREPARED FOR:	PREPARED BY:
Pre-Construct Archaeology Lincoln, 61 High Street, Newton on Tent, Lincoln, LN1 2JP	Mouli Start 16 Carr Road Walkley Sheffield S6 2WZ

1. INTRODUCTION

During the spring of 2002 building contractors digging tree pits at Gainsborough, Lincolnshire unexpectedly unearthed human remains. A rapid excavation to recover these bones was carried out by Pre-Construct Archaeology Lincolnshire (PCA Lincs.). At the time of writing it is not clear exactly what date or context these human remains came from, although preliminary investigations suggest that they come from a Medieval cemetery.

Jim Bonner, Senior Built Environment Officer with Lincolnshire County Council, then commissioned the author, through PCA Lincs., to undertake a limited programme of osteological work on these recovered human remains. This report is the result of these osteological investigations.

2. AIMS

Ideally a full osteological assessment should be made of any recovered human remains. However because these remains were not expected before the outset of building works, no contractor funding was available for this assessment. Therefore, Lincolnshire County Council gave me a specific set of limited osteological aims that were achievable within the budget and which would meet a minimum requirement for analysis. These were to provide:

1. a basic catalogue & archive of the remains
2. a minimum number of individuals (MNI) estimate
3. an assessment of demographics – age & sex
4. record & describe any obvious pathological disorders

This set of aims in fact goes a long way towards satisfying a full osteological brief of works. The significant aspects of analysis that have been omitted are: non-metric traits, detailed metric analysis and pathological investigations involving x-rays or photographic recording. Given that this is such a small sample of human remains, the validity of any non-metric analysis would be seriously questionable, and it could be argued that recording them would be recording only for recording's sake.

3. MATERIALS

A large box of human bones was received from PCA Lincs. by the author as detailed below:

Table 1: Catalogue of materials

Context		Description
001		5 plastic bags of bones clearly originating from one adult individual
004	Test pit 1	Several bags of mixed human remains originating from more than one individual including a complete skull & several complete or part mandibles
	Test pit 2	Single bag of feet & leg bones

4. METHODOLOGIES

Methodologies were tailored in order to meet the specific set of aims listed above in Section 2. These are described on an aim-by-aim basis.

4.1. MNI Estimate and Catalogue of Bones

A Minimum Number of Individuals (MNI) estimate is based on the highest number of an individual bony element present in a sample (Lyman 1994). For example, an individual person only ever has one right femur (thigh bone), so if a skeletal sample contains 20 right femurs, then the remains of at least 20 people are represented in that sample. In essence then an MNI is a glorified count of bones. Age-at-death and sex estimations are also used in an MNI. Obviously, an adult right femur will not come from the same individual as a left arm bone from a child of five or six.

The easiest way of approaching an MNI is to record every single identified bone into a spreadsheet. The creation of this spreadsheet also provides a complete catalogue of identified bones (Appendix 1), one of the specific aims of this report, and acts as part of the primary record of this skeletal collection. In order to facilitate this, a series of coding systems have been devised that identify which elements, or parts of elements, are present as well as any demographical, pathological or metric information.

4.1.1. Coding Systems and Spreadsheet

All of the coding systems employed for this report are presented as Appendix 2. A brief outline of each is given here.

Reference Number: Mandibles or crania provide far more information than a standard long bone, and therefore require more detailed recording. Any jaw or cranial fragment that could be used for age-at-death or sex estimations were assigned a reference number and recorded on a specially devised disarticulated recording form. Likewise, any pathological bony element was also assigned a reference number and again recorded on an individual recording form. These recording forms, like the catalogue of identified bones, forms part of the primary record of this analysis and they are therefore included as Appendix 3. In order to distinguish between reference numbers and context numbers, reference numbering started at 1000.

Element: Each bone is identified by a one or two letter code in order to speed up entry into the spreadsheet. For example, the letter F identifies a femur.

Side: Obviously it is important to record which side of the body a particular bone or bony fragment comes from. Most people have two femurs, but only one left and one right femur.

Completeness/Fusion: Codes were also used to indicate which portion of a bone was present. The state of union of a bone epiphysis, or the tripartite fusion and secondary ossification centres of the pelvis, is vital for ageing a bony element and therefore establishing a correct MNI. The completeness/fusion codes consist of three characters, the first (a letter) indicates which part of a bone is present, and the second (two numbers) indicate the state of fusion of the proximal and distal end of long bones, or tripartite and then secondary fusion centres of the pelvis.

For example, a whole adult femur is given the code A11, the 'A' describing that it is a complete bone, the '11' describing that both the proximal and distal ends of the bone are fully fused.

Age and Sex: These two codes describe the age-at-death and sex estimations made for each bony element.

Pathology: The final code used on the spreadsheet presents what type, if any, of pathological change has been seen on any particular element.

4.2. Age-at-Death

Table 2 below summarises the methods used to estimate age-at-death.

Table 2: Age-at-death estimation methods

Ageing Method:	References:
Pubic symphysis	Brooks & Suchey 1990
Auricular surface	Lovejoy *et al* 1985
Dental attrition	Miles 1962
Dental eruption	Smith 1991
Ectocranial suture closure	Meindl & Lovejoy 1985
Epiphyseal fusion	Schwartz 1995

The problems associated with assigning accurate age-at-death estimates, particularly for adults, are well known (Saunders 1992: Molleson and Cox 1993). In order to avoid introducing bias into the results produced by these problematic age-at-death estimation methods, broad age categories were used. When dealing with adult bones it is preferable to discuss age-at-death in terms of biological rather than chronological age. For example, two individuals who are both chronologically 60 years old may be vastly different in terms of their biological age with one possibly severely affected by osteoarthritis with very limited movement, and the other a fit and active adult regularly walking long distances. Therefore descriptive terms are used in general. However, since most osteological age-at-death estimation techniques present suggested chronological age ranges this convention is also followed in this report. The table below presents the age categories used during this analysis with both biological descriptive age categories and suggested chronological year ranges.

Table 3: Age categories

Age Category	Biological Age	Chronological Age
FE	foetal	9 - 39 weeks gestation
NE	neonate	birth-1 month
IN	infant	1 month-11 months
C1	younger child	1-6 years
C2	older child	7-12 years
JU	juvenile	13-17 years
YA	younger adult	18-25 years
PA	prime adult	26-45 years
OA	older adult	46+ years
SA	subadult	<18 years
AA	adult	18+ years

4.3. Sex Determination Methods

The determination of biological sex is based on the observation of morphological traits of the os coxa (pelvis) and cranium (skull). It is also possible to estimate sex using certain postcranial metric measurements, for example the length of the glenoid cavity of the scapula (shoulder blade). The table overleaf presents details of sex determination methods.

Table 4: Sex determination methods

Sex Determination Method	Reference
Morphological observation of the pelvis	Buikstra and Ubelaker 1994; Steele and Bramblett 1988
Morphological observation of the cranium	Buikstra and Ubelaker 1994; Steele and Bramblett 1988

Five categories of biological sex based on the combination of some or all of the techniques in Table 3 are used for this analysis. These are M (male); M? (probably male); ? (indeterminate); F? (probably female); F (female)

4.4. Palaeopathology

Of central importance to the study of pathological bones from human skeletons is thorough descriptive analysis (Ortner and Putschar 1984; Buikstra and Ubelaker 1994). As standard all pathological lesions, and morphological abnormalities of bones and teeth were described in detail using standard modern clinical terminology. Dental pathology is also recorded and scored after Brothwell (1981) and Lukacs (1989).

5. RESULTS AND DISCUSSION

This sample of human remains presented the author with a few problems, the largest being the lack of contextual data. The unexpected and rapid nature of the discovery of these remains, initially by building contractors not archaeologists, meant that it was not even known if these remains came from discreet grave cuts. A further problem within the large context 004 was how test pits 1 and 2 related to each other. If they were very close to each other, it is feasible that bones from both test pits might have originally come from one person. However, if the test pits were several metres apart, this is obviously not a likely scenario.

To compound the problem, this whole sample was a mixture of discreet securely identified individuals and disarticulated mixed up remains of several people. Quite obviously the whole approach to these different types of sample must be different. In the case of a complete individual, you have 206 bones known to all come from the same person in life and it is possible to see patterns of pathology throughout the skeleton. Secure age and sex estimates can be made, and it is possible to construct a biological 'biography' of a person in life from their bony remains. For a disarticulated sample you can only ever deal with a single bone and cannot identify individuals or their 'biographies'.

For this reason each context, and the two test pits within context 004, will be dealt with separately in this section of the report. Results will be presented for each and then discussed, and a summary of these will be presented in Section 6 at the end of the report.

5.1. CONTEXT 001

Inventory and condition: This context contained the remains of one adult individual. An entire post-cranial skeleton was present including all four limbs, hands and feet, shoulder and pelvic girdles. The only part of the skeleton missing was the head – no cranial or mandibular fragments were recovered. The bony articulations, matching pathological bony changes and consistency of results from ageing and sexing methods combine to give the definitive conclusion that context 001 is one articulated burial.

The only inconsistency was an extra right second metatarsal found within context 001. The most likely explanation of the inclusion of this extra foot bone with the remains of 001 is that it comes from an earlier burial cut into during the digging of context 001's grave. The inclusion of odd 'extra' bones from previous burials that have been cut into inadvertently while making grave cuts is a common occurrence in the past, particularly in crowded Medieval cemeteries (and one that still happens today more frequently than is comfortable to think about!).

The bones were well-preserved, most of them being complete, and cortical integrity was very good. It is a testament to the skill of the excavators that the vast majority of the tiny 'pebble-like' hand and feet bones are present.

Age-at-death estimate – prime adult (25-40): Fortunately the pelvis of this individual was very well preserved and it was possible to combine the results from both the pubic symphysis (the most accurate method for ageing adults) and the auricular surface. The left face of the pubic symphysis gave an age-at-death estimate of 22-35 (an 'older' Suchey Brooks phase III) while the right gave 26-45

('younger' Suchey Brooks phase IV). The right auricular surface gave an estimate of 30-39 years (Lovejoy phase 3-4). A sensible age-at-death estimate based on the combination of these results is 25 to about 40 years old.

Sex determination – M?: Observation of the morphological characteristic of the pelvis are the most reliable for determining biological sex (Steele and Bramblett, 1988). Fortunately a substantial part of the pelvis of context 001 survived. 4 traits were strongly male, 2 were probably male, 2 were probably female and 1 was strongly female. This combination of male and female observed morphological traits in the pelvis is a normal osteological finding, it is very rare to find a pelvis in which *all* traits are strongly either male or female – this is simply a result of a normal biological continuum. The combination of these observed traits in the pelvis context 001, bearing in mind the lack of a cranium to observe, suggests that context 001 was probably male. Metrical data taken from the post-cranial skeleton supports this.

Stature – 163.5cm (5'3"): Based on an average of the combined measurements of the femur and tibia (after Trotter 1970).

Pathology: This prime adult male suffered with *joint disease* at several sites in his body. The most severely affected joint was his *right knee*. All three bones making up the knee (femur, tibia and patella) were affected. The femoral and tibial joint surfaces were surrounded by osteophytic new bone growth resulting in a changed joint contour. The fibrocartilaginous medial meniscus that usually sits between the tibia and femur must have been destroyed in life because a large area of polished eburnation (where bone grinds against bone) is seen on the medial side of both joint surfaces. The medial side of the knee is usually the more affected even today by the wear and tear of activity.

The *left knee* of this individual is also affected by *joint disease*, in this case the area of eburnation, or polished bone, exists at the more unusual site of the posterior patella and patella surface of the femur. In this left knee the soft tissue structure damaged in life would have been the patella bursa, a fat pad that sits underneath the knee-cap that acts to prevent precisely the grinding bone-on-bone wear that this unfortunate individual has. The hips and ankles of this man in the prime of his life are unaffected by degenerative change. This level of degeneration in both of his knees is probably the legacy of a life far more active and mobile than a modern or privileged one. *Joint disease* was evident to mild degree in both wrist joints at the ulna-radial joints, although all other wrist bones were unaffected.

Four *rib fractures* were also recovered from the bones of individual 001. These are common injuries even today. All four are well healed and probably took place years before the death of this man.

5.2. Context 004: Test Pit 1

During the course of analysing this context and entering bones into the spreadsheet for MNI calculation and cataloguing purposes, it became apparent that 004 test pit 1 was probably the co-mingled remains of what were originally a few discreet burials. It quickly became obvious that one of the original people buried in this context was a child with small un-fused bones. These bones were easily identifiable as belonging together, coming from one child originally and easily separated from the adult bones.

However, other cases were more complicated. Two discreet part spines could be identified from various vertebrae that articulated together, one of these 'spines'

showed considerably more degenerative joint disease than the other. A left and a right humerus were of such similar morphology and dimensions that they must have originated from the same individual. It was frustrating to have a relatively small disarticulated sample which was probably the combination of discrete articulated burials originally and not be able to 're-articulate' them. Without direct articulations or clear developmental inconsistencies (as was the case for the child's bones) it simply is not possible to reassemble separate skeletons from lots of co-mingled bones.

5.2.1. MNI

The cranial remains from 004 test pit 1 proved to be the most useful for establishing both the demographic identities of the individuals whose remains form this context, and the MNI estimate. As described in Section 4.1.1 a reference number was given to each cranial fragment with useful demographic features. In practise this meant either whole crania, or parts of jaws with dentition in place. Table 5 below presents the raw demographic identities of the reference numbered cranial fragments.

Table 5: Context 004, test pit 1: MNI based on cranial remains

Reference #	Element description	Age category	Sex
1000	Cranial fragments including left maxilla & dentition + post-cranial fragments from most areas of the skeleton	C1	-
1001*	Largely complete but fragmentary cranium including maxilla & dentition	OA	M?
1002	Left mandibular fragment & dentition	PA	F
1003*	Complete mandible & dentition	OA	M?
1004	Complete cranium and mandible & dentition	OA	M

* later established to be from the same individual

After this analysis had been completed, it was noted that reference numbers 1001 and 1003 had very similar demographic assignments. Was it possible that the cranium with its maxilla numbered 1001 matched the mandibular remains numbered 1003? Unfortunately the fragmentary state of the cranium and post-mortem loss of some parts of the mandible did not allow any direct bony articulations between 1001 and 1003. Some teeth were also missing either through loss in life (ante-mortem) or post-mortem loss. However, it was possible to match patterns of attrition and uneven wear on a few of the opposing teeth in these two jaws and therefore it is my conclusion that mandible 1003 belongs to cranium 1001. Hereafter this individual will appear in the text as 1001(1003), making four people represented in the remains from context 004 test pit 1. Brief biographies can be constructed for each of these reference numbered individuals and these are found in Sections 5.2.2 – 5.2.5 below.

Over 70 post-cranial bones were recovered and catalogued apart from those that were given reference numbers (referenced bones were all those from the child 1000 and the cranial fragments of adults 1001(1003), 1002 and 1004). No other type of bone gave an MNI as high as four people. Appendix 1 gives a full catalogue of every single bone and bone fragment recovered from this context and the reader is referred here for detailed counts of individual element parts.

5.2.2. INDIVIDUAL 1000

Inventory: This young child's skeletal remains could be separated out from the adult bones of context 004 test pit 1 very successfully due to their immature morphology.

Either whole or part bones represent all four limbs, and the pelvis and cranium are largely complete although fragmentary.

All bones that could be securely identified as belonging to this child are given the reference number 1000 in the catalogue.

Age-at-death – young child (5-6): Very precise age-at-death estimations can be made for children due to the strikingly regular pattern of eruption of teeth. Individual 1000 had a mixture of erupted deciduous, or 'baby', teeth and unerupted or just erupting permanent teeth. The state of eruption with the first permanent molar just breaking through alveolar bone gave the age estimate of 5-6 years (after Smith 1991). Long bone length estimates after Hoppa (1991) gave an estimate of 6 years. The pattern of epiphyseal fusion agreed giving a range of c. 6 years (thoracic vertebrae) - <10 years (scapula).

5.2.3. Individual 1001(1003)

Inventory: This individual comprises 1001, a fragmentary cranium with complete maxilla and 1003, a largely complete mandible. As discussed in Section 5.2.1, this cranium and mandible were matched up through occlusion of some of the remaining teeth in both jaws.

Age-at-death – older adult (45-60+): The remaining molar teeth of 1001 gave an age estimate based on dental attrition of 42-60+ , and the lone surviving third molar of 1003 had secondary dentition exposed giving an attrition estimate of 60+. The reason that the teeth of the upper jaw of 1001 have a slightly lower age range estimate is because the teeth that they should occlude against in the lower jaw have been lost in life. Cranial suture closure gave an age range of 35-65.

Sex estimation – probably male: This estimation is based on a combination of morphological traits from both the mandible and cranium. 3 traits were strongly male, 4 were probably male and 1 was unknown.

Dentition and dental pathology:

	Right								Left								Total
periodontal	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	16
calculus		s	s											s			3
maxilla	**/**	**7**	**6**	**5**	**R**	**/**	**/**	**/**	**/**	**/**	**R**	**4**	**5**	**6**	**X**	**X**	**8**
mandible	**X**	**X**	**X**	**X**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**X**	**X**	**X**	**8**	**9**
calculus							s	s	s	s							4
periodontal	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	16
caries																1	1

Key

#	tooth and socket present (i.e. 8 or 7 or 6 etc.)
/	tooth lost post mortem (after death)
X	tooth lost ante mortem (i.e. during life)
R	root only
periodontal disease	graded as slight (s), moderate (m) and severe (g)
calculus	graded as slight (s), moderate (m) and severe (g)
caries	1 = small pit, 2 = <50% crown destroyed, 3 = >50% crown destroyed, 4 = crown destroyed

The teeth of this older man show dental disease consistent with his age estimate. Only 7 teeth are affected by *calculus*, which is mineralised plaque, and these only to

a mild degree. All 32 tooth socket sites are affected by either moderate or severe *periodontal disease* – the loss of alveolar bone surrounding tooth roots due to gum disease. Plaque, which mineralises to calculus, predisposes gums to disease and therefore also predisposes to periodontal disease, hence if a tooth is affected by calculus it is also more likely to be prey to periodontal disease. A small *carious* pit was found on the occlusal surface of the mandibular left third molar, this is the only case of caries in this set of jaws. However, 2 maxillary teeth (right first premolar and left canine) have entirely lost their crowns and are present only as roots of teeth. The crowns could have been lost for a variety of reasons including carious loss, severe attrition or breakage. *Ante-mortem tooth loss* was observed at 9 socket sites in these jaws, this was likely the end result either of a carious or periodontal disease process.

5.2.4. INDIVIDUAL 1002

Inventory: This individual comprises reference number 1002, a fragment of left-sided mandible.

Age-at-death – prime adult (30-44): This age estimate is based on the observation of attrition patterns on all three surviving molar teeth. Each tooth was scored individually after Miles (1962) and then a sensible age range calculated.

Sex estimation - probably female: Three sexually dimorphic traits could be observed in this mandibular fragment and all of these were strongly female. However the final sex estimation must be only *probably* female because only three skeletal traits are available for scoring.

Dentition and dental pathology:

	Right														Left		Total
maxilla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
mandible	-	-	-	-	-	-	-	-	-	-	/	**4**	**5**	**6**	**7**	**8**	**5**
calculus												s	s	m	g	g	5
periodontal												g	g	g	g	m	5
caries															1		1

Key

#	tooth and socket present (i.e. 8 or 7 or 6 etc.)
/	tooth lost post mortem (after death)
-	jaw absent
periodontal disease	graded as slight (s), moderate (m) and severe (g)
calculus	graded as slight (s), moderate (m) and severe (g)
caries	1 = small pit, 2 = <50% crown destroyed, 3 = >50% crown destroyed, 4 = crown destroyed

Of the five teeth present in this mandibular fragment, all are affected by severe *periodontal disease* (loss of alveolar bone due to gum disease) and *calculus* (mineralised plaque) to some degree ranging from mild to severe. All of the calculus that is present is located on the exposed tooth roots, a sign of how much the alveolar bone has receded down from the crowns. The second left mandibular molar has a small *carious* pit on its occlusal surface. The combination of severe periodontal disease leading to significant alveolar bone loss, calculus and an early carious lesion may well have led to the antemortem loss of these teeth had individual 1002 lived much longer.

5.2.5. INDIVIDUAL 1004

Inventory: This individual is represented by a nearly complete cranium (only some facial bones are missing) and complete mandible. Preservation was good with only a few post-mortem breaks and good cortical integrity.

Age-at-death – older adult (48-60): Since an almost complete cranium survived for individual 1004, the age estimate could be based on the combination of dental attrition and ecto-cranial suture closure methods. Dental attrition could be used to score age assessments for the six surviving molar teeth, and these combined gave an age estimate of 48-60 years. Cranial suture sites were scored and combined to give an age range of 35-60 years (vault score of 17; after Meindl and Lovejoy 1985). Dental attrition is a more accurate and precise ageing method and so this narrower age range was used.

Sex estimation – male: An almost complete cranium was available for the observation of sexually dimorphic traits, and of the 10 scored, 9 were strongly male and 1 was probably male. Therefore a sex estimate of male could be securely made.

Dentition and dental pathology:

	Right								Left								Total
periodontal			m	m	m	m	m						m	m			7
calculus			g		s	s											3
maxilla	/	/	R	5	4	3	2	/	/	/	/	4	5	-	7	/	8
mandible	8	7	/	5	/	3	/	1	1	/	3	/	5	6	7	8	11
calculus	g	g		m		s		m	s		s		m	m	m	s	11
periodontal	g	g											m	m	m		5

Key

#	tooth and socket present (i.e. 8 or 7 or 6 etc.)
/	tooth lost post mortem (after death)
R	root only
periodontal disease	graded as slight (s), moderate (m) and severe (g)
calculus	graded as slight (s), moderate (m) and severe (g)

For an older adult, and compared to 1001(1003) of a similar age, this man has fairly good dental health. The teeth that are missing from his jaws were all lost post-mortem so he had managed to hang on to them in life. 14 of the 19 teeth present were affected by *calculus* (mineralised plaque) to some degree ranging from slight on the anterior incisor teeth to severe on some of the posterior molar teeth. This is a typical pattern even for modern jaws because it is far easier to keep anterior teeth clean. 12 socket sites were affected by *periodontal disease* (resorption of alveolar bone caused by gum disease), but this may be an underestimate because several sites were subject to post-mortem breakage. No carious lesions were recorded, although the first right maxillary (upper) molar was present only as a root. The loss of this tooth crown could have been due to caries, although breakage or severe attrition could also be responsible.

5.3. CONTEXT 004: TEST PIT 2

Inventory: Only 8 bones or bone fragments were recovered in context 004 test pit 2. These were all adult and from the lower leg area, a left and right tibia and fibula, and two right foot bones (second metatarsal and navicular).

MNI and demography: These bones represent the lower legs of one adult of unknown sex.

No pathology was noted.

6. SUMMARY

The table below presents the combined results from the whole skeletal sample from Gainsborough.

Table 6: Summary of results

Context		MNI	Reference	Age/years	Sex	Pathology
001		1		25-40	M?	▪ joint disease left & right knees ▪ joint disease left & right wrists ▪ 4 rib fractures
004	test pit 1	4	1000	5-6	-	
			1001(1003)	45-60+	M?	▪ dental: caries, calculus & periodontal disease
			1002	30-44	F?	▪ dental: caries, calculus & periodontal disease
			1004	48-60	M	▪ dental: calculus & periodontal disease
004	test pit 2	1		adult	?	

The final MNI for the collection stands at 6 people for both contexts 001 and 004. If test pit 2 was located very close to test pit 1, then it is feasible that the legs and feet from test pit 2 might belong to one of the individuals in test pit 1, and this would then reduce the MNI for context 004 to 4 and the final total sample MNI to 5 people.

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8. APPENDICES

Appendix 1: Catalogue of Bones from Context 004, SSG02

Appendix 2: Coding Systems

Catalogue of bones from context 004 (SSG02)

ACC. NO. 2002.228

Tree Pit 1

Reference	Element	Side	Comp/fus	Age	Sex	Path	Meas 1	Meas 2	Meas 3	Meas 4	Meas 5	Meas 6	Meas 7
	B	?	D00	AA	?								
	B	?	D00	AA	?								
	B	?	D00	AA	?								
	CV4	M	A11	AA	?	JDS							
	CV5	M	D11	AA	?	JDS							
	CV6	M	A11	AA	?	JDS							
	CV7	M	A11	AA	?	JDS							
	CV7	M	A11	AA	?								
	F	L	A11	AA	F		392	41.8	71.7	24.7	25.8	21.9	31.7
	F	R	A11	AA	F		400		70.5	23.9	26.2	21.7	30.9
	F	?	D00	AA	?								
	H	R	A11	AA	?		285			20.2	16.9		
	H	R	C10	AA	F			41.5					
	H	L	B01	AA	?								
	H	R	E10	AA	M			49.1					
	H	L	B01	AA	?					23	20.4		
	IS1-5	M		AA	?								
	L	L	A11	PA-OA	?	ODS	148						
	L	R	A11	PA-OA	?	ODS	144						
	L	L	F14	YA-PA	?								
	LV1	M	A11	AA	?								
	LV2	M	A11	AA	?								
	LV3	M	A11	AA	?								
	LV4	M	A11	AA	?								
	LV5	M	A11	AA	?								
	MZ1	L	A11	AA	?								
	OC	L	F11	PA-OA	F?								
	OC	?	D00	AA	?								
	OC	R	G10	AA	F?								
	R	L	B01	AA	?								
	R1	R	A11	AA	?								
	R1	L	A11	AA	?								
	RV	L	E10	AA	?								
	RV	L	E10	AA	?								
	RV	L	E10	AA	?								

Catalogue of bones from context 004 (SSG02)

ACC. NO. 2002.228

Tree Pit 1

Reference	Element	Side	Comp/fus	Age	Sex	Path	Meas 1	Meas 2	Meas 3	Meas 4	Meas 5	Meas 6	Meas 7
	RV	L	E10	AA	?								
	RV	L	E10	AA	?								
	RV	R	E10	AA	?								
	RV	R	E10	AA	?								
	RV	R	E10	AA	?								
	RV	R	E10	AA	?								
	RV	R	E10	AA	?								
	S	L	D00	AA	?								
	S	R	C10	AA	M			45.7					
	S	L	C10	AA	M								
	S	R	F11	AA	?								
	S	?	D00	AA	?								
	TV1	M	A11	AA	?	JDS							
	TV1	M	A11	AA	?								
	TV10	M	A11	AA	?								
	TV11	M	A11	AA	?								
	TV12	M	D11	AA	?	JDS							
	TV12	M	A11	AA	?								
	TV2	M	A11	AA	?	JDS							
	TV2	M	A11	AA	?								
	TV3	M	A11	AA	?	JDS							
	TV4	M	D11	AA	?	JDS							
	TV5	M	A11	AA	?	JDS							
	TV6	M	A11	AA	?	JDS							
	TV7	M	D11	AA	?	JDS							
	TV7	M	A11	AA	?								
	TV8	M	D11	AA	?	JDS							
	TV8	M	A11	AA	?								
	TV9	M	D11	AA	?	JDS							
	TV9	M	A11	AA	?								
	U	R	A33	C1 [4-5)	?		126						
	VH	M	A11	PA-OA	?								
	VO	M		AA	?								
	VT	R		AA	M?								
	VT	L		AA	?								

Catalogue of bones from context 004 (SSG02)

ACC. NO. 2002.228

Tree Pit 1

Reference	Element	Side	Comp/fus	Age	Sex	Path	Meas 1	Meas 2	Meas 3	Meas 4	Meas 5	Meas 6	Meas 7
	VZ	L		AA	?								
	Z2	R	A11	AA	?								
	Z6	R	A11	AA	?								
1000	V	M		C1	?								
1000	VM	L		C1	?								
1000	H	L	B03	C1	?								
1000	H	R	A33	C1	?		183						
1000	R	R	A33	C1	?		135						
1000	S	R	A33	C1	?								
1000	RV	L	C30	C1	?								
1000	RV	L	C30	C1	?								
1000	RV	L	C30	C1	?								
1000	RV	R	C30	C1	?								
1000	RV	R	C30	C1	?								
1000	RV	R	C30	C1	?								
1000	RV	R	C30	C1	?								
1000	T3-5	M	A11	C1	?								
1000	OC	L	E33	C1	?								
1000	OC	R	F33	C1	?								
1000	F	L	C30	C1	?								
1000	F	R	B03	C1	?								
1000	T	R	E30	C1	?								
1000	B	R	A33	C1	?		194						
1001	V(X)	M		OA	M?	D							
1002	VM	L		PA	F?	D							
1003	VM	M		OA	M?	D							
1004	V(X+M)	M		OA	M	D							

Catalogue of bones from context 004 (SSG02)

ACC. NO. 2002.228

Tree Pit 2

Reference	Element	Side	Comp/fus	Age	Sex	Path	Meas 1	Meas 2	Meas 3	Meas 4	Meas 5	Meas 6	Meas 7
	B	?	D00	AA	?								
	B	?	D00	AA	?								
	MZ2	R	A11	AA	?								
	T	?	D00	AA	?								
	T	?	D00	AA	?								
	T	R	B01	AA	?								
	T	L	B01	AA	?								
	Z7	R	A11	AA	?								

Disarticulated Bony Element Codes			
V	Skull	F	Femur
SV	Cranial fragment	P	Patella
VF	Frontal	T	Tibia
VP	Parietal	B	Fibula
VO	Occipital	Z1	Talus
VBO	Basal occipital	Z2	Calcaneus
VT	Temporal	Z3	Medial cuneiform
VS	Sphenoid	Z4	Intermediate cuneiform
VX	Maxilla	Z5	Lateral cuneiform
VN	Nasal	Z6	Cuboid
VZ	Zygomatic	Z7	Navicular
VE	Ethmoid	MZ1	1st metatarsal
VL	Lacrimal	MZ2	2nd metatarsal
VA	Palatine	MZ3	3rd metatarsal
VO	Vomer	MZ4	4th metatarsal
VM	Mandible	MZ5	5th metatarsal
VH	Hyoid		
VTH	Thyroid		**Permanent Lower Dentition**
		M1	Central incisor
AT	Atlas	M2	Lateral incisor
AX	Axis	M3	Canine
C3-5	Vertebra in area C3-5	M4	1st premolar
C6-7	Vertebra in area C6-7	M5	2nd premolar
T1-4	Vertebra in area T1-4	M6	1st molar
T5-8	Vertebra in area T5-8	M7	2nd molar
T9-12	Vertebra in area T9-12	M8	3rd molar
L1-3	Vertebra in area L1-3		
L4-5	Vertebra in area L4-5		**Permanent Upper Dentition**
		X1	Central incisor
L	Clavicle	X2	Lateral incisor
S	Scapula	X3	Canine
R1	1st rib	X4	1st premolar
R2	2nd rib	X5	2nd premolar
RV	Vertebral end of rib	X6	1st molar
RS	Sternal end of rib	X7	2nd molar
RIB	Rib shaft 3-12	X8	3rd molar
ST	Sternum		
OC	Os coxa		**Deciduous Lower Dentition**
IC	Coccyx	DM1	Central incisor
IS1-3	Sacral vertebra in area S1-3	DM2	Lateral incisor
IS4-5	Sacral vertebra in area S4-5	DM3	Canine
		DM4	1st molar
H	Humerus	DM5	2nd molar
R	Radius		
U	Ulna		**Deciduous Upper Dentition**
C1	Scaphoid	DX1	Central incisor
C2	Lunate	DX2	Lateral incisor
C3	Triquetral	DX3	Canine
C4	Pisiform	DX4	1st molar
C5	Trapezium	DX5	2nd molar
C6	Trapezoid		
C7	Capitate		
C8	Hamate		
MC1	1st metacarpal		
MC2	2nd metacarpal		
MC3	3rd metacarpal		
MC4	4th metacarpal		
MC5	5th metacarpal		

Bone	Measurement	Description
Clavicle	1	maximum length
Scapula	1	maximum length
	2	glenoid length
Humerus	1	maximum length
	2	vertical diameter of head
	3	epicondylar width
	4	maximum diameter at mid-shaft
	5	minimum diameter at mid-shaft
	6	minimum circumference of shaft
Radius	1	maximum length
Ulna	1	maximum length
Femur	1	bicondylar length
	2	maximum diameter of head
	3	epicondylar breadth
	4	anterior-posterior diameter at mid-shaft
	5	medio-lateral diameter at mid-shaft
	6	anterior-posterior subtrochanteric diameter
	7	medio-lateral subtrochanteric diameter
Tibia	1	maximum length
	2	maximum proximal epiphyseal breadth
	3	anterior-posterior diameter at nutrient foramen
	4	medio-lateral diameter at nutrient foramen
Fibula	1	maximum length

Completeness of Long Bone/Rib Codes	
A	Complete
B	Complete except proximal/medial/vertebral end
C	Complete except distal/lateral/sternal end
D	Shaft only
E	Proximal/medial/vertebral end only
F	Distal/lateral/sternal end only
G	Proximal/medial/vertebral end + Distal/lateral/sternal end shaft incomplete
H	Epiphysis only

Completeness of Scapula Codes	
A	Complete
B	Fragment
C	Acromian absent
D	Coracoid absent
E	Glenoid absent
F	Acromian present
G	Coracoid present
H	Glenoid present

Completeness of Pelvis Codes	
A	Complete
B	Fragment
C	Ilium absent
D	Ischium absent
E	Pubis absent
F	Ilium present
G	Ischium present
H	Pubis present

Completeness of Vertebrae Codes	
A	Complete
B	Fragment
C	Body absent
D	Lamina absent

Pathological Codes	
TB	Trauma affecting bone
TS	Trauma affecting soft tissue
CD	Congenital and developmental conditions
NI	Non-specific infection
SI	Specific infection
JDS	Spinal joint disease
ODS	Non-spinal join disease
D	Dental disease
M	Metabolic disease
E	Endicrine disease
NP	Neoplastic disease
AI	Autoimmune disease
O	other

APPENDIX 3: Pottery report

By Jane Young (Lindsey Archaeological Services)

Context	**cname**	**full name**	**form type**	**sherds**	**weight**	**date**
004	LSW1	Lincoln Glazed Ware	jug	1	36g	mid/late 12th early/mid 13th

APPENDIX 4: List of SMR entries

SMR ref.	*Description*	*NGR (SK)*
SAM00033	Gainsborough Old Hall	8132 9002
52049	2 undated human skeletons, below Silver Street	814 898
52050	tetradrachm of Propus, Alexandria	unlocated
52051	Rim of medieval green glaze vessel	813 899
52052	Late 16th century jetton	8132 8982
52054	3 human skeletons, possibly Anglo-Saxon	unlocated
52055	Skeleton found at the corner of Lord St./Bright St., 1981	8134 8990
52056	2 Roman coins: Carausius, Crispus	unlocated
52057	Neolithic polished flint axe	unlocated
52058	Bronze palstave	unlocated
52059	Dug out canoe	unlocated
52069	All Saints Church	8144 9011
52072	Medieval floor tile	815 903
52073	Silver groat (1547-9)	814 908
52074	Possible Romano-British kiln	8325 8992
52078	2 bronze socketed axes	unlocated
52085	Medieval seal die	unlocated
52087	2 9th century Anglo-Saxon coins	unlocated
Notts. SMR	13 Neolithic flint scrapers, 1 knife, 2 flake knives, 1 hammer stone	8135 8945

APPENDIX 5: List of archaeological contexts

Context	*Type*	*Description*
001	Skeleton	Near complete inhumation (aligned E-W), TP1
002	Cut	Grave cut for skeleton [001], TP1
003	Fill	Fill of grave cut [002], TP1
004	Layer	Disturbed deposit containing disarticulated bone & pot, TP1, TP2
005	Layer	Former road surface, TP1, TP2
006	Layer	Bedding layer for road surface (007), TP1, TP2
007	Layer	Former road surface, TP1, TP2
008	Layer	Bedding layer for modern road surface, TP1, TP2
009	Layer	Natural sand layer, TP1, TP2
010	Layer	Backfill of cellar, TP 3, TP 4
011	Layer	Bedding for modern road surface, TP4
012	Layer	Bedding for modern road surface, TP4