

**GRANGE PADDOCKS
LEISURE CENTRE,
BISHOP'S STORTFORD,
HERTFORDSHIRE**



POST-EXCAVATION ASSESSMENT REPORT

CP. No: 886/09

11/11/2009

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Quality Assurance

This report covers works as outlined in the brief for the above-named project as issued by the relevant authority, and as outlined in the agreed programme of works. Any deviation to the programme of works has been agreed by all parties. The works have been carried out according to the guidelines set out in the Institute for Archaeologists (IfA) Standards, Policy Statements and Codes of Conduct. The report has been prepared in keeping with the guidance set out by North Pennines Archaeology Ltd on the preparation of reports.

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EXECUTIVE SUMMARY

In June 2009 North Pennines Archaeology Ltd was commissioned by Wardell Armstrong Ltd, acting on behalf of their client, Everyone Active, to undertake an archaeological excavation in advance of a ground floor extension to join the existing changing rooms and the swimming pool buildings at Grange Paddocks Leisure Centre, Bishop's Stortford, Hertfordshire (NGR: TL 4895 2207).

The site lies within an Area of Archaeological Significance as designated on the East Hertfordshire District Council's Local Plan (Number 113). The area to the east of the site encompasses the Cannon Close estate, which was excavated during the 1950's, and was found to overlie the remains of a substantial Romano-British urban settlement.

In 1978 rescue excavations were undertaken within the development area of the current changing rooms. This excavation found evidence for Roman activity comprising pits and postholes which cut into gravel dumps, dating from the 1st and 3rd centuries AD, with a presumed hiatus, possibly representing a period of abandonment at the site, which occurred during the 2nd century.

In 2001 an evaluation and rapid desk-based assessment to the north of the current proposed development also found evidence of pits, ditches and Roman burials ranging in date from mid 1st to 3rd centuries AD. However, no phase of abandonment or disuse was identified at the site during this evaluation.

As a result of these findings, and due to the likely potential for archaeological deposits to be encountered and removed during the proposed development works, East Hertfordshire Local Planning Authority requested further archaeological investigation be undertaken as a condition of planning consent. In June 2009, an evaluation, comprising eight Test Pits was undertaken by North Pennines Archaeology Ltd. The evaluation encountered well-preserved archaeological deposits within four of the eight Test Pits, two of which lie directly within the proposed development area, and which contained substantial Romano-British pit features, pottery from within which were found to date from the 3rd to 4th centuries AD.

Subsequently, and as a direct result of the findings of the 2009 evaluation, a specification for an archaeological excavation was agreed between the County Historic Environment Unit (CHEU) and the client. North Pennines Archaeology Ltd conducted the excavation, covering 85m², in 2009

The excavation found evidence for three phases of activity occurring at the site representing Roman, post-medieval and modern activities. Further excavation to the north of this area found the skeletal remains of an elderly female, and further supports the evidence of a burial cemetery occurring at the site.

The earliest activity encountered during the excavation comprised four distinct phases of activity, the first of which was represented by a ditch [1038], which was located at the west of the trench and was orientated east-west. This feature was observed to extend beyond the limits of both the west and eastern limits of excavation. Three small pit features [1045], [1029] and [1020], which are located further towards the east and were potentially used as refuse dumps, also date from this phase.

The second and third chronological divisions within the Romano-British phase of activity comprised a series of large refuse pits, some of which were intercutting, and which date from the 4th century. Within the eastern extent of the trench, these pits appear to respect the line of ditch [1038], and potentially cut into this feature, although the silting up of these pits has subsequently destroyed any definitive relationship that may have existed. It is probable however, that the second and third phases of pitting related to a demarcation of the existing boundary line, at a time when the nearby Romano-British settlement of Cannon Close would be a well established area of urban activity, generating large amounts of refuse.

Overlying these features, two distinct deposits were observed, both of which contained large amounts of Roman pottery dating from the 1st and 3rd centuries. It is possible that these upper deposits are resulting from silt wash created by the frequent flooding (caused by the close proximity of the River Stort to the site) which has occurred at the site during the Roman occupation of the area and is in evidence during times of high rain fall in the present day.

Burials found to the north during the 2001 evaluation were corroborated by the discovery of the remains of a female skeleton (SK 1) aged between 45 and 59 years old, and measuring between 5 feet 3 inches and 4 feet 11 inches in height, found within the excavation area. No further human remains were observed during the course of the excavation.

Post-medieval and modern day activity was represented by a collection of small planter pits, and a modern drainage channel which existed along the southern edge of the site.

A total of eighteen Roman coins dating from the 4th century were found within some of the pit features on the site, and may represent a dispersed hoard (Alison Tinniswood, *pers comm.*)

The pottery assemblage appears to support the findings of the 1978 excavations, which suggested that this area was subject to a period of disuse or abandonment during the 2nd century AD, supported by the apparent lack of material dating from this period. The assemblage is typical of an urban setting, as would be expected due to the close proximity of the Cannon Close estate, and the substantial settlement which would have existed there during the roman occupation of the area. (Tompson and Niblett *pers comm*). The assemblage is dominated by pottery originating from Oxfordshire kilns, and includes red slips, reduced course, and reduced fine wares, and Oxfordshire white

and white slipped ware. Nene valley colour coated wares and local late 4th century shelly wares, originating from Harrold in Bedfordshire are also represented within the assemblage (Hird).

The excavation revealed that archaeological features encountered during the 1978 excavation of the site were similar in nature to those found within this phase of groundworks, suggesting that this area was part of an extra mural zone outside the urban sprawl that may have existed within the Cannon Close area. The discovery of human remains to the north of the excavation area, coupled with an apparent lack of human remains to the southern areas of the site, supports the findings of the 2001 excavation conducted to the north, further suggesting that the extent of a cemetery at the site is limited, and exists within the areas to the north.

The potential for further archaeological remains is therefore high, necessitating further archaeological monitoring during the installation of two proposed external metal fire escapes at the east and west of the current development area and during the installation of service trenches. The high potential for archaeological remains which exists at the site should also be considered during any further ground penetrating works at the site.

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North Pennines Archaeology Ltd would like to thank Wardell Armstrong Ltd and their client, Everyone Active, for commissioning the project. Particular thanks are extended to Helen Martin-Bacon and Charlotte Dawson for all their help during the project.

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North Pennines Archaeology Ltd would also like to extend their thanks to Alison Tinniswood, Historic Environment Officer at Hertfordshire HER, for all her help and advice during this project.

North Pennines Archaeology Ltd is also grateful for the advice of Dr Rosalind Niblett and Isobel Tompson, Historic Environment Officer at Hertfordshire HER, for their comments regarding the pottery assemblage, conducted during an organised site visit.

The excavation at Grange Paddocks, (BSG-B) was directed by Frank Giecco, Technical Director, NPA Ltd. The day-to-day running of the site was undertaken by Nigel Cavanagh, Project Officer for North Pennines Archaeology Ltd. The site was excavated by Angus Clark, Sean Johnson, Michael McElligott and Helen Noakes.

This assessment report was written by Nigel Cavanagh and Helen Noakes. Drawings were produced by Michael McElligott, Frances Wood and Helen Noakes. Specialist reports were contributed by Don O'Meara and Patricia Shaw, David Jackson, Louise Hird, Jocelyn Strickland and David Shotter. The project was managed by Frank Giecco, Technical Director, NPA Ltd. The report was edited by Matthew Town, Project Manager, NPA Ltd.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 In June 2009, North Pennines Archaeology Ltd was commissioned by Wardell Armstrong Ltd, acting on behalf of Everyone Active, to undertake an archaeological excavation in advance of a proposed ground floor extension. This extension would link a pre-existing changing rooms to the main swimming pool building at Grange Paddocks Leisure Centre, Bishop's Stortford, Hertfordshire (NGR: TL 4895 2207).
- 1.1.2 The proposed development site is located within an Area of Archaeological Significance, as identified in the Local Plan (number 113). The development also lies to the south of Cannons Close, which is known to overlie the remains of a substantial Roman settlement.
- 1.1.3 Previous works carried out at the site include an excavation carried out by the East Hertfordshire Excavation Group and Bishop's Stortford and District Local History Society (Garfi 1979). This rescue excavation, carried out during 1978, was conducted to the immediate north of the site, located beneath the current changing room footprint. These excavations found evidence for large refuse pits and gullies, and dated to the 3rd century AD.
- 1.1.4 Further archaeological investigations were carried out to the north of the proposed development by Hertford Archaeological Trust (HAT) during 2001 (Crank et al 2001). These investigations comprised a desk-based assessment and a targeted evaluation, comprising six trenches. This evaluation found evidence for pits and gullies of a 1st- 3rd century date as well as skeletal remains in Trench 5, located directly to the north of the proposed development area.
- 1.1.5 A geotechnical watching brief was also conducted at the site during June 2009 by North Pennines Archaeology (NPA) Ltd (Giecco 2009). During this phase of works, a series of eight geotechnical test pits were excavated, which found further evidence of pits and cobbled surfaces relating to the Roman occupation of the area.
- 1.1.6 The current excavation, comprising an area of 85m² (Figure 2), was excavated from 22nd June to 4th July 2009. The excavation area was located between the swimming pool to the south, and the changing rooms to the north. The excavation area was located immediately south

of the 1978 archaeological excavations carried out by the East Hertfordshire Excavation Group.

- 1.1.7 This assessment report sets out the results of the excavations in the form of a short document, outlining their initial findings and assessing their potential. This is followed by a fully quantified recommendation for the potential for further work.

2 DESIGN AND METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 A Written Scheme of Investigation was submitted (Martin-Bacon 2009) by Wardell Armstrong Ltd, on behalf of their client Everyone Active.
- 2.1.2 Following acceptance of the Written Scheme of Investigation by East Hertfordshire Local Planning Authority and the County Historic Environment Unit, North Pennines Archaeology Ltd undertook excavation at the site between June and July 2009.
- 2.1.3 The project design was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute for Archaeologists (IfA 2008), and generally accepted best practice.

2.2 EXCAVATION AIMS

- 2.2.1 The archaeological excavation covered an open area measuring 85m² in size. The excavation was undertaken in order to achieve the following project aims:
- to establish the presence/absence, nature, extent and state of preservation of archaeological remains and to record these where they were observed in detail, in advance of loss through site works;
 - to establish the character of those features in terms of cuts, soil matrices and interfaces, in order to more fully understand the nature of archaeological remains within these areas; the period(s) of occupation present across the site and the relationships between the various periods of occupation and agricultural activity;
 - to recover artefactual material, especially that useful for dating purposes, to help inform understanding of the layout, date, function, phasing, development and economic basis of each settlement and the contemporary landscape environment.

2.3 SITE SPECIFIC AIMS

- 2.3.1 The main site-specific aims of the excavation were defined as follows:

- *to provide a permanent record of the archaeological remains prior to the development commencing and to inform on options for preservation in situ should this be feasible;*
- *to disseminate the results of the excavation through an appropriate level of publication subsequent to post-excavation analysis and assessment. (Martin-Bacon 2009)*

2.4 THE EAST ANGLIAN REGIONAL RESEARCH FRAMEWORK

- 2.4.1 A number of research issues exist within the East Midlands, which are set out within the East Anglian Regional Research Framework: resource assessment, (Brown and Glazebrook 2000). These documents outline the current archaeological record within East Anglia, and assess, by each chronological period, the necessity to identify where key areas of future research should focus.
- 2.4.2 Specific areas of research relevant to the excavation at Bishop' Stortford include the need to further understand intermural agricultural activity existing between large towns such as Colchester and St Albans, (Verulamium) and smaller settlements which existed along the routes to these towns. Specifically, a need to address the distribution patterns of goods such as Roman pottery within the later Roman periods may help to show shifting patterns of active settlement inside towns (Going and Plouviez 2000; 21).
- 2.4.3 The framework also calls for further use of environmental sampling, and the increased need to sieve soil samples to retrieve smaller bones, due to the lack of faunal information from military and rural sites. It is hoped that this would further inform on the use of the countryside during the Roman occupation of an area, and specifically aims to reduce the bias of information coming from larger towns such as Colchester, where large bone assemblages have been found, and are used indiscriminately to characterize the regions consumption patterns (*ibid*).
- 2.4.4 The regional research framework also calls for further investigation into the reasons behind the survival of some Roman roads, bridges and crossings, and the dereliction and abandonment of others, as seen in the late 5th century at Bishop's Stortford.
- 2.4.5 Finally, the framework calls for a need to use further surveying techniques such as geophysical survey, and to identify areas where this method of surveying could be used to characterize the nature of a site, and aid future planning considerations.

2.5 METHODOLOGY

- 2.5.1 The work was undertaken under the direction of Frank Giecco, NPA Technical Director, BA (Hons), Dip. Arch, AIFA and Nigel Cavanagh, NPA Project Officer, BA (Hons), MA. All staff were fully briefed on the project background, made aware of the work required under the specification, and understood the projects aims and methodologies.
- 2.5.2 Topsoil was removed using a 360° tracked mechanical excavator fitted with a toothless ditching bucket and stored in a separate topsoil storage area. All machine work was carried out under direct archaeological supervision, and was undertaken to the first archaeological horizon. The site was then cleaned by hand and base plans were produced at an appropriate scale. The limits of the site and initial pre-excavation planning were surveyed using a Total Station (a Trimble Geodimeter) and the captured data was transferred into CAD environment for manipulation.
- 2.5.3 All identified archaeological features within the stripped area were excavated by hand to the depth of natural deposits.
- 2.5.4 The sampling strategy comprised: a minimum of 50% of domestic and settlement related features, and 10% of linear features, with particular reference being made to examining intersections where they occurred. All written records utilised the NPA pro-forma record sheets.
- 2.5.5 A detailed record of the stratigraphic sequence was made, according to the conventions written in the NPA Excavation Manual (Giecco 2003), and in accordance with the Institute for Archaeologists (IfA 2008) and English Heritage guidelines (2002).
- 2.5.6 Plans and sections were drawn on water resistant permatrace. Plans were drawn at a scale of 1:20 or 1:50, and sections at 1:10 or 1:20. The captured data was digitised using AutoCAD software.
- 2.5.7 A site diary was maintained detailing the nature of the work undertaken each day.
- 2.5.8 Specialist advice on ceramics was provided during the excavation by Dr Rosalind Niblett and Isobel Tompson.
- 2.5.9 Finds were managed by Frank Giecco, NPA Technical Director. All finds belong to the landowner, but were initially taken to the NPA Ltd. premises at Nenthead. North Pennines Archaeology Ltd undertook the initial finds processing, and assessment was carried out by the relevant appropriate artefact specialists.

2.6 ASSESSMENT METHODOLOGY

2.6.1 This document is the *Post-Excavation Assessment* of a phase of excavation at Grange Paddocks, Bishop's Stortford (BSG-B). A Post-Excavation Assessment includes an initial finds and environmental assessment and a review of site data, following the guidance set out by English Heritage in the *Management of Archaeological Projects* (English Heritage 2nd Edition 1991) and in *Management of Research Projects in the Historic Environment* (English Heritage 1st Edition 2006).

2.6.2 Key features of this report include:

- a site location plan related to the National Grid (Figures 1 and 2);
- dates on which the project was undertaken;
- a concise non-technical summary of the data;
- a description of the methodology employed, work undertaken and an outline of results obtained;
- plans and sections at an appropriate scale showing the locations and positions of deposits and finds;
- a list of, and spot dates for, any finds recovered and a description of the deposits identified and a description of any environmental or other specialist work.
- an updated project design including recommendations for further work.

2.6.3 A number of specialists have provided assessment reports for the excavated material from the Bishop's Stortford Excavation:

- Romano-British pottery was assessed by Louise Hird
- Lithics were assessed by David Jackson (NPA Ltd)
- The Roman Coins were assessed by David Shotter
- Human Remains were assessed by Jocelyn Strickland (NPA Ltd)
- Environmental processing took place under the direction of Patricia Shaw (NPA Ltd). Further environmental input was provided by Sue Stallibrass, English Heritage Regional Scientific Adviser. Samples were processed according to current English Heritage guidelines (2002).

2.7 ARCHIVE

- 2.7.1 A full professional archive has been compiled in accordance with the project design, and in accordance with current English Heritage guidelines (1991), and Brown, DH, 2007, *Archaeological Archives A Guide to Best Practice in Creation, Compilation, Transfer and Curation*. The archive will be deposited within an appropriate repository, and a copy of the report given to the North Yorkshire County Historic Environment Record, where viewing will be available on request. The archive can be accessed under the unique project identifier NPA 09, BSG-B.
- 2.7.2 North Pennines Archaeology supports the Online Access to the Index of Archaeological Investigation (OASIS) project. This project aims to provide an online index and access to the extensive and expanding body of grey literature created as a result of developer-funded archaeological fieldwork. As a result, details of the results of this excavation will be made available by North Pennines Archaeology, as a part of this national project. The site has been given the unique identification number, *northpen3- 61845* as part of the OASIS Project.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

- 3.1.1 Grange Paddocks Leisure Centre, situated at NGR: TL 4895 2207, is located on the northern edge of Bishop's Stortford in the valley of the River Stort (Figure 1). The site lies on the flood plain just to the east of the river Stort.
- 3.1.2 The underlying geology of the site comprises terrace gravels relating to the close proximity of the River Stort. Within the site the soils belong to the Melford association, described as being derived from deep, well drained loams overlying calcareous clayey subsoil (Soil Survey of England and Wales, 1983).
- 3.1.3 The area of the excavation lies between two buildings currently used by Grange Paddocks Leisure Centre. The changing rooms lie to the north and the swimming pool building to the south of the site, which comprised an area totaling 85m² (Figure 2).

3.2 HISTORICAL BACKGROUND

- 3.2.1 The proposed development is located within an Area of Archaeological Significance which includes substantial evidence of a Roman urban settlement, centered within the Cannons Close estate. The Roman road known as Stane Street, which linked Bishop's Stortford with the Braughing to Colchester road network, is located to the northern side of Stane Street, and crosses the playing fields on an east-west alignment, less than 50m to the south of the swimming pool.
- 3.2.2 The location of Stane Street, which appears to have been used as a fording point during the Roman period, and the close proximity of the settlement centered within the Cannons Close Estate, suggest that settlement is likely to have been related to the military control of the area. It has also been postulated that this settlement served as an imperial posting station, created to protect the juncture of a vital trading route.
- 3.2.3 Excavations at Legions Way suggest that the date of construction of Stane Street is from the 1st century AD, with a dense occupation occurring during the 2nd century AD, (Fell 2002). This evaluation also found evidence for a burial within a roadside ditch.
- 3.2.4 During the 1953-60 excavations of Cannon Close, foundations for a substantial building of a Roman date were observed, but not planned.

Finds of gold rings and steelyards were also discovered during these salvage works, which were led by Wing Commander T.W.Ellcock. Further excavations at Cannons Close during 1956 found evidence for a burial located under the pavement outside numbers 174 and 175 Cannon Close, and which contained the body of a shrouded man (stortfordhistory.co.uk).

- 3.2.5 The Roman occupation of Bishop's Stortford appears to be well documented until the 5th century, when the Stane Street crossing of the River Stort appears to have fallen out of use, and a new fording point is constructed 2.5km to the south.

3.3 SITE SPECIFIC BACKGROUND

- 3.3.1 Within closer proximity to the site, a rescue excavation was undertaken in 1978 by the East Hertfordshire Excavation Group, and the Bishop's Stortford and District Local History Society. This excavation was conducted within the area which currently houses the changing rooms, located immediately to the north of the site.
- 3.3.2 The excavation found evidence for two phases of activity at the site, which was represented by the remains of a small concentration of pits and gullies which cut into the underlying river gravels. The findings of this excavation suggested that the site had been subject to a partial abandonment during the 2nd century AD, characterized by the lack of any material culture dating to this period.
- 3.3.3 Further works were carried out at the site in 2001 by Hertfordshire Archaeological Trust (HAT), who conducted a six trench archaeological evaluation, (Crank *et al* 2001). This evaluation found evidence for a small inhumation cemetery, located approximately 10m to the north of the changing rooms. Furthermore, evidence for a continued occupation from the 1st through to the 3rd century was identified within all the trenches, which were observed to contain ditches, gullies and small pits.
- 3.3.4 The uncertainty created by the contradictory findings within this area, alongside the lack of formal excavation evidence, supported the necessity for a full scale archaeological excavation in advance of the proposed extension. In June 2009, a geotechnical survey was conducted at the site, (Giecchio 2009). This investigation comprised a series of eight Test Pits which were excavated in order to further inform on the likely archaeological potential of areas around the site.
- 3.3.5 Archaeological features, consisting of pits and soil spreads, dating to at least two separate phases were observed within four of eight trenches.

The findings of this investigation concurred with those of the 1978 excavations, suggesting that substantial archaeological features would survive in situ beneath the proposed excavation area, which could also potentially be directly be related to features found during the 1978 excavations, and would furthermore help to resolve whether the site had been continuously occupied from the 1st to the 3rd centuries AD.

4 ASSESSMENT RESULTS: STRATIGRAPHIC DATA

4.1 INTRODUCTION

- 4.1.1 Machine stripping of the light grey-brown sandy loam topsoil (**1005**), which was undertaken using a mechanical digger fitted with a toothless ditching bucket, revealed this to be 0.15m- 0.20m in depth. To the north, the topsoil had been truncated to an overall depth of 0.5m by a footpath **[1004]**. This footpath, which measured 17m in length and 2.2m in width, was located between the changing rooms, to the north, and the swimming pool, to the south (Plate 1).
- 4.1.2 The footpath was comprised of hexagonally shaped concrete paving slabs (**1000**) edged by concrete block paving. Directly beneath this deposit, a layer of compacted orange sandy mortar, (**1001**) was observed. This measured 0.15m in depth and was bedding sand for the footpath above. Below this deposit, compact grey-brown silty gravels, containing red brick demolition rubble (**1003**) was observed to measure 0.10m in depth, and possibly relate to the firepath documented on plans during the 1978 excavations (Garfi 1979).



Plate 1: the Site prior to excavation, photograph taken facing East

- 4.1.3 The construction of the firepath completely truncated the late Roman deposits which sealed features and which were viewed within the southern extent of the site, (Plate 2). However, the remainders of some features were observed cutting in to the natural within the northern extent of the site, which comprised compacted flint based gravels, (1047) and which were observed across the site as a whole.
- 4.1.4 The results from the excavations at Grange Paddocks, Bishop's Stortford (BSG-B), undertaken from 22nd June to 4th July 2009, are now summarised. For ease of analysis the archaeological features are grouped. Features have initially been grouped on both spatial and morphological grounds, although final post-excavation reporting, informed particularly by further environmental analysis, will undoubtedly alter these initial interpretations. Where features have been grouped for ease, but where there is no obvious relationship between them, it is stated.



Plate 2: Pre-excavation shot of the Site, Facing East. Photograph shows the truncation caused by the modern footpath and 1970's firepath, (left) and deposit (1006) (right).

4.2 PHASING

4.2.1 A total of 3 chronological phases were created from the excavation of features at Grange Paddocks, Bishop's Stortford. The primary occupation phase comprises Romano-British activity, which has been sub-divided into five separate phases, representing activity spanning from the 4th to the 5th centuries AD. Post-medieval and modern activities represent the final two periods of activity at the site. These chronological divisions are as follows:

4.3 PHASE 1A: LINEAR FEATURE [1038], PIT FEATURES [1020], [1029] AND [1045], AND SKELETAL REMAINS, SK 1 (FIGURES 4-6)

4.3.1 INTRODUCTION

4.3.1.1 The earliest activity on site was represented by Pit [1020], which existed in isolation, at the north-east of the site and which contained 1st century pottery types. This truncated the natural which comprised compacted gravels and sand deposits (1047), and which were observed over the entire extent of the site.

4.3.1.2 Furthermore, shallow gully or ditch [1038] and a pit of sub-circular plan that was partially exposed at the southern limit of the excavation area [1045], as well as pit features [1029] and [1020] are all assumed to be early features due to their stratigraphic location in relation to surrounding features. Both features were cut into naturally-formed gravel deposits, (Figure 4).

4.3.1.3 During further excavations of the area immediately to the north of the excavation area, the skeletal remains of an adult female aged approximately 45-59 years old were uncovered, associated with pottery of a 1st century date (NPA forthcoming).

4.3.2 EXCAVATION RESULTS

4.3.2.1 Situated in the far north-east part of the site, Pit [1020], (57.85m AOD), represented part of a sub-oval pit that extended into the northern trench baulk (Plate 3). The exposed part of the feature was 1.90m in length and 0.60m in width. The pit was filled to a depth of 0.35m, by moderately compacted grey-brown silty sand (1013) that contained pieces of 1st century Romano-British rim sherds.

4.3.2.2 Gully [1038] (Plate 4), which was aligned east to west, had an extent of 3.40m and was cut at both ends by later features. The gully survived to a maximum depth of 0.30m (57.39m AOD) and was 0.80m in width, with a moderately-sloping, concave-based profile. It was filled by moderately

compacted dark black-brown silty sand (1037). Four sherds of 4th century Oxford red slip ware pottery and fragments of ceramic tile and animal bone were found within this deposit.

4.3.2.3 Pit [1045] (Plate 5) was situated 2.20m to the south-east of Gully [1038] and appeared to be a circular or sub-oval feature that extended beyond the limits of the excavation to the south, as such only a quadrant of this feature was fully excavated.

4.3.2.4 The pit [1045] was truncated to the east by a later feature, [1036], however the surviving portion measured 1.10m in length, 0.50m in width and was 0.30m in depth, (57.65m AOD). The feature was observed to have a steeply-sloping profile and a concave base. This was filled by moderately compacted dark brown-grey silt (1044), which contained sherds of Romano-British pottery and a fragment of ceramic tile.

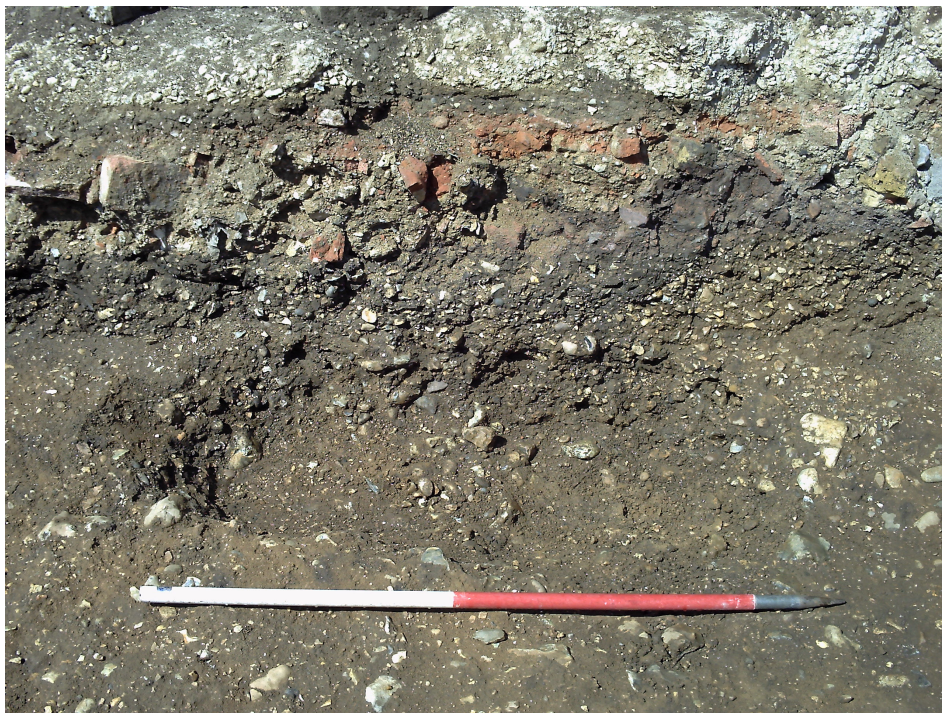


Plate 3: South facing section of pit [1020].



Plate 4: West facing photograph of gully [1038]



Plate 5: South facing overview of the remains of pit [1045]

- 4.3.2.5 Pit [1029], which was located towards the eastern part of the site, was sub-circular in plan, with vertical sides that sloped to a U-shaped base. The feature measured 1.40m in diameter (57.67m AOD). It was filled to a depth of 0.42m by moderately compacted dark blackish-brown silty sand (1028), which contained white slipped mortarium and shelly ware pottery sherds dating to the 4th century AD, as well as fragments of tile and animal bone.
- 4.3.2.6 The skeletal remains of an adult woman (SK 1) were observed during the removal of the northern baulk, which was left in place during the initial excavation due to health and safety considerations (See Figure 6 Plate 6).
- 4.3.2.7 Lying below a rubble demolition layer 0.49m in depth (2004), SK 1 was interred east to west in a prone position, with the arms resting over the chest. Severe truncation, caused by the current works programme had occurred to the remains on the right hand side removing the clavicle, humerus and the ribs.
- 4.3.2.8 The Femur, Tibia, Fibula and associated feet bones of both the left and the right hand sides had been truncated during the construction of a concrete stanchion, which was associated with the works carried out during the construction of the footings for the changing rooms in 1978/9. Similarly, the cranium appeared to have been moved from the original position, suggesting that further truncation had also occurred sometime during antiquity.
- 4.3.2.9 The presence of verdigris staining near to the Temporal bone suggested that a shroud pin may have been used, the presence of which was not confirmed by excavation, although it is possible this may have been removed during the evident disturbances that these remains have been subject to.
- 4.3.2.10 Pottery sherds dating from the 1st century, and comprising Oxfordshire and Nene Valley colour coated wares, were found in association with the remains of SK 1. Previous excavations to the north of the changing rooms have also uncovered human remains dating to the 1st to 2nd centuries. (Crank *et al* 2001)
- 4.3.2.11 Further analysis suggested that the remains were of a 45 to 59 year old female who suffered osteoarthritis, antemortem tooth loss and had evidence of the development of a benign tumour (Section 6).



Plate 6: north facing photograph of SK1, the remains of an adult female, aging from 45 to 59 years in age, found to the north of the excavation area.

4.4 PHASE 1B: PITS [1043], [1046] AND [1035] (FIGURES 4 AND 7)

4.4.1 INTRODUCTION

4.4.1.1 Observed within the western area of the site, three large pits, [1035], [1043] and [1046] appear to be stratigraphically earlier in date than similar pit features which surround these features and appear to truncate them.

4.4.2 EXCAVATION RESULTS PHASE 1B

4.4.2.1 Pit [1043], which vertically truncated gully [1038], measured 3.50m in diameter and had a profile which varied from steeply-sloping to the west to a more gradual slope to the east; the base was concave (57.69m AOD).

4.4.2.2 The pit was filled to a depth of 0.64m by a moderately compacted dark grey-brown sandy silt (1009) that contained frequent inclusions of gravel, animal bone, 4th century Oxford, shelly and Nene Valley colour coated ware pottery sherds, four 4th century Romano-British coins (Small Finds 24, 25, 28 and 29), a bronze fitting (Small Find 31) and a fragment of vessel glass (Small Find 30).

- 4.4.2.3 Deposit **(1009)** was cut to the east by a second large pit **[1046]**. This feature, at 57.47m AOD, was irregular in form, appearing sub-oval in plan. The pit measured 3.60m in diameter and had a varied profile, from steeply to moderately-sloping, whilst the base was concave.
- 4.4.2.4 Pit **[1046]** was backfilled to a depth of 0.45m by a mixed deposit of moderately compacted grey-brown gravel and silt **(1010)** which also contained 4th century Oxfordshire, Nene Valley Colour Coat and Shelly ware pottery sherds, fragments of animal bone and four 4th century Romano-British coins (Small Finds 3, 20, 22, 23).
- 4.4.2.5 A third pit **[1035]**, was located approximately 3.80m to the east of feature **[1046]**. Pit **[1035]** (57.54m AOD), was truncated to both east and west by later features, making it difficult to discern the original shape of the cut in plan. However, the surviving part of the feature measured 2.50m in diameter and had a steeply-sloping, flat-based profile and probably represented the remains of a sub-oval pit. It was filled to a depth of 0.48m by a deposit of moderately compacted grey-brown silty sand **(1033)** which contained sherds of 4th century Romano-British pottery, consisting of all the Oxfordshire, Nene Valley and Shelly wares already noted, as well as fragments of animal bone.

4.5 PHASE 1C: PIT FEATURES **[1022]**, **[1023]**, **[1026]**, **[1027]**, **[1034]**, **[1036]** AND **[1042]**

4.5.1 INTRODUCTION

- 4.5.1.1 The final phase of pit activity within the site occurred during phase 1C, which was observed as a series of five intercutting pits (Plate 7, 8 and 10) at the eastern extent of the excavation area. Two pits, **[1042]** and **[1036]** were also observed to truncate features from within Phase 1B. Analysis of the pottery assemblage from these features suggested that these were filled sometime after the 4th century AD.

4.5.2 EXCAVATION RESULTS

- 4.5.2.1 Deposits **(1010)**, **(1035)** and **(1044)** were cut by a large sub-circular feature **[1036]**, which measured 2.80m in diameter, and had a moderately-sloping profile with a concave base. (57.52m AOD).
- 4.5.2.2 Pit **[1036]** was filled to a depth of 0.55m by moderately compacted dark grey-black silty sand and gravel **(1011)** that contained 4th Romano-British pottery sherds including late 4th century Shelly wares, animal bone and four 4th century Roman coins (Small Finds 12, 13, 17 and 18).
- 4.5.2.3 Deposits **(1033)** and **(1028)** were cut to the east by a further large pit **[1034]**. Pit **[1034]**, which appeared sub-oval in plan, was 3.80m in

diameter (57.32m AOD), with a moderately-sloping, concave-based profile. It was filled to a depth of 0.56m by a deposit of moderately compacted black-grey sandy clay (1002) that contained late 4th century Romano-British pottery sherds, animal bone fragments, ceramic building material and two fragments of bronze (Small Finds 26 and 27).



Plate 7: West facing overview of sectioned pits [1023], [1026], [1027], [1029], [1034] and [1035].

- 4.5.2.4 Deposit (1028) was cut to the east by a sub-circular pit [1027] that measured 1.20m diameter and which formed part of a sequence of inter-cutting pits that were situated in the eastern part of the excavation area. Pit [1027] (57.72m AOD), was observed to have steeply-sloping sides, with a U-shaped base profile. It was filled to a depth of 0.40m by moderately compacted black-grey silty sand (1025) that contained 4th century Romano British pottery, animal bone fragments, a fragment of bronze (Small Find 19) and a worked bone needle or stylus (Small Find 21 and Figure 11). Environmental processing of samples taken of this

deposit also found one small blue glass bead, measuring 4mm in size, and the remains of a probable hob nail, measuring 10mm in length.

- 4.5.2.5 Deposit **(1025)** was cut by a later pit **[1026]** that was observed to be sub-circular in plan (57.72m AOD). Measuring 1.70m in diameter, it had a steeply-sloping profile, with a U-shaped base. Pit **[1026]** was filled to a depth of 0.30m by moderately compacted black-grey silty sand **(1024)**, which contained Oxfordshire type, Nene Valley colour coated and Shelly ware pottery sherds and animal bone fragments.
- 4.5.2.6 Deposit **(1024)** was cut to the east by a further small pit **[1023]**, which was also observed to be sub-circular in plan, (57.60m AOD). The feature had steeply-sloping sides and a flat base, and had a diameter of 1.45m. Pit **[1023]** was filled to a depth of 0.45m by moderately compacted black-grey silty sand **(1014)**, which contained fragmentary sherds of the same 4th century white ware Mortarium that was also found within deposit **(1021)**, which lies immediately above it.
- 4.5.2.7 Deposit **(1014)** was cut by the last of the sequence of inter-cutting pits, pit **[1022]**, situated in the eastern part of the site. Pit **[1022]** was sub-circular in plan and was observed to have a steep-sided, flat-based profile, measuring 1.30m in diameter (57.62m AOD). Pit **[1022]** was filled to a depth of 0.40m and contained deposits **(1030)** and **(1015)**. Deposit **(1030)** consisted of moderately compacted grey sandy gravel, which was visible in section on the western edge of the feature and represents a discontinuous basal slump deposit within the feature. The upper fill, **(1015)** was moderately compacted grey-black silty sand, which also contained 4th century Romano-British pottery sherds, comprising shelly, Nene Valley colour coated and Oxfordshire ware typologies, animal bone, ceramic building material and a 4th century Romano-British coin (Small Find 14).
- 4.5.2.8 At the western end of the site, deposit **(1009)** was cut by a sub-circular pit **[1042]**, which was observed to have a moderate to steeply-sloping bowl-shaped profile that had a diameter of 1.50m (57.41m AOD). This was filled to a depth of 0.60m by moderately compacted black-grey sandy silt **(1041)**. No datable finds were recovered from within this deposit.

4.6 PHASE 1D: DEPOSIT (1021) (FIGURE 8)

4.6.1 INTRODUCTION

- 4.6.1.1 A deposit, rich in datable artefacts from the late 4th century AD was observed to overlie pit features from within Phases 1B and C, (Plate 9).

This potentially represents silt wash from flooding episodes due to the close proximity of the River Stort (to the south-east of the site) and potentially also represents an attempt to level the refuse pits created during the previous phases. The deposit contained finds which were consistent with a continued function for the dumping of domestic refuse, potentially linked to the Cannons Close settlement.

- 4.6.1.2 Deposit **(1021)** was truncated by Test Pit 7, excavated as deposit **(105)** and Test Pit 6, excavated as deposit **(104)** during the geotechnical evaluation of the site during the BSG-A phase of investigation.

4.6.2 EXCAVATION RESULTS

- 4.6.2.1 Phase 1B and Phase 1C features were sealed by a spread of loosely compacted black-brown silty sand **(1021)** that contained large quantities of Romano-British pottery of a 4th to 5th century date, animal bone, ceramic building material and tile. Also found within this deposit were a copper alloy fitting (Small Find 15) and a fragmentary piece of a possible 4th century Romano-British coin (Small Find 16). Deposit **(1021)** was situated at a mean height of 58.15m AOD, with a maximum depth of 0.25m and was viewed to an extent of 10m, existing predominantly over the western parts of the site.



Plate 8: North facing Section of Pit [1022] and [1023].

4.7 PHASE 1E: DEPOSIT (1006) (FIGURE 8)

4.7.1 INTRODUCTION

- 4.7.1.1 Sealing deposit (1021), and viewed over the extent of the southern part of the site, deposit (1006) also represents a probable leveling of the site, as well as representing the final phase of Roman activity at the site.
- 4.7.1.2 Deposit (1006) truncated by Test Pit 6, excavated as deposit (105), during the geotechnical evaluation of the site during the BSG-A phase of investigation.

4.7.2 EXCAVATION RESULTS

- 4.7.2.1 Deposit (1006) consisted of loosely compacted blackish-brown sandy silt, situated at a mean height of 58.35m AOD, and was a maximum of 0.30m in depth. The deposit, which was viewed across the whole of the site (although not within the northern extents, where the creation of the firepath had removed all but the lower deposits of the pits), contained large quantities of 4th – 5th century pottery, including a sherd of amphora from southern Spain and animal bone, together with the remains of a probable red deer antler pick (Small Find 1) a fragment of decorated worked bone (Small Find 2), fragments of bronze fittings (Small Finds 5 and 6), a hobnail (Small Find 7), and a fragment of vessel glass (Small Find 11).



Plate 9: West facing photograph of deposit (1021). The remains of deposit (1006) can also be seen in the foreground



Plate 10: North-east facing photograph of excavated Roman features from Phases 1a-1c.



Plate 11: South facing Section of Pit [1017], which truncated deposit (1006)

4.8 PHASE 2: POST-MEDIEVAL PITS [1017] AND [1019]

4.8.1 INTRODUCTION

4.8.1.1 Observed within the central area of the site, two small pits, [1017] and [1019] were observed to cut deposit (1006). These features represent probable planting pits due to the contents of highly abraded Roman pottery, frequent root inclusions and a fragment of clay tobacco pipe stem, which suggests the features are of a late 19th century origin.

4.8.2 EXCAVATION RESULTS

4.8.2.1 Pit [1017] (Plate 11), which had a diameter of 0.55m, was filled to a depth of 0.10m, by loosely compacted black silty sand, (1016) which had frequent root inclusions. Abraded Roman pottery and a fragment of clay tobacco pipe stem were found within this feature. A 4th century Roman coin was observed within environmental sample <2> taken of deposit (1016). This find is suggested as being residual due to the abraded nature of the Roman pottery found in association within this deposit.

4.8.2.2 Pit [1019] had a diameter of 0.70m and was filled to a depth of 0.15m by loosely compacted black silty sand, (1018) which had frequent root inclusions. No datable finds were recovered from within this feature; however, based on similar morphological grounds, and the close proximity of feature [1017], this is interpreted as a planter pit.

4.9 PHASE 3: MODERN AND UNDATED FEATURES

4.9.1 INTRODUCTION

4.9.1.1 A modern service trench [1008], which functioned as a rain water collection drain for the flat roof of the swimming pool, was orientated east-west and observed along the whole of the southern extent of the site.

4.9.1.2 Two small pit features, [1032] and [1040], which were located within the eastern side of the site, contained no datable artefacts, but did however contain frequent amounts of roots within the fill, suggesting two more planter pits, similar in nature to pits [1017] and [1019]. These features did not truncate (1006) however, and therefore their stratigraphic location is subject to change should further environmental evidence provide dating materials.

4.9.1.3 The construction of the firepath and the subsequent footpath, which truncated the upper deposits over the north-eastern area of the site, also belongs to this phasing.

4.9.2 EXCAVATION RESULTS

- 4.9.2.1 Deposit **(1006)** was cut by linear feature **[1008]**, a service trench containing a drain pipe serving the existing pool building to the south of the excavation area, and was backfilled by a deposit of gravel **(1007)**. The feature was not excavated.
- 4.9.2.2 Pit **[1032]** was sub-circular in plan, 0.82m in diameter and was filled to a depth of 0.25m by loosely compacted black-brown silty sand, **(1031)**.
- 4.9.2.3 Pit **[1040]** was also sub-circular in plan, with a diameter of 0.74m. It was filled to a depth of 0.20m by loosely compacted black-brown silty sand, **(1039)**.

4.10 STRATIGRAPHIC ARCHIVE

- 4.10.1 On completion of the excavation, the written, drawn and photographic records were checked and cross-referenced. The context record was entered into a table (Appendix 1). The plans were digitised using Autocad 2007. As stated in 4.1.1 above, the context record was assessed in conjunction with the artefactual data and feature groups were created.
- 4.10.2 The excavation archive is presently held at the NPA office in Nenthead, Alston, Cumbria. The archive consists of: 47 Context Records; 8 Plan and 14 Section drawings; 166 Photographs (Black and White / Colour Slide); and 120 Digital Photographs.

5 ASSESSMENT RESULTS: THE ARTEFACTS

5.1 INTRODUCTION

5.1.1 This section details the artefacts recovered during the excavation. All of the artefacts have been listed by material type and quantified. The archive is currently held at the NPA offices Nenthead, Alston, Cumbria. The quantification of the pottery archive is set out in Table 1 (a comprehensive list of all finds from the excavation at Grange Paddocks can be viewed in Appendix 2).

Context	Material	Quantity	Weight (kg)	Period
1002	Pottery	71 sherds	0.832	4 th century
1006	Pottery	315 sherds	3.443	4 th – 5 th century
1009	Pottery	201 sherds	2.269	4 th century
1010	Pottery	130 sherds	1.471	4 th century
1011	Pottery	99 sherds	1.718	4 th century
1013	Pottery	3 sherds	0.149	1 st century
1014	Pottery	7 sherds	0.101	4 th century
1015	Pottery	17 sherds	0.214	4 th century
1016	Pottery	4 sherds	0.013	4 th century
1018	Pottery	3 sherds	0.004	4 th century
1024	Pottery	15 sherds	0.382	Later 4 th century
1025	Pottery	26 sherds	0.425	4 th century
1021	Pottery	125 sherds	2.116	4 th century
1028	Pottery	61 sherds	0.777	4 th century
1033	Pottery	19 sherds	0.313	4 th century
1035	Pottery	3 sherds	0.049	3 rd century
1037	Pottery	4 sherds	0.144	3 rd century
1044	Pottery	14 sherds	0.175	3 rd century
Total		1117 sherds	14.619	

Table 1: Summary Quantification of the Artefacts

5.2 THE ROMANO-BRITISH POTTERY BY LOUISE HIRD

5.2.1 **Introduction:** this report provides an assessment and summary of 944 sherds of Romano-British pottery found on this site. The fabric types are identified and the likely date for the assemblage is given. In Section 6, the potential of the sherds is assessed, and recommendations for further work are provided together with costs.

5.2.2 **Methodology:** the pottery has been recorded and described according to the guidelines of the PCRG (1997). In addition, this report conforms to the standards and guidance of the IfA (2001). All the sherds have been weighed and recorded.

- 5.2.3 The sherds have been examined in order to allow the fabric types to be summarised.
- 5.2.4 **Quantifications:** a total of 1117 sherds weighing 14.619 kg were deemed of a potential Romano-British date and these are detailed in Table 1 above.
- 5.2.5 **Analysis:** the site produced a total of 944 sherds of coarse and fine wares and mortaria weighing a total of 12.843kg (Table 2 below). The majority of the pottery was produced by the Oxford pottery industry and included red-slipped ware (OXF RS), Oxford reduced ware (OXF R), Oxford fine reduced ware (OXF FR), Oxford white slipped ware (OXF WS) and Oxford white ware (OXF WH). Context (1006) also produced a few sherds of medieval and modern pottery.
- 5.2.6 The only other ware present in significant amounts was a late Roman shelly ware from the pottery at Harrold in Bedfordshire (HAR SH), which was found in contexts **(1002)**, **(1006)** (HAR form 6 of 4th century date), **(1009)**, **(1010)**, **(1011)**, **(1014)**, **(1015)**, **(1021)**, **(1025)**, **(1028)** and **(1033)**. Types present include the jar, the type which travelled most widely, and the flanged bowl which it is noted by P Tyers, is found nearer to the source of production. This ware became much more abundant from the early 4th century onwards.
- 5.2.7 Context **(1021)** produced 4 sherds of Lower Nene Valley colour-coated ware (LNV CC) and context **(1006)** produced sherds of a flanged bowl, Howe Perrin and Mackreth type 75 and a flanged dish, both types dating to the fourth century. One sherd of South Spanish amphora (BAT AM 2) came from context **(1006)**.
- 5.2.8 The pottery appears to date almost entirely to the 3rd and 4th centuries, see Table 2. Several contexts produced types which did not come into production until the later 4th century, contexts **(1002)**, **(1009)**, **(1021)**, **(1024)** and **(1028)**.

CONTEXT	FABRIC	NO OF SHERDS	WEIGHT (GRAMS)	COMMENT
(1002)	HAR SH	3	60	
	OXF FR	43	345	R21 X 2 - c2, R53 X 3 - AD240-400
	OXF RS	22	130	
	OXF WS	1	15	FLAGON
	OXF PA?	2	20	LOOKS EARLY - IMIT DR 29
	UNID GREY	13	170	
	LNV CC	4	100	G335 - AD360-400
	OXF RS	1	55	MORTARIUM
(1006)	OXF RS	25	665	R20 - C1 ONWARDS
	OXF FR	114	1355	INCLUDES MEDIEVAL AND MODERN SHERDS
	OXF RS	100	720	C18 X 2 - AD 270-400+, C16 - AD 270-400+
	OXF PA	3	10	
	LNV CC	6	85	H P & M 75 - C4, FLANGED DISH - C4
	OXF WS	1	10	
	HAR SH	8	75	HAR FORM 6 - C4
	BAT AM 2	1	25	AMPHORA - SOUTH SPANISH
	OXF WH	5	185	MORTARIUM - M22,
	OXF RS	1	80	MORTARIUM - C97 - AD 240-400+
(1009)	OXF R	8	320	LARGE STORAGE JAR
	OXF FR	40	340	R15 X 2 - C1-4, R47 X 3 - C3 ONWARDS, R53
	OXF RS	84	785	C3 X 3, C16 X 2, C18 X 4 -, C93, C94 X 4
	OXF PA	1	15	
	HAR SH	9	50	
	LNV CC	8	60	DISH
	OXF WH	1	60	MORTARIUM M2 - AD 100-170(?)
(1010)	OXF RS	78	705	C49 - AD 240-400+, c18 - AD 270-400+, C55?
	OXF WS	3	110	WC3 - AD 240-400
	OXF R	1	20	
	OXF FR	17	305	R17 X 2 - AD 240-400, R53 X 2 - AD 240-400
	LNV CC	4	20	
	HAR SH	21	260	BASES OF TWO JARS
	OXF WH	2	50	MORTARIUM M17 - AD 240-300
	OXF RS	1	20	MORTARIUM
(1011)	UNID GREY	15	570	STORAGE JAR FRAGMENTS

CONTEXT	FABRIC	NO OF SHERDS	WEIGHT (GRAMS)	COMMENT
	OXF R	2	125	R20 X 2 - C1 ONWARDS
	OXF FR	35	695	R43 - AD 100-300, R38 - C1-4, R46, R47.
	HAR SH	2	20	
	OXF PA	1	10	
	OXF RS	1	10	
	LNV CC	3	140	
	OXF WS	2	50	MORTARIUM
(1013)	OXF R	3	140	R20 - C1 ONWARDS
(1014)	HAR SH	2	30	
	OXF RS	2	10	
	OXF FR	2	50	R53 - AD 240-400
	OXF WH	1	30	MORTARIUM - SAME AS 1006/1021
(1015)	HAR SH	4	55	
	OXF R	6	70	
	OXF FR	2	15	
	OXF RS	4	110	C18 - AD 270-400
(1016)	OXF WS	3	10	FLAKES
(1018)	OXF RS	3	5	
(1021)	OXF R	24	965	R20 - C1 ONWARDS
	OXF FR	38	675	R26?, R53 X3, R17, R21, R8, R76, R47 X 4.
	OXF RS	47	280	C18 - 270-400+, C52 - 350-400, C59 - 310-360
	LNV CC	4	110	
	HAR SH	1	10	
	OXF WH	3	110	M22 - AD 240-400+
(1024)	OXF RS	9	70	C79? - 340-400
	OXF FR	2	10	
	OXF R	2	40	STORAGE JAR
(1025)	OXF RS	4	10	
	HAR SH	1	5	
	LNV CC	1	5	
	OXF FR	1	20	
	OXF RS	1	15	MORTARIUM
(1028)	HAR SH	2	25	
	OXF FR	23	180	R38 X 3 - C1-4, R53?
	OXF R	4	120	
	OXF RS	24	235	C51 - 240-400, C50 325 - 400+, C18 - 270-400+
	OXF WH	1	40	MORTARIUM
	OXF WS	2	35	MORTARIUM
(1033)	HAR SH	1	20	
	OXF FR	5	130	

CONTEXT	FABRIC	NO OF SHERDS	WEIGHT (GRAMS)	COMMENT
	OXF RS	11	85	C75 - C4
	LNV CC	1	10	
	OXF WH	1	65	M22 - AD 240-400+
(1035)	OXF PA	1	10	FLAGON HANDLE
	OXF FR	2	35	POSSIBLY R26
(1037)	OXF RS	4	145	C109 - C4
TOTAL		944	12830	

Table 2: Pottery typologies identified from the BSG-B assemblage

5.3 THE ROMAN COINS BY DAVID SHOTTER

- 5.3.1 A total of eighteen coins and fragments of coins were found during the excavations at Grange Paddocks, and are listed in Table 3 below.
- 5.3.2 One coin, (Small Find 34) was recovered from within environmental sample <2>, taken from deposit (1016).
- 5.3.3 Although a number of the coins were damaged, rendering precise identification difficult in some cases, a reasonably clear chronological picture emerges.
- 5.3.4 All the main periods within the 4th century are represented; (Constantinian I (AD 346), 6 coins, Constantinian II (AD 364), 3 coins, Valentinianic, 4 coins, and Theodosian, 4 coins).
- 5.3.5 Most of the coins exhibited a moderate degree of wear, although a number of those from Constantinian I appear to have been lost when still relatively fresh; some of the coins of Constantinian I were local copies of poor quality.
- 5.3.6 Many of the later coins exhibited considerable wear which certainly prompts the suggestion that they were probably losses of later than the 4th century. In such a small sample it is notable that such a high proportion were Valentinianic or later. Although not all the mint marks survived on the coins, those that could be recovered indicated a normal spread of western mints, including those from London (1), Trier (4), Lyon (2), Rome (2), and Aquileia (1). Minting marks on six of the coins proved illegible.

SMALL FIND	CONTEXT	TYPE	DATE	WEAR ANALYSIS	NOTES
3	1010	Constantine I	AD 330-5	Moderate wear (MW)	Constantinopolis
8	1006	Constantine I	AD 323	Little wear (LW)	Minted in Trier
9	1006	Theodosian ?	AD 380-90	MW	Reverse Illegible
10	1006	Constantius II/ Constans	AD 350	MW	Silver, copy
12	1011	Valentinian II	AD 383-7	MW	Fragmentary, in silver
13	1011	Constantine I	AD 330-5	MW	Silver, with she wolf and twins
14	1015	Constantine II	AD 335-7	LW	Silver
16	1021	Constantine I	AD 314-5	LW	Fragmentary, in silver. Minted in London
17	1011	Constantine I	AD 330-5	MW	Silver, depicts she wolf and twins
18	1011	Valens	AD 364-75	MW	
20	1010	Constantius II	AD 346-50	LW	Falling Horseman depicted
22	1010	Theodosius I	AD 383-7	MW	Silver
23	1010	Magnus Maximus	AD 387-8	MW	Silver
24	1009	Valens	AD 367-75	MW	Silver
25	1009	Valens	AD 367-75	MW	Silver
28	1009	Valens	AD 367-75	MW	Silver
29	1009	Constantius II?	AD 350	MW	Silver, fragmentary, copy. Depicts falling horseman
34	1016	Constantius	AD 330	LW	Found in Environmental sample <2>

Table 3: Analysis of Roman coins found at Grange Paddocks, Bishop's Stortford

5.4 THE FLINT BY DAVID JACKSON

- 5.4.1 **Introduction:** this report provides an assessment and summary of 10 flint artefacts found on this site. The types are identified and the likely dates for the artefacts are given.
- 5.4.2 **Quantifications:** a total of 10 artefacts were recorded on this part of the site, and these are detailed in Table 4 below.
- 5.4.3 **Analysis:** the lithic assemblage recovered during the excavation at Bishop Stortford comprised a total of 10 separate pieces from two separate contexts; deposits (1002) and (1006). All pieces within the assemblage can be classified as debitage and have been summarised in table 4 below.
- 5.4.4 Unfortunately, the lithic assemblage represents residual material and is likely to have been produced over an extended period of time. This is attested to by the differing degrees of patination throughout the assemblage, from heavily patinated to no patina at all. This, together with the diminutive size of the assemblage, renders any serious debitage analysis ineffectual.
- 5.4.5 However, there are several attributes of the assemblage which indicate a pre-late Neolithic date. Firstly, there is evidence of blade technology. Three of the pieces from deposit (1002) are probably best classified as blades, or bladelets given their small size. This type of technology predominates in the Mesolithic and early Neolithic periods, although blades produced during the latter period are generally larger than their Mesolithic predecessors. However, blades are occasionally produced during later periods, although these generally result from a random flaking strategy rather than a specific technology (Butler 2005: 157).
- 5.4.6 Secondly, the lithic assemblage displays a relatively high proportion of dorsal scars. This again indicates a pre-late Neolithic date when the maximum amount of flakes and blades possible were removed from the core as opposed to the more expedient knapping techniques of later periods. This change is especially apparent in areas where raw material was abundant such as at Bishop Stortford.
- 5.4.7 Further observations include the probable use of both hard and soft-hammer techniques, although the distinction between hard-hammer and soft-hammer attributes may be devoid of any meaning as both techniques can produce similar results (Bradley and Sampson 1986; *pers. obs.*).

5.4.8 However, these observations must be approached with a degree of caution as any lithic assemblage, regardless of the strategy employed, will occasionally produce false results. This is especially true of small assemblages in which real technological attributes will be underrepresented.

CONTEXT	CLASSIFICATION	BRIEF DESCRIPTION	DIMENSIONS/WEIGHT
(1002)	Blade/ Bladelet	Proximal portion of blue/grey flint with heavy patina. Tertiary flake with 4 dorsal scars including 1 step fracture. Butt missing. Diffuse percussion features. Minor edge damage and abrasion.	Length – 25.85mm Width – 11.66mm Thickness – 3.47mm Weight – 0.002kg
(1002)	Blade	Parallel sided black flint with plain butt, diffuse percussion features and 3 dorsal scars. Moderate edge damage and minor abrasion	Length – 48.23mm Width – 14.86mm Thickness – 6.52mm Weight - 0.004kg
(1002)	Blade/ Bladelet	Distal portion of grey flint with heavy patina. Tertiary flake with 4 dorsal scars and diffuse percussion features. Moderate edge damage and abrasion.	Length – 21.9mm Width – 10.23mm Thickness – 2.51mm Weight – 0.001kg
(1002)	Fragment	Distal portion of secondary flake fragment. Mottled grey flint with prominent ripple marks. Minor edge damage and heavily abraded.	Length – / Width – 32.85mm Thickness – 2.45mm Weight – 0.001kg
(1006)	Flake	Secondary flake of black flint with semi-cortical butt and 7 dorsal scars. Moderate edge damage and minor abrasion. Divergent in plan.	Length – 35.84mm Width – 31.17mm Thickness – 5.65mm Weight – 0.005kg
(1006)	Flake	Tertiary flake of black flint with heavy patina, plain butt, prominent bulb of percussion and 5 dorsal scars. Extensive edge damage and moderate abrasion.	Length – 45.85mm Width – 26.61mm Thickness – 7.85mm Weight – 0.010kg

CONTEXT	CLASSIFICATION	BRIEF DESCRIPTION	DIMENSIONS/WEIGHT
		Convergent in plan.	
(1006)	Flake Fragment	Proximal portion of black flint flake. Secondary flake with cortical butt, prominent bulb of percussion and 3 dorsal scars. Minor edge damage and abrasion.	Length – 32.66mm Width – 36.06mm Thickness – 4.87mm Weight – 0.006kg
(1006)	Fragment	Fragment of black flint with heavy patina on dorsal surface. Naturally fractured although evidence of two previous flake scars.	Weight – 0.002kg
(1006)	Flake Fragment	Siret portion of black/grey tertiary flint flake. Butt missing, prominent ripple marks and 3 dorsal scars. Minor edge damage and moderate abrasion.	Length – 30.35mm Width – 15.89mm Thickness – 3.89mm Weight – 0.002kg
(1006)	Flake	Tertiary flake of black flint with slight patina. Butt missing, diffuse bulb of percussion and 2 dorsal scars. Extensive edge damage and abrasion. Convergent in plan.	Length – 31.55mm Width – 18.79mm Thickness – 3.34mm Weight – 0.003kg

Table 4 Analysis of flint assemblage from BSG-B

5.5 OTHER ARTEFACTS

- 5.5.1 **Introduction:** this section provides an assessment and summary of other artefacts found on this site. The types are identified and the likely dates for the artefacts are given
- 5.5.2 **Romano-British Tile:** a total of one hundred and seventeen fragmentary pieces of tile were recovered from the site.
- 5.5.3 None of the tile exhibited unusual or interesting traits to warrant further analysis.

- 5.5.4 **Roman Metal Objects:** a total of thirty-one metallic items were found during the excavation.
- 5.5.5 Twelve of these items, found within deposits **(1006)** and **(1011)**, were hand made nails, square topped in section. Ranging from a maximum of 7cm in length (minimum 2cm) and a maximum of 2cm in width (minimum 0.1cm) and weighing a maximum of 0.093kg, these items although corroded, were easily identified.
- 5.5.6 Also found within deposits **(1015)**, **(1006)**, **(1025)**, **(1002)**, **(1033)**, **(1009)** and the remains of nine hobnails. These measured a maximum of 1.5cm in length and were 1.0cm in width, and weighed 0.03kg.
- 5.5.7 Small Find 5, also found within deposit **(1006)** was the remains of a bronze fitting, measuring 3cm in length and 0.1cm in thickness. This appears to be the remains of a possible belt fastening.
- 5.5.8 Five items of metal work recovered were pieces of scrap bronze, measuring a maximum of 5cm in length and 1cm in width. No apparent decoration was identified from these remains. These finds, supported by environmental evidence for hammer scale and hammer spheres suggest that metalworking in industrial form took place somewhere nearby to the site.
- 5.5.9 A copper alloy object, measuring 1cm long, 1cm wide and 0.03cm thick, which was curled into a loop at one end, was found within the retent during the environmental processing of sample <3> of deposit **(1018)**.
- 5.5.10 A total of eight corroded ferrous objects were also recovered from within samples <6> **(1014)**, <12> **(1011)**, <13> **(1021)**, <15> **(1021)** and <17> **(1037)** during the environmental processing. Most were too corroded to accurately assign a function to, but most appeared to be the remains of nails.
- 5.5.11 **Roman Glass Fragments:** a total of two fragments of thin Roman vessel glass, turquoise in colour and from the body of a vessel, were recovered during the excavation. No decoration was observed on this glass.
- 5.5.12 During the environmental processing of a sample of deposits **(1018)**, **(1021)** and **(1014)**, four pieces of vessel glass, clear in colour and measuring a maximum of 2cm in length and 1cm in width were discovered.
- 5.5.13 **Roman Glass Bead:** during the processing of sample <8>, of deposit **(1025)**, a small blue glass bead was recovered. This measured a maximum of 0.04cm in diameter.

- 5.5.14 **Bone objects:** two notable animal bone objects were recovered from the excavation: an antler bone pick (Small Find 1) from within deposit (1006) and a small bone implement, possibly the remains of a pin from within deposit (1021), (Small Find 21, Figure 11). Further conservation of these artefacts is advised to prevent further possible breakage.
- 5.5.15 **Clay tobacco pipe:** one fragment of a clay tobacco pipe stem was recovered from within deposit (1016), the fill within pit [1017]. No manufacturing marks or datable characteristics were found on this stem, and so a generic date of the 19th century is ascribed.

5.6 CURATION AND CONSERVATION

- 5.6.1 **Introduction:** finds which require further preservation include the Roman coin collection, Bronze and Copper fittings, bone tools and the pottery assemblage.
- 5.6.2 **Condition and Storage:** it is recommended that all the material should be retained for further study and research, and that all the sherds should be well packed in suitable material to prevent further abrasion. The metal objects should all be wrapped in acid free paper and kept in a stable environment ready for deposition.
- 5.6.3 **Museum:** the intended recipient for the artefactual material is Bishop's Stortford Museum; all relevant standards and guidelines will be adhered to in preparation of the artefacts for long-term storage.

6 THE HUMAN BONE

6.1 INTRODUCTION

6.1.1 This is a summary report on the relatively complete human skeletal remains recovered during an archaeological watching brief at Bishop Stortford, carried out by North Pennines Archaeology Ltd (NPAL). The human skeletal remains were found on August 11, 2008.

6.1.2 The skeletal remains were quickly identified as those of a single individual, with the preservation and recovery of the remains being generally good, although the lower legs were absent due to truncation of concrete stanchions. This relatively complete skeleton was given an overall grade of 2, meaning that 25%-75% of the remains were present and could be used for macroscopic analysis (Buikstra and Ubelaker 1994). In the majority of the skeletal elements the surface of the bone had degraded making pathological information difficult to derive. Likewise, due to the postmortem fragmentation of the skull only basic observations could be made. The post-mortem fragmentation was predominantly appears to have been caused by the discovery and excavation of the remains.

6.2 METHODS

6.2.1 The primary analysis of the human remains was done macroscopically, with the bones being identified by anatomical element and when possible sided. Notes on age, sex, stature, non-metric traits, pathology and taphonomic change were made according to standard recommendations (Buikstra and Ubelaker 1994). Age at death was estimated using age-related changes of the auricular surface (Meindl and Lovejoy 1989) and sex was determined using sexually dimorphic aspects of the skull (Askadi and Nemeskeri 1970 as cited in Buikstra and Ubelaker 1994) and the ossa coxae (Phenice 1969 as cited in Buikstra and Ubelaker 1994). It was not possible to establish ethnicity due to the fragmented nature of the skull. In order to estimate biological stature, measurements of the long bones were taken, where possible, according to Trotter and Gleser (1952). Due to postmortem taphonomic change to the surface of the bone, the aforementioned degradation, few pathological lesions were identified.



Plate 12: Skeletal remains of SK1, an adult female aged between 45 and 59 years.

6.3 MATERIAL

- 6.3.1 The human remains (Context (2003)) were truncated by the modern excavation, as well as by the foundations and concrete stanchions of a 1980s changing rooms. The remains were aligned east/west, with the head to the west and were stratigraphically located beneath a rubble spread (Context (2004)) and above natural sands and gravels at a depth of 0.65m from the base of the changing room brick wall. There was no apparent grave cut but the *in situ* remains indicated that the arms were folded over the chest at the time of burial.

6.4 RESULTS

- 6.4.1 **Age: 45-59 years old:** the fragmentary nature of the skull made it impossible to use palatal, ecto, and endocranial suture closure to determine the age of this individual. The epiphyseal aspects of the left

humerus, radius and ulna as well as the proximal epiphysis of the left femur had completely fused, indicating that this individual was over 20 years old (Bass 1995). The auricular surfaces on both ossa coxae were well preserved and were used to establish the age of this individual. The auricular surface of the right os coxae was determined to be Phase 6 (45-49 years old) using the methods of Meindl and Lovejoy (1989). The auricular surface on the left os coxae displayed marked surface irregularity and was assigned to Phase 7 (50-59 years old). Therefore the age range of this individual was determined to be between 45-59 years old.

- 6.4.2 **Sex: Female.** Based on dimorphic aspects of the skull this individual was female. The area above the eye orbits, the supraorbital margin, was minimally expressed, which is characteristic in females (Ascadi and Nemskeri 1970). The mastoid process and the mental eminence were also more characteristic of females (*ibid*). It was noted that the width of the body of the sacrum was greater than that of the ala, which is considered to be seen more in males. However, the shape of the greater sciatic notch and the subpubic concavity again indicate that this individual was almost certainly female (Phenice 1969). The diameter of the humeral head also fell within the range of females (Stewart 1979, Suchey 1997) and this was again confirmed by the vertical diameter of the femoral head that also fell within the range of female (Pearson 1917, Suchey 1997). One noteworthy characteristic were the robust muscle markings on the humerus and radius at the deltoid and radial tuberosities, at the point where biceps inserts, this could be an occupational stress marker.
- 6.4.3 **Stature: 4 feet 9 inches to 5 feet 2 inches.** In the absence of the leg bones, the length of the humerus and radius were used to calculate the forensic stature of this individual. Using the length of the humerus, the stature of this individual was calculated to be between 5 feet 3 inches tall (159.86cm) and 4 feet 11 inches tall (150.96cm). Using the length of the radius the stature was calculated to be between 5 feet 1 inches (156.34cm) and 4 feet 10 inches (147.86cm). Loss of height appears to begin around the age of 45 and must therefore be factored into stature estimates. In the case of this individual an additional 1.12cm must be taken off of the calculated stature, making the range 158.74 cm-149.84 cm for the humerus and 155.23cm- 146.68cm for the radius. (Galloway 1988). These stature calculations are based on Caucasoid females and it must be taken into consideration that the ethnicity of this individual could not be determined (Trotter and Gleser 1952).
- 6.4.4 **Palaeopathology:** a number of the skeletal elements showed signs of degenerative disease. One of the fragmented ribs displayed osteophytic

development on the tubercle. These osteophytes are a sign of osteoarthritis and are typically associated with advanced ageing (Snodgrass 2004). All of the lumbar vertebrae displayed osteophytic development on the vertebral bodies as well as the superior and inferior articular facets. The osteophytic development of the fourth lumbar vertebra (L4) was so severe that it had created a 'window' of bone on the left inferior articular surface. As well as showing signs of osteoarthritis the right inferior articular facet of L4 and the right superior articular facet of L5 had eburnation, bone on bone wear that develops following the degeneration of cartilage resulting in a polished shiny appearance, was noted on the right inferior articular facet of L4 as well as on the right superior articular facet of L5. L5 and the body of the sacrum were beginning to display horizontal osteophytes (Schwartz 1995).

- 6.4.5 On the ectocranial surface of the fragmented frontal bone were two raised, somewhat circular areas of denser bone located one next to the other. It is possible that these were the beginning stages of development for a button osteoma, a common form of benign tumour.
- 6.4.6 There was evidence of antemortem tooth loss on the maxillae and mandible. There was alveolar resorption on the maxilla, with all of the molars lost antemortem. The third and fourth premolar on the left (P³ and P⁴) as well as P⁴ on the right aspect of the maxilla had also been lost antemortem. Alveolar resorption of the molars was also noted on the mandible. The alveoli of the remaining teeth also appeared to be unusually shallow also indicative of antemortem tooth loss. Tooth loss is typically characteristic of the elderly, but the level of tooth care and diet of the time needs to be taken into consideration, and can make such deductions unreliable.
- 6.4.7 There were no signs of cribia orbitalia (iron deficiency), fractures, or disease noted on the skeletal elements.
- 6.4.8 *Taphonomy*: the fragmented nature of the bones was sustained during the machining of the area. Taphic processes bring about physical and chemical change that can result in a bone being poorly preserved and were the most probable explanation for the changes to the outer bone surface (O'Connor 2000). A fragment of the cranium displayed evidence of insect activity.
- 6.4.9 One fragment of temporal bone displayed green verdigris staining, often caused by the presence of copper alloy, such as a shroud pin, at the time of burial.



Plate 13: Osteoarthritic development on the lower lumbar vertebrae (L4 and L5)



Plate 14: Right hand side of mandible, showing Alveolar resorption, indicative of antemortum tooth loss, common in skeletal remains of the elderly.

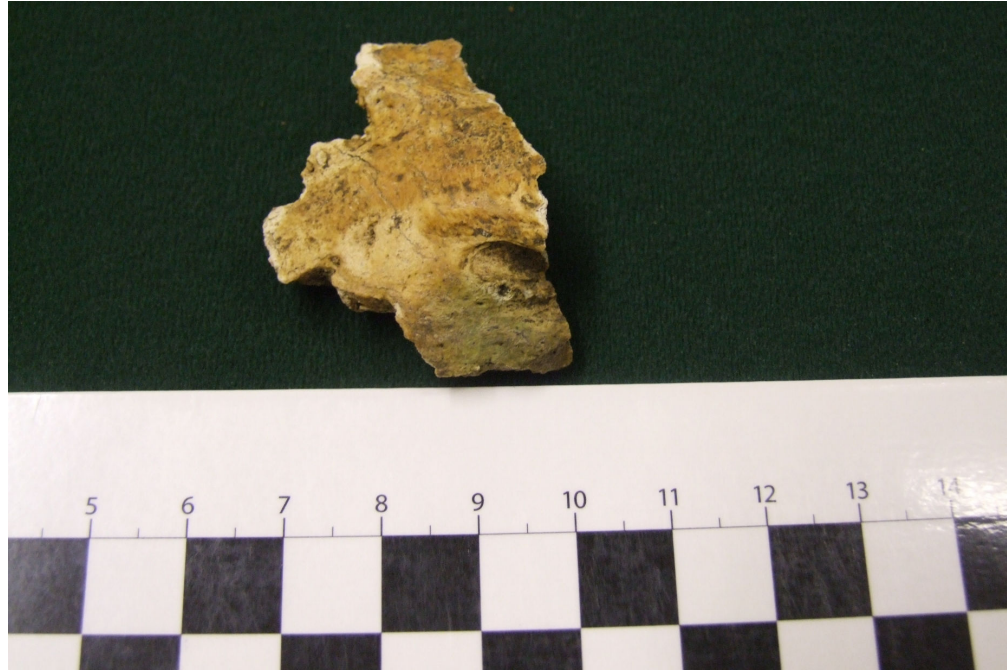


Plate 15: Verdigris staining on the Temporal bone potentially indicating the presence of a shroud pin.

6.5 CONCLUSION

- 6.5.1 The human remains that were recovered at Bishop Stortford on August 11, 2009 were those of an adult female with an age range of 45-59 years old. This individual had a biological stature that ranged from 5 feet 2 inches (158.74cm) to 4 feet 9 inches (146.68cm). There was neither evidence of fractures, deficiencies in the diet, nor any evidence of disease, although this was difficult to determine due to taphonomic changes of the bones. There was evidence of osteoarthritis and antemortem tooth loss that could indicate a person of older age.

6.6 HUMAN REMAINS INVENTORY

Category	Skeletal Element	Side	Segment	Completeness	Notes	Sex	Age
Skull:					Very fragmented with at least 57 fragments of which 11 were identified as parietal, 5 of occipital and 4 frontal. Only ectocranial suture present was the midlambdoid suture. The only palatal suture present was the anterior median palatine suture.	Supraorbital margin was typically female. The mastoid process was small and did not project far over the inferior margins of the external auditory meatus= female. The mental eminence was minimally expressed= female and there was no flaring of the gonial angle= female.	
	Frontal Bone		at least 4 fragments	>75%	There is what appeared to be an osteoma developing on the frontal bone. No evidence of cribia orbitalia on the orbits		
	Parietal Bone		at least 11 fragments	50%-75%			
	Occipital Bone		at least 5 fragments	25%-50%	One fragment had the cruciform eminence present.		
	Temporal Bone				The largest fragment of temporal bone was still articulated with a fragment of the occipital bone (L). On the internal surface of this fragment was a very pronounced sulcus for the meningeal artery. A fragmented petrous pyramid (L) was also present. Another fragment of temporal bone had verdigris staining present.		
	Sphenoid Bone			<25%	A fragmented sella tursica was present.		

Category	Skeletal Element	Side	Segment	Completeness	Notes	Sex	Age
	Maxilla			50%	Alveolar process of the maxilla was present with evidence of alveolar resorption. All of the molars have been lost antemortem as well as P4 on the right and both premolars on the left have also been lost antemortem. Shallow tooth sockets also indicates that other teeth have been lost antemortem.		
	Zygomatic Bone	Right	Only the right zygoma was present	100% for the element that was present			
	Nasals	Right and Left		75%	Missing inferior and superior ends of the nasal bones.		
	Mandible			>75%	Similar to the maxilla in that the molars on both the right and left side had absorbed. The remaining teeth were missing postmortem. On the posterior surface of the mandible, behind P3 were bony projections, possible abscesses?		
Vertebrae :					The state of preservation for the vertebrae was very good. In addition to the almost complete vertebrae there were two fragments of vertebral body and a fragmented articular facet present.		
	Cervical				There were no cervical vertebrae present.		
	Thoracic		T6-T12	50%	7 thoracic vertebrae were present along with one fragmented lamina. All of the vertebrae were missing the spinous process. The ligamentum flavum was ossified.		

Category	Skeletal Element	Side	Segment	Completeness	Notes	Sex	Age
	Lumbar		L1-L5	100%	<p>Transverse processes have been broken postmortem. All of the vertebral bodies displayed osteophytic lipping. This was also seen on the superior and inferior articular facets. L5 and the sacrum were starting to display horizontal osteophytes that is characteristic of spondylosis deformans.</p> <p>Eburnation was present on the right inferior articular facet of L4 matched with the right superior articular facet on L5.</p> <p>Osteophytic development had created a 'window' on the left inferior articular facet.</p>		
Thorax	Ribs	4 Right, 1 Left, 1 Right fragment of shaft		<25%	5 fragmented heads were present, with osteophytic development present on one of the tubercles. One fragment of a shaft was also present.		
Long Bones: Arm	Humerus	Left		100%	Complete humerus with a postmortem break midshaft. From Trotter and Gleser (1952) for White Females: 3.36(29 cm) + 57.97 +/- 4.45=159.86 cm (high), 150.96 cm (low)	Breadth of the humeral head= 33.5 mm = female (Stewart 1979, Suchey 1997)	
	Radius	More complete radii was a left, fragmented shaft of a right radius		>75%	The Left radius was broken towards the proximal end through the radial tuberosity. The deltoid tuberosity and the radial tuberosity, where biceps insert, were quite robust (occupational stress marker?). From Trotter and Gleser (1952) for White Females: 4.74(20.5 cm) + 54.93 +/- 4.24= 156.34 cm (high), 147.86 cm (low)		

Category	Skeletal Element	Side	Segment	Completeness	Notes	Sex	Age
	Ulna	Left		>75%	Almost a complete ulna with only the radial articulation and styloid process missing.		
Hand	Carpals		Both right and left lunates, scaphoids, capitates and triquetrals (although the triquetrals were very fragmented) were present. There was also a hamate (l), trapezoid (r), Trapezium (r) were also present	>75%			
	Metacarpals		Both right and left MCI were present, the more complete one was a (l), both MCII and MCV were present. MCIII was a (l) and MCIV was a ®		2 fragments of MC/MT shaft were present.		
	Phalanges		4 proximal phalanges of the hand were present				
Pelvic Girdle	Ossa Coxae	1 (r), 1 (l)	Iliac Crest, ischium, pubic symphysis, ilium	75%	On the left os coxae the ischium was fragmented, with osteophytes present on the ischial tuberosity. Osteophytes had begun to develop on the iliac crest. Slight taphonomic change was seen on the medial aspect. The right os coxa was more fragmented than the	The greater sciatic notch= female. The subpubic concavity= female (Phenice 1969)	Using the auricular surface: (Meindl and Lovejoy 1989) the left os coxae was Phase 7=

Category	Skeletal Element	Side	Segment	Completeness	Notes	Sex	Age
					left. Also a fragmented (r) iliac crest and (r) pubic symphysis were also present.		50-59 years old and the right os coxae was Phase 6= 45-49 years old.
	Sacrum			>75%	The sacrum was well preserved with a slight amount of damage on the right side. There was osteophytic development on the right aspect of the promontory.	The width of the first sacral body is greater than the ala= male. The overall shape of the sacrum is not very curved= female.	
Long Bones: Legs	Femur	Both left and right femoral heads		<25%	The larger fragment with the greater trochanter present is a Right.	Using the right femoral head as the left was too damaged: breadth= 38.8 mm= female (Pearson 1917-1919, Suchey 1997)	
	Fibula		Two fragmented shafts were present	<25%	Can't determine if these were two separate fibulae or from the same.		
Other:							
Animal Bone					There were 11 fragments of animal bone of which two were teeth.		

Category	Skeletal Element	Side	Segment	Completeness	Notes	Sex	Age
Pottery					There were 2 fragments of Roman pottery and 1 unidentifiable ceramic rod.		

Table 5: Inventory of Human Skeletal Remains from Bishop Stortford

7 ENVIRONMENTAL ANALYSES

7.1 INTRODUCTION

- 7.1.1 During the course of an archaeological watching brief and excavation 20 samples were taken, comprising 2 bulk soil samples taken from contexts within the watching brief phase (BSG-A) and 18 taken from the excavation phase (BSG-B). The results of this analysis can be observed in Appendix 3.
- 7.1.2 Samples from both phases of work at the site were processed in order to extract material which may be pertinent to understanding the development of these contexts, as well as the site as a whole. This would include evidence of any human activity during the prehistoric or historic periods which may have left preserved archaeological material. In particular, due to the artefactual assemblage collected from this area, evidence of activity during the Romano-British period (traditionally seen as 55 BC – AD 440) was expected to be evident in the soil samples processed.

7.2 METHODOLOGY

- 7.2.1 The methodology employed required that the whole earth samples be broken down and split into their various different components. A sub-sample of only 10 litres from these contexts was manually floated and sieved through a 'Siraf' style flotation tank. This will provide enough material from which to develop a strategy for those requiring further analysis due to their rich plant macrofossil or organic content.
- 7.2.2 The residue from each sample was retained, described and scanned using a magnet to extract ferrous fragments to detect possible metal working areas. The flot from each sample was dried slowly and scanned at x40 magnification for charred and uncharred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at North Pennines Archaeology. Plant taxonomic nomenclature follows Stace (1997).
- 7.2.3 The retent, like the residue from wet sieving, will contain any larger items of bone, heavy (e.g. waterlogged) ecofacts or artefacts. The flot or floating fraction will generally contain organic material such as plant matter, fine bones, cloth, leather and insect remains. A rapid scan at this stage was done to allow further recommendations to be made as to the

potential for further study by entomologists or palaeobotanists, with a view to retrieving vital economic information from the samples.

- 7.2.4 Favourable preservation conditions can lead to the retrieval of organic remains that may produce a valuable suite of information, in respect of the depositional environment of the material, thus enabling assessment of anthropogenic activity, seasonality and climate and elements of the economy associated with the features from which the samples are removed.
- 7.2.5 Sample numbers appear in brackets thus < >, whilst context numbers appear in brackets thus () for all analysis and discussion below.

7.3 ASSESSMENT RESULTS FROM BSG-A

- 7.3.1 Sample **(102)** <1> contained no material in the heavy residue which could be ascribed to cultural activity. The flot matrix consisted of modern roots with some charcoal and insect casts. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies, including low amounts of haematite collected as magnetic material.
- 7.3.2 Seeds of moderate amounts of a *Myosotis* species (Forget-Me-Not) as well as low numbers of a *Chenopodium* species (Goose Foot) and a *Sambucus* species (Elder) were recovered from the flot. Three cereal grains were recovered, possibly those of a barley variety. The *Chenopodium* seeds suggest an arable environment, further suggested by the *Myosotis*, which generally grows best in moist aerated areas.
- 7.3.3 Sample **(113)** <2> contained bone fragments, burnt clay, pottery fragments, fragments of at least two oyster shells and small amounts of magnetic remains in the heavy residue. The bone consisted of some small mammal bone and fragments of larger mammal bone (none of which was sufficiently preserved to allow species identification as this point).
- 7.3.4 The magnetic material recovered was, relatively, the largest amount recovered from all the samples in this study and contained both hammer scale and spheroidal hammer slag. It was, however, still a small quantity compared to the sample as a whole, and thus no secure statement can be made regarding metal working activity in the immediate vicinity of this feature.
- 7.3.5 The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies. The flot matrix consisted of modern moss with small amounts of charcoal, fragments of insect

exoskeleton and a small amount of small mammal bone. Low numbers of seeds of a *Chenopodium* species, as well as four unidentified cereal grains, were recovered from the flot. The *Chenopodium* species suggests an arable environment.

7.4 ASSESSMENT RESULTS FROM BSG-B

7.4.1 *Introduction:* contexts were phased according to seven phases of activity that were interpreted by the excavator as discussed in the main report. These groups have been maintained here and are described below:

7.5 PHASE 1A: LINEAR FEATURE [1038] AND PITS [1020], [1029] AND [1045]

7.5.1 *Introduction:* samples taken from these contexts represent the earliest activity observed at the site, dating from the 1st to 2nd century. These are represented as samples (1037) <17>, (1013) <4>, (1018) <9> and (1044) <18>

7.5.2 *Analysis:* sample (1037) <17> came from within the fill of a linear ditch [1038], located below a pit [1042]. It contained small amounts of bone, burnt clay, charcoal, pottery and magnetic residue in the heavy residue. Three ferrous objects were also recovered.

7.5.3 The magnetic material comprised some fragments of hammer scale, and rare fragments of spheroidal hammer slag, none of which occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.

7.5.4 The flot matrix consisted mainly of charcoal with small amounts of roots and bone. Low numbers of seeds of a *Chenopodium* species (Goose Foot) and a *Brassica* species were also recovered. The recovery of both the *Chenopodium* and the *Brassica* seeds suggest an arable environment.

7.5.5 Sample (1013) <4> came from the fill of a pit [1020]. It contained small amounts of burnt clay, charcoal, pottery and magnetic remains in the heavy residue.

7.5.6 The magnetic material comprised naturally occurring iron rich stones including haematite, with some fragments of what appeared to be hammer scale. A number of larger irregular fragments in the sample appeared to be iron rich, slag like fragments, it is suggested that these might be waste from primary smithing as they are too thick to be caused in the same manner as hammer slag.

- 7.5.7 The flot matrix consisted mainly of roots with lower amounts of charcoal and insect casts. Moderate numbers of seeds of a *Chenopodium* species were recovered with lower amounts of a *Silene* species (campion). Small amounts of seeds of a *Poa* species (grasses) and *Galium* (bedstraw) were also recovered from the flot. The seeds from this sample suggest an open arable environment.
- 7.5.8 Sample **(1028)** <9> came from the fill of a pit **[1029]**. It contained small amounts of bone, burnt clay, charcoal, pottery and magnetic residue in the heavy residue.
- 7.5.9 The magnetic material comprised naturally occurring iron rich stones, with some fragments of hammer scale. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.
- 7.5.10 The flot matrix consisted mainly of roots with lower amounts of charcoal, insect casts and small snail shells. Abundant seeds of a *Chenopodium* species with small amounts of a *Polygonum* species (knotweed), *Urtica diocea* and *Rumex* species were recovered from the flot. These seeds suggest an arable environment.
- 7.5.11 Sample **(1044)** <18> came from the fill of a pit **[1045]**. It contained small amounts of bone, burnt clay, charcoal, moderate amounts of pottery and some magnetic remains in the heavy residue.
- 7.5.12 The magnetic material was mainly naturally occurring iron rich stones with some fragments of hammer scale, and occasional spheroidal hammer slag. A small lead item was observed within this sample, and was tentatively interpreted as a small weight. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.
- 7.5.13 The flot matrix consisted mainly of roots with moderate amounts of charcoal. Seeds of a *Chenopodium* species, a *Silene* species, a *Myosotis* species (Forget-Me-Not) and an unidentified seed were recovered, as well as two possible charred barely grains. The *Chenopodium* seeds suggest an arable environment, further suggested by the *Silene*. *Myosotis* generally grows best in moist aerated areas, further suggesting an arable environment.

7.6 PHASE 1B: PITS [1043], [1046] AND [1035]

- 7.6.1 *Introduction:* three large pits were observed, which may date to the 4th century, and represent a re-use of the landscape, from open land to a

- refuse dump. These are represented as samples **(1009)** <14>, **(1010)** <15> and **(1033)** <11>.
- 7.6.2 *Analysis:* sample **(1009)** <14> came from the fill of a pit **[1043]**. It contained small amounts of bone, pottery and magnetic residue in the heavy residue. One corroded ferrous object was recovered which appeared to be a hobnail.
- 7.6.3 The magnetic material was mainly naturally occurring iron rich stones with some fragments of hammer scale, and rare fragments of spheroidal hammer slag. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.
- 7.6.4 The flot matrix consisted mainly of charcoal with lower amounts of, moss, woody plant material and bone. Low amounts of a *Sambucus* species (Elder) and a *Chenopodium* species were recovered from the flot. The *Chenopodium* seeds suggest an arable environment while the *Sambucus* may suggest an area of scrub.
- 7.6.5 Sample **(1010)** <15> came from the fill of pit **[1046]**. It contained small amounts of bone, burnt clay, moderate amounts of pottery and some magnetic residue in the heavy residue.
- 7.6.6 The magnetic material comprised iron rich stones including haematite and rare fragments of hammer scale and spheroidal hammer slag. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature.
- 7.6.7 The flot matrix consisted mainly of roots with lower amounts of charcoal and insect casts. Abundant numbers of a *Chenopodium* species were recovered, along with moderate amounts of a *Sambucus* species. Lower amounts of a *Rubus* species (dock weed), *Veronica hederifolia* (ivy leaved Speedwell) and a *Melilotus* species were also observed, as well as two grains of wheat. The *Chenopodium* seeds suggest an arable environment while the *Veronica* and *Melilotus* both suggest loose, rich sandy soils. The *Sambucus* and *Rubus* both suggest an area of scrub.
- 7.6.8 Sample **(1033)** <11> came from a pit **[1035]**. It contained small amounts of bone, burnt clay, pottery and magnetic residue in the heavy residue. One well preserved hobnail was also recovered.
- 7.6.9 The magnetic material comprised naturally occurring iron rich stones with some fragments of hammer scale. The flot matrix consisted mainly of charcoal with occasional fragments of insect exoskeleton. Occasional seeds of a *Chenopodium* species and a *Carex* species (sedge) were

recovered along with one charred grain of wheat. The *Chenopodium* seeds suggest an arable environment, while the *Carex* suggest a damp area, or an area with surface water.

7.7 PHASE 1C: PITS [1022], [1023], [1026], [1027], [1034], AND [1036]

7.7.1 *Introduction:* a series of seven intercutting pits were observed during the excavation. These features potentially relate to 4th century activity occurring at the site, utilizing the area as a dumping ground. These are represented as samples (1015) <5>, (1014) <6>, (1024) <7>, (1025) <8>, (1002) <10>, (1011) <12>.

7.7.2 *Analysis:* sample (1015) <5> was the fill of a pit [1022]. It contained moderate amounts of bone as well as small amounts of charcoal, pottery and magnetic residue in the heavy residue. Three corroded ferrous objects were also recovered, all possibly hobnails.

7.7.3 The magnetic material comprised naturally occurring iron rich stones including haematite, with some fragments of what appeared to be hammer scale, and occasional fragments which appeared to be spheroidal hammer slag. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.

7.7.4 The flot matrix consists mainly of charcoal with small amounts of leaf litter and small snail shells. One charred grain of a barley variety and one of an unidentified seed were recovered from the flot.

7.7.5 Sample (1014) <6> came from a pit [1023]. It contained small amounts of bone, charcoal, pottery, glass and magnetic residue in the heavy residue.

7.7.6 The magnetic material comprised naturally occurring iron rich stones including haematite, with occasional fragments hammer scale, and rare fragments of spheroidal hammer slag. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.

7.7.7 The flot matrix consisted mainly of roots and charcoal with lower amounts of insect casts and small snail shells. Moderate amounts of a *Chenopodium* species were recovered from the flot, suggestive of an arable environment.

- 7.7.8 Sample **(1024)** <7> came from a pit **[1026]**. It contained small amounts of bone, pottery and magnetic residue in the heavy residue. Two corroded ferrous objects were recovered, both possible hobnail fragments.
- 7.7.9 The magnetic material comprised naturally occurring iron rich stones with some fragments of hammer scale. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.
- 7.7.10 The flot matrix consisted mainly of charcoal with lower amounts of roots, insect casts and small snail shells. Abundant amounts of a *Chenopodium* species were recovered, with small numbers of a *Rumex* species and seeds of *Veronica hederfolia*. The seeds recovered from this sample all suggest an open arable environment.
- 7.7.11 Sample **(1025)** <8> came from a pit **[1027]**. It contained small amounts of bone, burnt clay, charcoal, pottery and magnetic residue in the heavy residue. A well preserved hobnail was also recovered (approximately 1cm long), as well as a 4mm spherical blue glass bead.
- 7.7.12 The magnetic material comprised naturally occurring iron rich stones, with rare fragments of hammer scale, and spheroidal hammer slag.
- 7.7.13 The flot matrix consisted mainly of charcoal with lower amounts of roots, insect casts and small snail shells. Abundant amounts of a *Chenopodium* species were recovered as well as low numbers of a *Polygonum* species and a grain of charred wheat. The presence of these seeds suggests an arable environment.
- 7.7.14 Sample **(1002)** <10> came from the fill of a pit **[1034]**. It contained small amounts of bone, burnt clay, pottery and magnetic residue in the heavy residue. Two corroded ferrous objects were also recovered; both appear to be hobnails.
- 7.7.15 The magnetic material comprised naturally occurring iron rich stones including haematite, with moderate amounts of hammer scale, and one spheroidal hammer slag sphere. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature.
- 7.7.16 The flot matrix consisted mainly of charcoal with lower amounts of roots. Low numbers of a *Chenopodium* species were recovered, along with the remains of charred grains, comprising one grain of barley, one of wheat and one unidentified grain.
- 7.7.17 Sample **(1011)** <12> came from the fill of a pit **[1036]**. It contained small amounts of bone, burnt clay, charcoal, pottery and magnetic residue in

the heavy residue. One corroded ferrous object was recovered from within the retent.

- 7.7.18 The magnetic material comprised naturally occurring iron rich stones, with some fragments of what appeared to be hammer scale. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.
- 7.7.19 The flot matrix consisted mainly of modern moss fragments with lower amounts of charcoal. Low numbers of seeds of a *Chenopodium* species were recovered. The *Chenopodium* seeds suggest an arable environment

7.8 PHASE 1D: DEPOSIT (1021)

- 7.8.1 *Introduction:* deposit (1021) was observed to overlies features from the preceding phases. Containing substantial dating evidence which suggests that this deposit represents a 4th century occupation of the area, this deposit is represented by sample (1021) <13>.
- 7.8.2 *Analysis:* sample (1021) <13> came from a Romano-British dump layer, located below a similar deposit, (1006). It contained small amounts of bone, burnt clay, a moderate amount of pottery and some magnetic residue in the heavy residue. One corroded ferrous object was recovered, roughly rectangular in cross section, approximately 32mm long and less than 10mm thick.
- 7.8.3 The magnetic material comprised naturally occurring iron rich stones including haematite, with common fragments of hammer scale. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.
- 7.8.4 The flot matrix consisted mainly of roots with lower amounts of charcoal and insect casts. Abundant numbers of a *Chenopodium* species and an unidentified seed were recovered from the flot. The *Chenopodium* seeds suggest an arable environment.

7.9 PHASE 1E: DEPOSIT (1006)

- 7.9.1 *Introduction:* deposit (1006) overlaid all the archaeological features, and dates to the later 4th century occupation of the area. This deposit is represented by sample (1006) <1>.
- 7.9.2 *Analysis:* sample (1006) <1> came from a Romano-British occupation layer. The sample contained small amounts of bone, charcoal, pottery

and magnetic residue in the heavy residue. One corroded ferrous object was also recovered.

- 7.9.3 Magnetic material found within the sample comprised naturally occurring iron rich stones, with some fragments of hammer scale, and spheroidal hammer slag. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies.
- 7.9.4 The flot matrix consisted mainly of roots with lower amounts of charcoal, insect casts and bone. Abundant seeds of a *Chenopodium* species were recovered, as well as moderate numbers of seeds of *Veronica hederifolia*, with lower numbers of *Sambucus racemosa* (red berried Elder), *Polygonum (aviculare)*, a *Rumex* species, and a *Veronica species* (Speedwell). This sample contains a somewhat mixed group of plants. Scrub or 'waste' land is suggested by the *Sambucus*, while the others seeds suggest an open arable environment.

7.10 PHASE 2: POST-MEDIEVAL PITS [1017] AND [1019]

- 7.10.1 *Introduction:* two small pits, observed to truncate deposit (1006), were observed to contain abraded Roman pottery and clay tobacco pipes, and are represented by samples (1016) <2> and (1018) <3>.
- 7.10.2 *Analysis:* sample (1016) <2> came from the fill of a pit [1017]. It contained small amounts of bone, possible coal fragments and magnetic remains in the heavy residue. A coin dated to the reign of Constantine I was also recovered.
- 7.10.3 The magnetic material comprised naturally occurring iron rich stones, including haematite, with some fragments of what appeared to be hammer scale. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature. Also found in this magnetic residue sample was a wire like object, 0.9mm thick and 7mm long, roughly circular in cross section.
- 7.10.4 Abundant seeds of a *Chenopodium* species were recovered, as well as moderate numbers of seeds of *Sambucus racemosa*, a *Rubus* (bramble) species and a *Rumex* species, with lower numbers *Polygonum (aviculare)*, a *Laminiaceae* species (mint family), a *Brassica* species, and a *Silene* (campion) species. Trace seeds of *Urtica dioica* (small nettle) and one grain of an oat variety were also recovered. Scrub or 'waste' land is suggested by the *Sambucus* and the *Rumex*, while the other seeds suggest an open arable environment.

- 7.10.5 Sample **(1018)** <3> came from the fill of a pit **[1019]**. It contained small amounts of bone, charcoal, pottery, glass, possible coal fragments and magnetic remains in the heavy residue. A copper alloy object was also recovered from within the retent.
- 7.10.6 The magnetic material comprised naturally occurring iron rich stones, including haematite, with some fragments of hammer scale, and several fragments of spheroidal hammer slag. None of this occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature, although the presence of many spheroidal hammer slag elements does suggest iron working (either primary smithing or welding) on this site.
- 7.10.7 The bulk of the heavy residue consisted of fragments of flint with lower amounts of stone of other lithologies. The flot matrix consisted mainly of roots with some charcoal and lower amounts of insect casts. Abundant seeds of a *Chenopodium* species were recovered with some *Veronica hederifolia* (Ivy leaved Speedwell), along with lesser amounts of a *Rumex* species, a *Sambucus* species, a *Vaccinium* species (berry) and a *Carex* (sedge) species. The *Sambucus* and *Vaccinium* suggest scrub land, while the others suggest a more open environment. The *Carex* species suggests localised open water, or damp soil. Others such as the *Veronica hederifolia* suggest sandy soils, as are common in this area.

7.11 PHASE 3: UNDATED FEATURES, PITS [1032] AND [1040]

- 7.11.1 *Introduction:* a pit, located within the eastern part of the site contained no dating evidence, and had no stratigraphic relationship to the surrounding features. This feature is represented by sample **(1031)** <16>.
- 7.11.2 *Analysis:* sample **(1031)** <16> was the fill of a pit **[1032]**. It contained small amounts of bone, burnt clay, pottery and magnetic remains in the heavy residue.
- 7.11.3 The magnetic material contained rare fragments of hammer scale, none of which occurred in sufficient quantities to confirm iron working in the immediate vicinity of this feature.
- 7.11.4 The flot matrix consisted mainly of roots with lower amounts of small snail shells. Moderate numbers of seeds of a *Chenopodium* species were recovered along with lower numbers of a *Rubus* species, a *Silene* species and a *Myosotis* species. The *Chenopodium* seeds suggest an arable environment, further suggested by the *Silene*. *Myosotis* generally grows best in moist aerated areas, further suggesting an arable environment.

Rubus is adaptable to many areas, but grows best in hedges and scrub areas.

7.12 CONCLUSIONS

- 7.12.1 Plant seeds identified from this site create the picture of an unchanged landscape, which remained generally open, and largely cultivated from the 2nd century through to the late 4th. The seeds generally conform to a pattern of weeds of arable fields, best suited to the moist, sandy soils common in this area.
- 7.12.2 The frequency of *Chenopodium* seeds is of particular note. These were identified in nineteen of the twenty samples, the exception being sample <5>. *Chenopodium* species grow best in damp, nitrogen rich soils, similar to those found in well manured, arable fields. The presence of these seeds here may also suggest localised crop processing, as they are not merely present in the samples, but clearly abundant. These findings support the theory that linear features identified as 2nd century constructions, may have served as boundary ditches for cultivation plots nearby to the Cannon's Close settlement.
- 7.12.3 The presence of Seeds of *Melilotus* sp, *Myosotis*, *Polygonum* and *Silene* (possibly of *Silene noitiflore*) suggest well aerated, (sandy), moist, rich soils, as would be expected in an arable area. *Rumex* (docks) are a common agricultural weed and again suggest cultivation. These seeds generally suggest a landscape of open fields on the sandy soils of the area. The presence of nitrogen loving plants such as *Chenopodium* and *Veronica hederifolia* which thrives on loose rich loams further suggests this scenario.
- 7.12.4 The presence of elder seeds (*Sambucus* sp) and the *Vaccinium* species, suggests limited scrub areas, also suggested by the presence of *Rubus* seeds. However, both of these plants also produce edible berries, and thus these seeds may have been brought from the regions outside the occupation and farming areas. The presence of *Sambucus* seeds in context (1006) in sample <1>, a context described as a Romano-British occupation layer, might lend weight to this theory.
- 7.12.5 Cereal grains were found in eight of the twenty contexts. This represented sixteen individual grains, with most contexts only producing one or two grains. All of the grains examined showed poor levels of preservation. All the grains were observed to have been charred, and nine of the sixteen were classed as indeterminate due to their heavy surface wear.

- 7.12.6 Of the sixteen grains found during the excavation, Oat varieties were found in one sample <2>; Barley varieties were found in two samples <5> and <10>; Wheat varieties were found in three samples <8>,<10> and <11> and indeterminate grains were found in six samples <10>, <18> <2>, <13>, <5> and <1>.
- 7.12.7 The poor preservation does not allow accurate variety identification to be made, and at this stage, all that can be said confidently is that oat, wheat and barley were being cultivated in this area and entered contexts on this site which exposed them to heat sufficient to char them.
- 7.12.8 Metal objects recovered from the excavation samples seemed to be mainly iron hobnails, generally in a corroded state, but with some well preserved examples. A few larger iron objects appear square in cross section and may be fragments of Roman nails. Iron objects were very common, being found in thirteen contexts. All these finds support the theory that the site was being used as a refuse dump later in the 4th century. Furthermore, a single glass bead was recovered from sample (1025) <8>, which attests to the urban nature of these deposits.
- 7.12.9 Though magnetic residues of a cultural origin were recovered from nineteen contexts, the exception being (1002) <1>, it did not occur in sufficient quantities to suggest that iron working is definitely ascribed to a specific context or area within this excavation. The relative uniformity in the amounts of hammer slag recovered, and in the frequency of the naturally magnetic material (mainly haematite), suggests that considerable mixing has occurred within the area to create such a 'bland' distribution of magnetic material.
- 7.12.10 No further human bone was encountered during the environmental analysis, suggesting that burials encountered during this phase, and preceding phases of excavations at the site, are likely to represent a well defined burial ground, which appears to exist within the north-eastern areas of the site. However, no further inferences can be made from the environmental material analysed.

7.13 SCIENTIFIC DATING TECHNIQUES

- 7.13.1 Dating from finds recovered is generally good enough to enable features to be categorised throughout the site.

8 ANIMAL BONE

8.1 INTRODUCTION

8.1.1 During the course of an archaeological excavation, animal bones were hand collected from thirteen contexts. Favourable preservation conditions can lead to the retrieval of animal bones that may produce a valuable suite of information. This can enable an assessment of anthropogenic activity, seasonality and climate and elements of the economy associated with the features from which the samples are removed. More generally it will allow an assessment of the types of animals present on this site during phases of prehistoric and historic activity, though in this case the artefactual data suggests these bones originated from Romano-British contexts.

8.1.2 In the case of Bishop Stortford, the sandy, well drained, base rich nature of the soil would be suitable for the preservation of bone (should mineral replacement occur to offset the leeching of calcium from deposited bones material). However, various taphonomic factors will act on the death assemblage causing degradation and weathering of the original sample. Thus, the sample being discussed here is only a fragment of the original assemblage formed in the past, in this case the Romano-British period.

8.1.3 Thirteen contexts produced animal bone. These are (1002), (1006), (1009), (1010), (1011), (1014), (1015), (1021), (1024), (1025), (1028), (1033) and (1037). A full list of animal bone is present in Appendix 3.

8.2 OBJECTIVES

8.2.1 The purpose of this study is to:

- quantify the bones collected from the excavation by deducing their anatomical position and the Genus of the animal from which they originate (if possible). This is done by comparing the material with reference material held by North Pennines Archaeology Ltd, at the Environmental Laboratory in Nenthead;
- to assess the presence of butchery evidence on all bones;
- to assess evidence which may allow comments to be made regarding the pathology of the original animal population and other factors such as age at death and sex of animals;

- to assess the taphonomic history of the bone from the creation of the death assemblage to their examination for this report.

8.3 ASSESSMENT RESULTS FROM BSG-B

8.3.1 *Introduction:* contexts were phased according to seven phases of activity that were interpreted by the excavator as discussed in the main report. These groups have been maintained here and are described below:

8.4 PHASE 1A: LINEAR FEATURE [1038] AND PITS [1020], [1029] AND [1045]

8.4.1 *Introduction:* Phase 1A features represent the earliest activity interpreted at the site, and is represented by animal bones found within deposits (1037) and (1028), observed within linear [1038] and pit [1029] respectively.

8.4.2 *Analysis:* context (1028) produced twenty-seven bones, twenty of which could not be identified to either an anatomical position or a species. Of these unidentified bones, three showed evidence of butchery marks.

8.4.3 A total of two bones could be assigned an anatomical position, but not species identification; these bones comprised a metacarpal and a rib fragment.

8.4.4 Two bones were identified as that of Bos (cattle), and comprised a fragment of femur and a vertebra.

8.4.5 Two bones were identified as that of Sus (pig), and comprised a fragment of mandible and a rib.

8.4.6 One bone was identified as that of Canis. This was a radius fragment, though it is also possible that this belongs to a fox.

8.4.7 Butchery evidence in the form of cut marks was seen on the Bos mandible, the Sus mandible, where cut marks were clear on the dorsal view, on the Sus rib and on three of the unidentified fragments. Gnaw marks were also evident on the Sus mandible.

8.4.8 Context (1037) produced two bones, one bone, comprising a rib fragment, could be assigned an anatomical position, but not species identification. One bone was identified as that of Bos. This was a fragment of scapula, which showed evidence for butchery in the form of light cut marks seen near the articulating head.

8.5 PHASE 1B: PIT FEATURES [1043], [1046] AND [1035]

- 8.5.1 *Introduction:* Phase 1B features, which are dated to the 2nd to 4th centuries, comprise pits which contained deposits (1009), (1010) and (1033) respectively, all of which contained animal bones.
- 8.5.2 *Analysis:* context (1009) the fill of pit [1043], produced four bones, two of which could not be identified to either an anatomical position or a species. One bone, a metatarsal, could be assigned an anatomical position, but not species identification.
- 8.5.3 One bone was identified as that of Bos. This was a fragment of mandible bone (1).
- 8.5.4 Butchery evidence was not seen on the bones from this context.
- 8.5.5 Context (1010) the fill of pit [1046], produced sixteen bones, eleven of which could not be identified to either an anatomical position or a species. One bone could be assigned an anatomical position, but not species identification.
- 8.5.6 Two bones were identified as that of Bos. These were a fragment of metatarsal bone and a fragment of scapula.
- 8.5.7 Two bones were identified as that of Caprid (sheep/goat). These were a fragment of mandible and a fragment of rib.
- 8.5.8 Butchery evidence in the form of cut marks, and rodent gnawing was seen on the Bos metatarsal. Evidence of possible dog savaging and of further rodent gnawing was observed on fragments of the unidentified bones.
- 8.5.9 Context (1033), the fill of pit [1035], produced nine bones, six of which could not be identified to either an anatomical position or a species. Three bones could be assigned an anatomical position, but not species identification, and these comprised a radius-ulna fragment and two teeth.
- 8.5.10 Butchery evidence was not seen on any of these bones.

8.6 PHASE 1C: PIT FEATURES [1022], [1023], [1026], [1027], [1034], [1036], AND [1042]

- 8.6.1 *Introduction:* Phase 1C features represent the main phase of activity occurring at the site. During the 4th century AD, the site was used as a refuse dump for urban deposits. Animal bones were found within deposits (1015), (1014), (1024), (1025), (1002) and (1011) respectively.
- 8.6.2 *Analysis:* context (1015) which was the fill of pit [1022], produced eleven bones, six of which could not be identified to either an anatomical

- position or a species. A rib bone did not lend itself to species identification.
- 8.6.3 One bone, a fragment of ulna, was identified as that of Canis. The identification of this bone is confidently based on the shape of the ulna head; however, it is as yet unclear whether this is Canis domestica (dog) or possibly Vulpes vulpes (a fox).
- 8.6.4 One metacarpal bone was identified as that of Caprid. Furthermore, two canines were identified as belonging to a Sus. Butchery evidence was not seen on bones from this context.
- 8.6.5 Context **(1014)** which was the fill of pit **[1023]** produced twenty-four bones, eight of which could not be identified to either an anatomical position or a species. Four bones, comprising a rib and two long bone fragments did not lend themselves to species identification.
- 8.6.6 Three bones, comprising two fragments of scapula, and one tooth fragment, were identified as that of Bos. Nine bones were identified as that of Caprid. These were all teeth.
- 8.6.7 Butchery evidence was not seen on bones from this sample.
- 8.6.8 Context **(1024)** which was the fill of pit **[1026]** produced nine bones, five of which could not be identified to either an anatomical position or a species, and one which had evidence of possible dog or rodent gnawing. A rib did not lend itself to species identification, although cut marks were observed along the caudal edge.
- 8.6.9 Two bones, comprising a fragment of radius-ulna and a tooth, were identified as that of Bos. The radius-ulna showed evidence of butchery cuts and rodent gnaw marks on the surface.
- 8.6.10 One metatarsal bone was identified as that of Caprid.
- 8.6.11 Context **(1025)** which was the fill of pit **[1027]** produced eighteen bones, six of which could not be identified to either an anatomical position or a species. Nine bones could be assigned an anatomical position, but not species identification; these comprised the fragments of six pieces of skull, two rib fragments and one innominate bone.
- 8.6.12 Two bones, fragments of Tibia and scapula, were identified as that of Bos. The Tibia exhibited butchery markings, in the form of light cut marks. One tooth was identified as that of Caprid.
- 8.6.13 Context **(1002)**, which was the fill of pit **[1034]** produced fifty bones, twenty-six of which could not be identified to either an anatomical position or a species, six of which included two rib fragments, a vertebra, a calcaneous, a mandible fragment and a scapula fragment.

- 8.6.14 One bone (an antler) was identified as that of a *Cervus elaphus* (Red deer). Furthermore, one bone of *Equus* (horse) was identified via the distinctive coronoid process.
- 8.6.15 Thirteen bones were identified as those of *Bos* (cattle). These were mandible bones, a metatarsal, a tibia fragment, a proximal phalange, a metapodial bone (undistinguished between carpals or tarsals) and a vertebra. Three bones of a Caprid (sheep/goat) were identified; these were two teeth and a metatarsal.
- 8.6.16 Butchery evidence was seen on several of the bones, but in particular patterns can be deduced from two mandibles which showed butchery evidence on the angle below the condyle (the other two mandible fragments did not have this area preserved). Both ribs showed cut marks on the medial, cranial side.
- 8.6.17 Context (1011) was the fill of pit [1036], and produced thirteen bones, eight of which could not be identified to either an anatomical position or a species. 2 bones, comprising fragments of scapula and ribs, could not be identified to species level.
- 8.6.18 One fragment of scapula was identified as that of *Bos*. Two bones, comprising tibia and fibula fragments were identified as that of Caprid. These bones appear to represent two individuals. Rodent gnawing was seen on one of these bones.
- 8.6.19 Butchery evidence in the form of cut marks was seen on both the Caprid tibia-fibula. This included a mid-shaft breakage on one which may represent butchery (though trampling is also a possibility) and a saw mark on the other.

8.7 PHASE 1D: DEPOSIT (1021)

- 8.7.1 *Introduction:* deposit (1021) is interpreted as being a possible leveling episode. Containing late 4th century Roman pottery types, animal bones were also found within deposit (1021).
- 8.7.2 *Analysis:* context (1021) produced thirteen bones, eight of which could not be identified to either an anatomical position or a species. Two bones, comprising a scapula and rib fragment, did not lend themselves to species identification.
- 8.7.3 One scapula was identified as that of *Bos*. Two bones were identified as that of Caprid. These were fragments of tibia-fibula, one right and one left, but the differences in sizes suggests two individuals. Rodent gnawing was seen on one of these bones.

8.7.4 Butchery evidence in the form of cut marks was seen on both the Caprid tibia-fibula. This included a mid-shaft breakage on one which may represent butchery (though trampling is also a possibility) and a saw mark on the other. Furthermore, rodent and dog gnawing were visible on other bone fragments.

8.8 PHASE 1E: DEPOSIT (1006)

8.8.1 *Introduction:* deposit (1006) is interpreted as the final Roman occupation within the excavation area. Dating of the pottery typologies contained within this layer suggests a date of the later 4th century AD.

8.8.2 *Analysis:* context (1006) produced fifty-five bones, twenty-seven of which could not be identified to either an anatomical position or a species. Eight bones could be assigned an anatomical position, but not species identification.

8.8.3 Six bones (antler), was identified as that of a Cervus elaphus. Thirteen bones, comprising a mandible bone, three metacarpals, one intermediate phalange, a scapula and seven teeth, were identified as those of Bos.

8.8.4 One bone of a Caprid was identified; this was one tooth.

8.8.5 Butchery evidence was seen on a section of the antler and appeared as deep chop marks. The ventral side of the unidentified mandible showed light cut marks and a Bos metacarpal showed cut marks around that articulating end.

8.9 PHASES 2 AND 3: POST-MEDIEVAL FEATURES, AND MODERN AND UNDATED FEATURES

8.9.1 *Introduction:* Phases 2 and 3 represent the later phases of activity and occupation of the site at Bishop's Stortford. No animal bones were recovered during the excavation of these later phased features.

8.10 INITIAL CONCLUSIONS

8.10.1 This assemblage possesses much information regarding the species of animals present at Bishop Stortford, possible butchery practices and taphonomic factors which would have affected not only the bones, but all the archaeological features and artefacts likely to be encountered on this site.

8.10.2 *Species Identification:* from an examination of the Minimum Number of Individuals (MNI) and Number of Identified Species Present (NISPP)

numbers it is apparent there is some variation over the site, as would be expected from a multi-period site.

- 8.10.3 However, the dominant species appear relatively consistent, and comprise cattle and sheep/goat. Cattle bones were positively identified in twelve of the thirteen contexts and sheep/goat in nine of the thirteen contexts. Background species also exist at the site, and Dog, Pig, Red deer and Horse specimens were all identified from the various contexts.
- 8.10.4 *Evidence for Butchery:* evidence was seen on twenty-one bones and mainly involved light cut marks (eighteen bones) and chop-marks (two bones) saw marks (one bone) and cracking which may represent butchery, but could also be ascribed to trampling.
- 8.10.5 The assemblage as a whole appears not to be representative of a primary butchery site, as supported by the artefactual evidence. Cut marks observed within the assemblage are likely to be the result of primary butchery, the source of which is not likely to have been on site, but may have been within the site environs.
- 8.10.6 *Abrasion:* sandy, flinty soil in which the assemblages were deposited may have done much to cause abrasions, which would have been damaging to the preservation of butchery evidence, particularly on vertebrae and mandible fragments.
- 8.10.7 However, preservation ranged from near complete for a cattle metatarsal, to heavy abrasion as seen on the vertebrae of various contexts. This suggests that some the bones were not incorporated into their final sediment until a considerable period after butchery had elapsed. This period possibly allowed bones to be moved around the site, leading to abrasion, as well as leaving them open to scavenging by rodents, and possibly dogs. The variation in preservation shows that there are variations within the formation of this site which would allow excellent preservation on one hand, to total destruction on the other.

8.11 RECOMMENDATIONS

- 8.11.1 The assessment of this assemblage revealed little information which would greatly further our knowledge of Romano-British zooarchaeology issues. For this reason it is not recommended that further work be undertaken on the assemblage at this point.

9. CONCLUSIONS AND RECOMENDATIONS

9.1 CONCLUSIONS

- 9.1.1 Three distinct elements can be discerned in the Romano-British activity (phases 1A-1E) uncovered during the excavation. In the first instance, the earliest phase of activity consisted of a well-defined gully or ditch [1038] that appeared to be associated with a number of small isolated pits [1045] and [1020]. It is possible that these features, particularly the ditch, served as a delimitation of an area associated with a cemetery. The remains of an elderly female also belong within this phase of activity, as noted by the 1st century pottery found in association with the burial.
- 9.1.2 This early phase was followed by an intensive phase of pit digging, characterised by a sequence of large inter-cutting pits in the central and western parts of the site, and a similar sequence of somewhat smaller features, in the eastern part of the site. In the final phase of Romano-British activity, the backfilled pits were sealed by two levelling or dump deposits, (1021) and (1006), both of which contained large quantities of pottery sherds and other refuse.
- 9.1.3 In terms of archaeological activity previously recorded on the site, the early gully may relate to the delimitation of an area set aside as a cemetery, potentially associated with the Cannons Close settlement. It is also possible that this ditch represents a Romano-British field system which may have been constructed just after the cemetery fell out of use; a theory supported by the environmental analysis which suggests an open, pastoral landscape at this time.
- 9.1.4 East-west aligned linear features were identified in Trenches 1 and 3, to the north and north-west of the current excavation area during the 2001 HAT evaluation (Crank 2001; 20). Finds suggested a date ranging from the mid 1st century to the early 5th century, further supporting the idea that these ditches may have been re-used as the use of the land changed.
- 9.1.5 The subsequent sequence of inter-cutting pits is very similar to the sequence recorded to the north of the excavation area prior to the construction of the changing room block in 1978 (Garfi, 1979). The current sequence probably equates to the later phase of activity (Phase 2, Later 3rd Century) identified in the 1979 report (*ibid*, 25). It is likely that the pits were dug in order to extract gravel and were subsequently backfilled by domestic refuse which probably originated within the

- Roman settlement located within the current Cannons Close Estate, to the east of the site.
- 9.1.6 The presence of ceramic building material, including roof tiles, within the fill deposits of the various pits, argues strongly for an urban origin. The fill deposits themselves were remarkably homogenous and this, together with the relatively short date range of the finds suggests a short-lived burst of activity, potentially occurring during the later 4th century. Similarly, the fact that coins with a contemporary date range to the pottery assemblage were found in a number of features, suggest that the coins may have originated from the same source. This would therefore suggest that several features were open, and subsequently backfilled, at the same time.
- 9.1.7 The sequence of pits was sealed by two extensive dump layers which also contained large amounts of pottery sherds, ceramic material and other finds. Again, these probably originated in the settlement and were deliberately imported into the site. Similar dumps were noted to the north during the 1978 excavation (Garfi 1979). The purpose of the dumps is not clear; they may have been extra-mural rubbish tips, or perhaps a deliberate attempt to raise the ground level in an area prone to flooding. Date ranges for the pottery assemblages found within these dumps suggests a later phase of activity occurring sometime during the early 5th century, and potentially represents the final Roman occupation of the area.
- 9.1.8 The pottery assemblage from the excavation mirrors somewhat the findings of the 2001 evaluation and the findings of excavations at Legion's Way (Fell 2002). However, of interest is the apparent lack of types originating from Colchester and Verulamium (St Albans) which would be expected due to the close proximity and importance of these two towns to Bishop's Stortford. This discrepancy is possibly due to depositional factors and the size of the sample area, rather than reflective of any underlying trade implications, as pottery from these centres were recorded during the 2001 evaluation (Fell 2002).
- 9.1.9 No archaeological evidence was identified of Romano-British buildings or structures upon the site. This mirrors the results of the 2001 and 1978 excavations and confirms that the site lies to the west of the main settlement foci.
- 9.1.10 The occurrence of metal working found both within the environmental remains (existing as hammer spheres and scale, as well as limited evidence for potential smithing slag) and within the excavation, suggests that some form of industrial activity was occurring nearby to the site.

This potentially relates to buildings thought to have existed within the Cannons Close Estate prior to works during the late 1950's.

- 9.1.11 The remains of an elderly female were identified during the excavation. Roman burials were found in Trench 5 of the 2001 excavation (Crank 2001, 17) some distance to the north of the current excavation and burials were also noted during the construction of Cannons Close estate to the east. Whilst the nature and extent of this apparent cemetery remains as yet ill-defined, the limited size of the cemetery coupled with the well documented, and longevity of the use of the land as a dumping ground, suggests that the use of the area for burials seems to have been sporadic and short lived. The environmental data also seems to suggest that this area would have been used for agricultural practices, supporting a short-life span for ritual land use.

9.2 RECOMMENDATIONS

- 9.2.1 The findings of the excavation suggest that the sites origins lie within the 1st century AD. Activity dating to the 2nd century has been identified to the north of the site, but within the area of the excavation, the evidence seems to support the idea of some kind of hiatus during the 2nd century, followed by re-use during the 4th. Further work within the site environs and closer to the Cannons Close settlement may help to link the use of the Grange Paddocks site to the areas of known occupation density.
- 9.2.2 Further to the north, human remains may still survive, although the evidence from the combined results of the archaeological excavation and the evaluations conducted at the site, suggests that any cemetery complex that may have existed was concentrated towards the north, underneath the current playing fields, and does not extend further across the site. Further investigations, potentially utilizing some form of geophysical survey, could clarify this situation. Furthermore, the detailed documentation of these burials may offer further insight to beliefs within the regional framework which states that there are *'different practices in urban areas to the countryside, where formal burial cemeteries are the exception rather than the norm.'* (Going and Plouviez, 2000).
- 9.2.3 A report synthesizing the various pottery assemblages from the Bishop's Stortford area, categorizing the main typologies and looking at fabric types, should be attempted. Furthermore, the analysis of a glass bead found within deposit (1025) should be undertaken. Information these studies would provide would further inform on trading routes and patterns which are currently, within Bishop's Stortford, poorly

understood. The East Anglian Regional Research Framework also encourages the study of pottery distribution patterns, as they, '*may indicate shifting patterns of active settlement within towns*' (*ibid*).

- 9.2.4 Further works scheduled at the site include the construction of two metal fire escapes to the east and west of the excavation area, as well as numerous service trenches (NPA Ltd forthcoming). The findings of the excavation suggest that the archaeological monitoring of these works, as well as any future substantial groundwork at the site, should be highly recommended.
- 9.2.5 Dissemination of the results from the Grange Paddocks excavations was stated as one of the main aims of this excavation, and as such, the results of the excavation, as well as the findings of the ongoing watching brief being conducted at the site, will be synthesized into an article written for publication within the Hertfordshire Archaeology and History Journal.

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APPENDIX 1: CONTEXT TABLE

CONTEXT NUMBER	TYPE	DESCRIPTION
1000	Deposit	Concrete Path
1001	Deposit	Sand bedding layer for path
1002	Deposit	Fill of pit [1034]
1003	Deposit	Rubble layer for path
[1004]	Cut	Cut of path foundations
1005	Deposit	Topsoil/ turf layer
1006	Deposit	Romano-British dump layer, c. Later 5th century
1007	Deposit	Fill of [1008], modern drain at southern extent
[1008]	Cut	Cut of modern drainage ditch, runs E-W at southern extent
1009	Deposit	Fill of pit [1043]
1010	Deposit	Fill of Pit [1046]
1011	Deposit	Fill of pit [1036]
1012	Deposit	Same as 1011, fill of pit [1036]
1013	Deposit	Fill of possible 1st century pit [1020]
1014	Deposit	Fill of pit [1023]
1015	Deposit	Secondary fill of pit [1022]
1016	Deposit	Fill of modern planter pit [1017]
[1017]	Cut	Cut of modern planter pit, filled by 1016
1018	Deposit	Fill of modern planter pit [1019]
[1019]	Cut	Cut of modern planter pit, filled by 1018
[1020]	Cut	Cut of 1st century pit, filled by 1013
1021	Deposit	Romano British dump layer, underlies 1006, c. Later 4th/5th century
[1022]	Cut	Cut of later 4th century pit, filled by 1015
[1023]	Cut	Cut of later 4th century pit, filled by 1014
1024	Deposit	Fill of pit [1026]
1025	Deposit	Fill of pit [1027]
[1026]	Cut	Cut of later 4th century pit, filled by 1024
[1027]	Cut	Cut of later 4th century pit, filled by 1025
1028	Deposit	Fill of pit [1029]
[1029]	Cut	Cut of probable 4th century pit, filled by 1028
1030	Deposit	Primary fill of pit [1022]
1031	Deposit	Fill of pit [1032]
[1032]	Cut	Cut of probable modern pit, filled by 1031
1033	Deposit	Fill of pit [1035]
[1034]	Cut	Cut of later 4th century pit, filled by 1002
[1035]	Cut	Cut of 4th century pit, filled by 1033
[1036]	Cut	Cut of later 4th century pit, filled by 1011

CONTEXT NUMBER	TYPE	DESCRIPTION
1037	Deposit	Fill of linear feature [1038], 2nd century activity
[1038]	Cut	Cut of linear feature, filled by 1037, aligned east-west
1039	Deposit	Fill of pit [1040]
[1040]	Cut	Cut of probable modern pit, filled by 1040
1041	Deposit	Fill of pit [1042]
[1042]	Cut	Cut of later 4th century pit, filled by 1041
[1043]	Cut	Cut of 4th century pit, filled by 1009
1044	Deposit	Fill of pit [1045]
[1045]	Cut	Cut of 4th century pit, filled by 1044
[1046]	Cut	Cut of 4th century pit, filled by 1010
1047	Deposit	Natural gravels, observed over site
2004	Deposit	Rubble layer of path, same as 1003, observed during Watching Brief

APPENDIX 2: LIST OF FINDS

FIND NUMBER	CONTEXT	TYPE	NOTES
1	1006	Bone implement	Antler pick, fragmented
2	1006	Bone fragment	Worked, concentric circles, now degraded
3	1010	Coin	
4	1006	Flint	
5	1006	Metal work	Bronze Fitting
6	1006	Metal work	Bronze Plate
7	1006	Metal work	Hobnail
8	1006	Coin	
9	1006	Coin	
10	1006	Coin	
11	1006	Glass	Romano British body vessel, fragment
12	1011	Coin	
13	1011	Coin	
14	1015	Coin	
15	1021	Metal work	Copper alloy fitting
16	1021	Coin	
17	1011	Coin	
18	1011	Coin	
19	1021	Metal work	Bronze or iron plating
20	1010	Coin	
21	1025	Bone implement	Worked bone pin, Fragmented
22	1010	Coin	
23	1025	Coin	
24	1009	Coin	
25	1037	Coin	
26	1002	Metal work	Bronze Plate
27	1002	Metal work	Bronze object
28	1009	Coin	
29	1009	Coin	
30	1009	Glass	Romano British body vessel, fragment
31	1009	Metal work	Copper alloy loop possible ornament
32	1002	Metal work	Bronze object
33	1028	Metal work	Pb slag
34	1016	Coin	4th Century, residual, found in sample <2>

APPENDIX 3: ENVIRONMENTAL SAMPLE AND ANIMAL BONE ANALYSIS

Sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	1	2	
Trench Number (if applicable)																					
Context number	100 6	101 8	101 3	101 5	101 4	101 4	102 4	102 5	102 8	100 2	103 3	101 1	101 0	100 9	102 1	103 1	103 7	104 4	102	113	
Volume processed (litres)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Volume of retent(ml)	350 0	210 0	240 0	620 0	320 0	420 0	350 0	400 0	260 0	320 0	400 0	340 0	470 0	410 0	430 0	400 0	520 0	350 0	420 0	0	0
Volume of flot. (ml)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Residue contents (relative abundance)</i>																					
Bone/teeth burnt bone	1	1	1	-	2	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	1
Burnt clay	-	-	-	1	-	-	-	1	1	1	1	1	1	-	1	1	1	1	-	-	1
Charcoal	1	-	1	1	1	1	-	1	1	-	-	1	-	-	-	-	1	1	-	-	1
Charred plant remains (total counts)	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Flint/chert	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Magnetic Residue	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	1
Pottery	1	1	1	-	1	1	1	1	1	1	1	1	2	1	2	-	1	2	-	-	2
Glass	-	-	1	-	-	1	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-
Oyster Shell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Stones/gravel	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Fe objects (total counts)	1	-	-	-	3	1	2	1	-	2	1	1	1	1	2	-	3	2	-	-	-
Pb objects (total counts)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Coal	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coin (total counts)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Flot matrix (relative abundance)</i>																					
Modern roots	3	3	3	3	-	2	3	1	3	1	-	-	3	-	3	3	1	3	3	-	-
Charcoal	1	2	2	2	3	2	2	3	1	2	2	1	1	3	1	-	2	2	2	1	1
Insect casts	2	1	1	1	-	1	-	1	1	-	-	-	1	-	1	-	-	-	1	-	-
Moss	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	3
Small snail shells	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	1	-	-	-	-	-
Bone	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	1
Woody plant parts	-	1	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-

Sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	1	2	
Trench Number (if applicable)																					
Context number	100	101	101	101	101	101	102	102	102	100	103	101	101	100	102	103	103	104			
Insect fragments	6	6	8	3	5	4	4	5	8	2	3	1	0	9	1	1	7	4			
Leaf litter	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-			
Charred plant remains from flots (total counts)																					
(c) <i>Avena</i> sp grain (Oats)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
(c) <i>Hordeum</i> sp grain (Indet. barley)	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	
(c) <i>Triticum</i> sp grain (Wheat)	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	
(c) Cerealia indeterminate	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	3	-	
(c) Chaff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other plant remains (relative abundance)																					
(a) <i>Veronica hederifolia</i> (Speedwell)	2	-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	
(f) <i>Sambucus</i> sp	1	2	1	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	1	-	
(w) Cyperaceae sp (sedges)	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	
(x) <i>Chenopodium</i> sp (Goosefoot)	3	3	3	2	-	2	3	3	3	1	1	1	3	1	3	2	1	1	1	1	
(x) <i>Filago vulgare</i>	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
(x) <i>Melilotus</i> sp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	
(x) <i>Myosotis</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2	-	
(f) <i>Polygonum</i> sp (Knotgrass)	1	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
(x) <i>Rubus</i> sp	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	
(x) <i>Rumex</i> sp (Docks)	1	2	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
(x) <i>Silene</i> sp (Campion)	-	1	-	1	-	-	2	-	-	-	-	-	-	-	-	1	-	1	-	-	
Unidentified seeds	-	-	-	2	1	-	-	-	-	-	-	-	1	-	-	-	1	-	-	2	

Table 6 Environmental Sample Index for BSG-A and BSG-B

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1002	Cervid	1/1	Antler	-	1	1	-	-	Y	-	Saw marks at caudal end. Heavily weathered on surface.
1002	Bos	1/10	Mandible	:Left	4	4	-	-	Y	-	Butchery evidence below condyle. M1 and M3 present
1002	Bos		Mandible	Left	1	2	-	-	Y	-	Butchery evidence below condyle.
1002	Equus	1/1	Mandible	Left	1	-	-	-	-	-	Only coronoid present
1002	Bos		Teeth	-	2	9	-	-	-	-	Molars
1002	Caprid	1/3	Tooth	-	1	8	-	-	-	-	Molar
1002	Bos		Tooth	-	1	9	-	-	-	-	Incisor
1002	-		Rib	-	1	1	-	-	Y	-	Cut-marks on medial-cranial side.
1002	-		Rib	-	1	1	-	-	Y	-	Cut-marks on medial-cranial side.
1002	-		Mandible	-	1	1	-	-	-	-	Coronoid process, near condyle
1002	Caprid		Tibia	Left	1	1	-	-	Y	-	1/3 of proximal shaft
1002	Caprid		Metatarsal	-	1	4	-	-	Y	-	Possible broken for marrow, cut marks on

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1002	-		Calcaneous	Right	1	2	-	-	-	-	surface. Heavily weathered surface does not allow accurate species ID
1002	-		Scapula	-	1	2	-	-	-	-	Ex / Post-Ex fracture
1002	Bos		Metatarsal	Right	1	10	Y	Y	-	-	Surface striation along longitudinal section. Unusual pitting on medial and lateral sides.
1002	Bos		Tibia	Left	1	1	-	Y	-	-	Distal left articulation, possible butchery marks near articulation.
1002	Bos		Prox Phalange	-	1	9	-	-	-	-	Heavily weathered on proximal articulation.
1002	Bos		Metapodial	-	1	1	-	-	-	-	Unfused distal articulation of metapodial
1002	Bos		Vertebra	-	1	8	-	-	-	-	Weathered around

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1002	-		Vertebra	-	1	4	-	-	-	-	vertebral column Heavily weathered around vertebral column
1002	-		-	-	26	-	-	-	-	-	26 fragments, no evidence of butchery or gnawing
1006	Cervid	1/2	Antler	Left	3	4	-	-	Y	-	Red deer. Cut marks of medial side of coronet.
1006	Cervid		Antler	-	1	2	-	-	-	-	Red deer, identified via bone guttering. Cranial end of tine.
1006	Bos	1/12	Teeth	-	7	8	-	-	-	-	7 teeth, no mandible fragments
1006	Capra	1/1	Tooth	-	1	9	-	-	-	-	Single tooth (premolar)
1006	-		Vertebra	-	1	1	-	-	-	-	Base of neural spine only
1006	-		Vertebra	-	1	1	-	-	-	-	Base of neural spine only
1006	-		Tibia	-	1	2	-	Y	-	-	Heavily

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1006	-		Metapodial	-	1	2	-	Y	-	-	weathered distal section
1006	-		Mandible	-	2	3	-	-	Y	-	1/2 of distal articulating surface
1006	Bos		Scapula	-	1	3	-	-	-	-	Fragmented diastema, in pieces. No teeth.
											Ex / Post/Ex damage
1006	Bos		Mandible	-	1	3	-	-	-	-	Angle of mandible, no teeth present. Size suggests younger animal
											Weathering on surface, cracked 1/3 from proximal end.
1006	Bos		Metacarpal	L	1	4	Y	-	Y	-	In 2 fragments, spiral break on bone.
1006	Bos		Metacarpal	R	2	3	Y	-	-	-	Angle of mandible, no teeth present.
1006	-		Mandible	L	1	3	-	-	-	-	5 fragments, 4 with butchery marks.
1006	-		Ribs	-	5	2	-	-	-	-	

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1006	Bos		Intermed-Phalange	-	1	7	-	-	-	-	Very worn on cranial side
1006	-		Mandible	-	1	1	-	-	-	-	Arch between coronoid and condyle preserved
1006	-		-	-	27	-	-	-	-	-	27 unidentified fragments, 13 longbones, 14 indeterminate.
1009	Bos	1/1	Mandible	-	1	1	-	-	-	-	Molar and fragment of mandible bone.
1009	-		Metatarsal	-	1	2	-	-	-	-	Species unidentified
1009	-		-	-	2	-	-	-	-	-	2 unidentified bone fragments
1010	Bos	1/2	Metatarsal	-	1	4	Y	-	Y	Y	Light butchery and gnawing evidence
1010	Caprid	1/2	Mandible	Right	1	2	-	-	-	-	2 teeth, P2 and P2 present.
1010	Caprid		Rib	-	1	3	-	-	-	-	Thoracic rib
1010	Bos		Scapula	-	1	1	-	-	-	-	Heavily fragmented blade section
1010	-		Longbone	-	1	-	-	-	-	Y	Possible evidence for dog scavenging

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1010	-		Longbone	-	11	-	-	-	-	Y	Evidence for rodent gnawing on one bone.
1011	Caprid	1/2	Tibia-fibula	Right	1	5	-	Y	Y	-	Mid-shaft breakage may represent butchery
1011	Caprid		Tibia-fibula	Left	1	4	-	-	Y	Y	Gnaw and cut marks on distal end, possible saw mark at proximal end. Mid-shaft only present.
1011	Bos	1/1	Scapula	Right	1	1	-	-	-	-	Heavily fragmented. Point of articulation not present.
1011	-		Scapula	-	1	1	-	-	-	-	Heavily fragmented. Point of articulation not present.
1011	-		Rib	-	1	1	-	-	-	-	Cross section suggests Bos.
1011	-		-	-	8	-	-	-	-	-	Unidentified fragments.

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1014	Bos	1/3	Tooth	-	1	9	-	-	-	-	One molar
1014	Bos		Scapula	-	2	-	-	-	-	-	Longitudinal weathering striations on bone surface
1014	Caprid	1/9	Tooth	-	9	-	-	-	-	-	Molar
1014	-		Rib	-	1	-	-	-	-	-	Mid-rib fragment. Shows some Ex / Post-Ex damage on surface
1014	-		Longbone	-	2	-	-	-	-	-	In 3 fragments. Breakage during Ex / Post-Ex stage
1014	-		Rib	-	1	-	-	-	-	-	Mid-rib fragment. Unidentified species, no obvious butchery
1014	-		-	-	8	-	-	-	-	-	Fragments, too small to be assigned anatomical or species identification
1015	Canis	1/1	Ulna	Right	1	3	Y	-	-	-	Identified as Canis based on ulna head but

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1015	Caprid	1/1	Metacarpal	-	1	4	-	-	-	-	could be fox. Mid-shaft section
1015	-		Rib	-	1	3	-	-	-	-	Cut-marks on cranial side.
1015	Sus	1/2	Teeth	-	2	9	-	-	-	-	2 pig canines
1015	-		-	-	6	-	-	-	-	-	6 fragments, one with a deep chop-mark
1021	Bos	1/4	Metatarsal	Left	5	2	Y	-	Y	-	In 5 fragments. Breakage during Ex / Post-Ex stage
1021	Canis	1/1	Femur	Right	1	6	Y	-	-	-	Broken at distal end, pre-Excavation
1021	-		Metapodial	-	3	1	Y	-	-	-	Post-Ex fracture. In three pieces
1021	-		Long bone	-	3	-	-	-	-	-	Post-Ex fracture. In three pieces
1021	Bos		Rib	-	1	2	-	-	-	-	Mid-rib fragment. Species suggested by size and shape in cross section
1021	-		-	-	1	-	-	-	-	-	Possible

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1021	Bos		Metapodial	-	1	1	-	-	-	-	innominate bone Identified through midline groove
1021	-		Long bone	-	10	-	-	-	-	-	10 fragments. All show Ex / Post-Ex fractures
1021	-		-	-	7	-	-	-	-	-	7 fragments. All show Ex / Post-Ex fractures
1021	Caprid	1/3	Teeth	-	3	9	-	-	-	-	3 molars
1021	Bos		Teeth	-	1	-	-	-	-	-	Heavy pre-mortum wear
1024	Bos	1/2	Radius-Ulna	Left	1	8	Y	-	Y	Y	Evidence of butchery cuts and gnaw marks on the surface. Light weathering on surface.
1024	-		Rib	-	1	1	-	-	Y	-	Scrape marks along blade of bone.
1024	Bos		Tooth	-	1	9	-	-	-	-	2nd molar
1024	Caprid	1/1	Metatarsal	-	1	2	-	-	-	-	Midshaft, split along cranial/caudal

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1024	-		-	-	5	-	-	-	-	-	line. Unidentified fragments
1025	Bos	1/2	Tibia	Right	1	-	-	Y	Y	-	Wear around articular surface may suggest an older animal. Light cut marks at distal end.
1025	-		Rib	-	1	1	-	-	-	-	Mid-rib fragment.
1025	-		Rib	-	1	1	-	-	-	-	Mid-rib fragment.
1025	Caprid	1/1	Tooth	-	1	9	-	-	-	-	Heavily weathered on surface.
1025	Bos		Scapula	-	1	1	-	-	-	-	Fragmentary blade section
1025	-		Innominate	-	1	1	-	-	-	-	Very weathered innominate fragment.
1025	-		Skull	-	6	-	-	-	-	-	Unidentified skull fragments, identified via interior cranial surface.
1025	-		-	-	6	-	-	-	-	-	6 unidentified

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1028	Bos	1/2	Femur	Right	1	6	-	-	Y	-	Post-mortum fracture along length of bone. Terminals heavily worn, articulation points not present.
1028	Bos		Vertebrae	N/A	1	6	-	-	-	-	Heavily weathered around articulation points.
1028	-		Rib	-	1	3	-	-	-	-	Pre and Post-Ex fracture.
1028	Sus	1/2	Mandible	Right	1	4	-	-	Y	-	Cut marks on ventral view. Teeth missing.
1028	Sus		Rib	-	1	3	-	-	Y	Y	Element near neck of rib. Cut marks and gnaw marks on both ends of bone.
1028	Canis	1/1	Radius	Left	1	7	Y	-	-	-	Identified as Canis based on

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
1028	-		Metacarpal	-	1	3	-	-	-	-	tuberousities on bone shaft but could be fox. Fragmented mid-shaft.
1028	-		-	-	20	-	-	-	-	-	Unidentified fragments. Ex / Post Ex damage on bones. Butchery evidence on 3 fragments.
1033	-		Radius-Ulna	Right	1	5	-	-	-	-	Heavily weathered on surface
1033	-		Teeth	-	2	8	-	-	-	-	Molars, species unidentified
1033	-		-	-	6	-	-	-	-	-	Unidentified fragments.
1037	-		Rib	-	1	1	-	-	-	-	Split along lateral-medial line
1037	Bos	1/1	Scapula	Right	1	4	Y	-	Y	-	Possible butchery mark near articulating head. Longitudinal

Context	Genus	MNI/NISP	Element	Side	# of bones	/10 present	Prox	Distal	Butchery	Gnawing	Notes
											weathering striations on bone surface.

Table 7: Animal Bone Analysis for BSG-B

APPENDIX 4: FIGURES



North Pennines Archaeology Ltd
2009

PROJECT: Grange Paddocks, Bishop's Stortford

SCALE: 1:250,000 at A4

REPORT No: CP 886/09

CLIENT Wardell Armstrong

DRAWN BY: FG

DATE: October 2009

FIGURE: Figure 1

KEY:

 Site Location



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Figure 1 : Site Location Plan

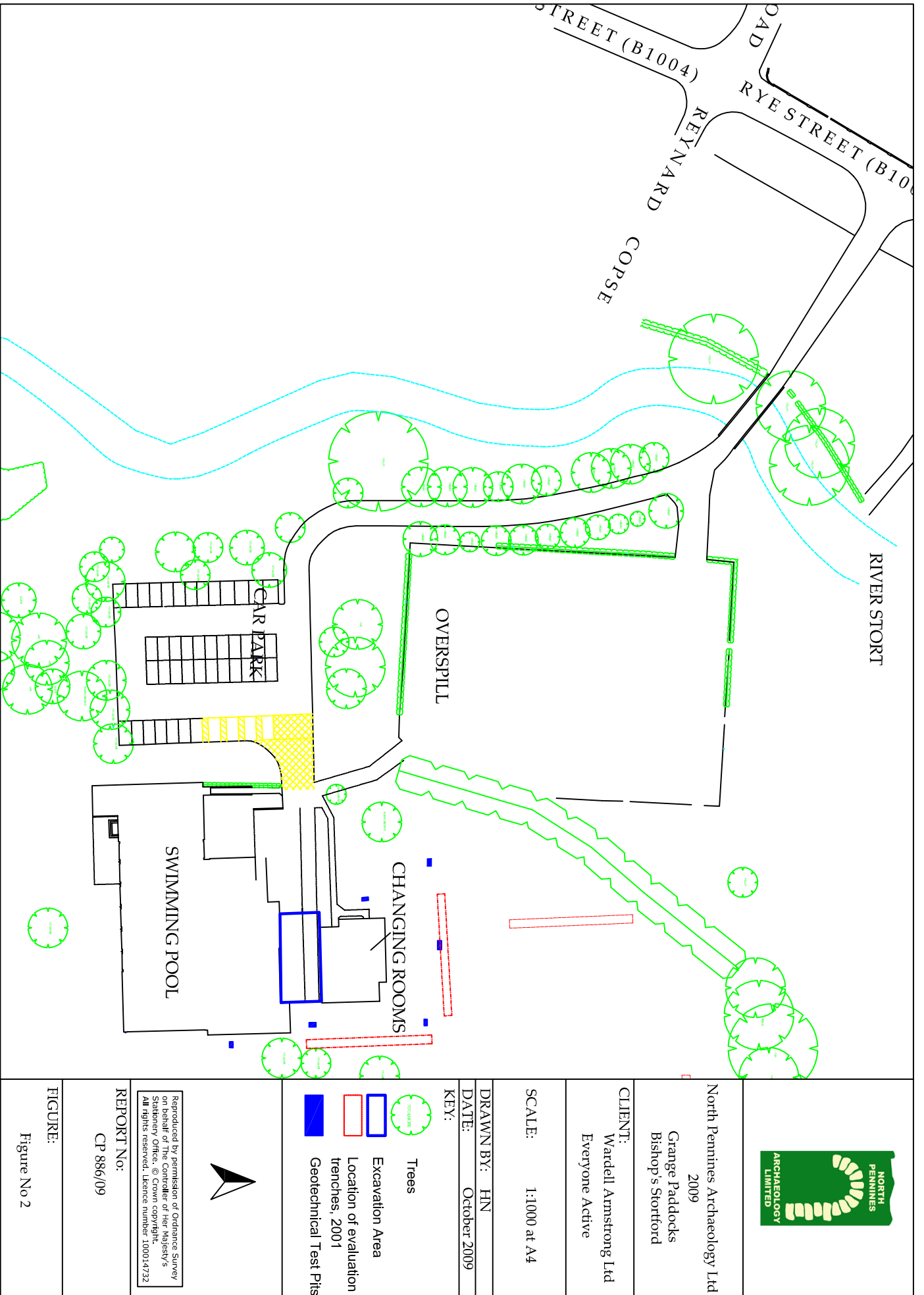


Figure 2 : Site Location Plan

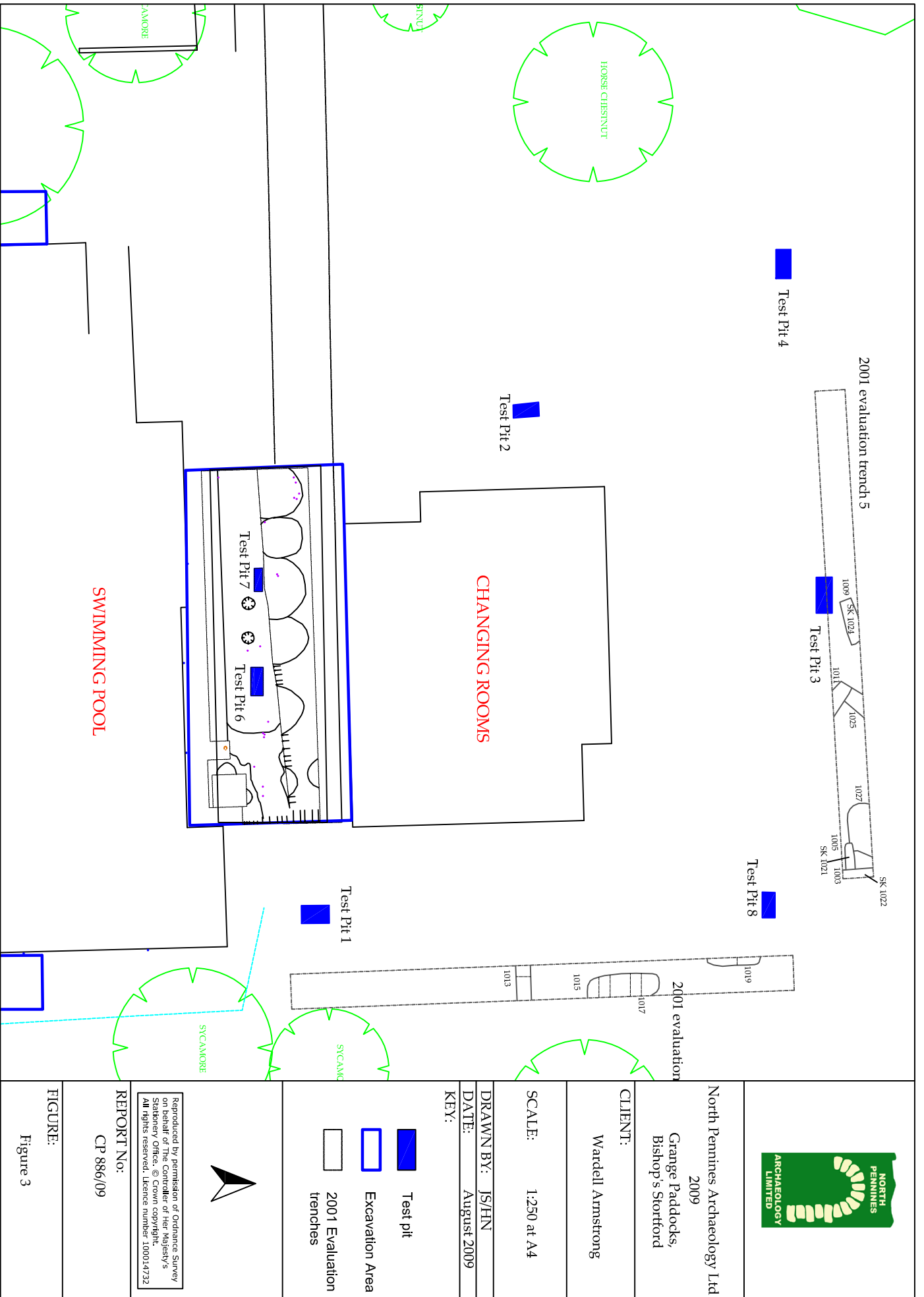


Figure 3: Location of Test Pits, previous archaeological investigations and Excavation area



North Pennines Archaeology Ltd
2009
Grange Paddocks
Bishop's Stortford

CLIENT:
Everyone Active
Wardell Armstrong Ltd

SCALE: 1:100 at A4

DRAWN BY: MME/HN
DATE: August 2009

- KEY:
- Phase 1A Features
 - Phase 1B Features
 - Phase 1C Features
 - Phase 3 Features
 - Section Lines
 - A Section Points



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REPORT No:
CP 886/09

FIGURE:
Figure 4

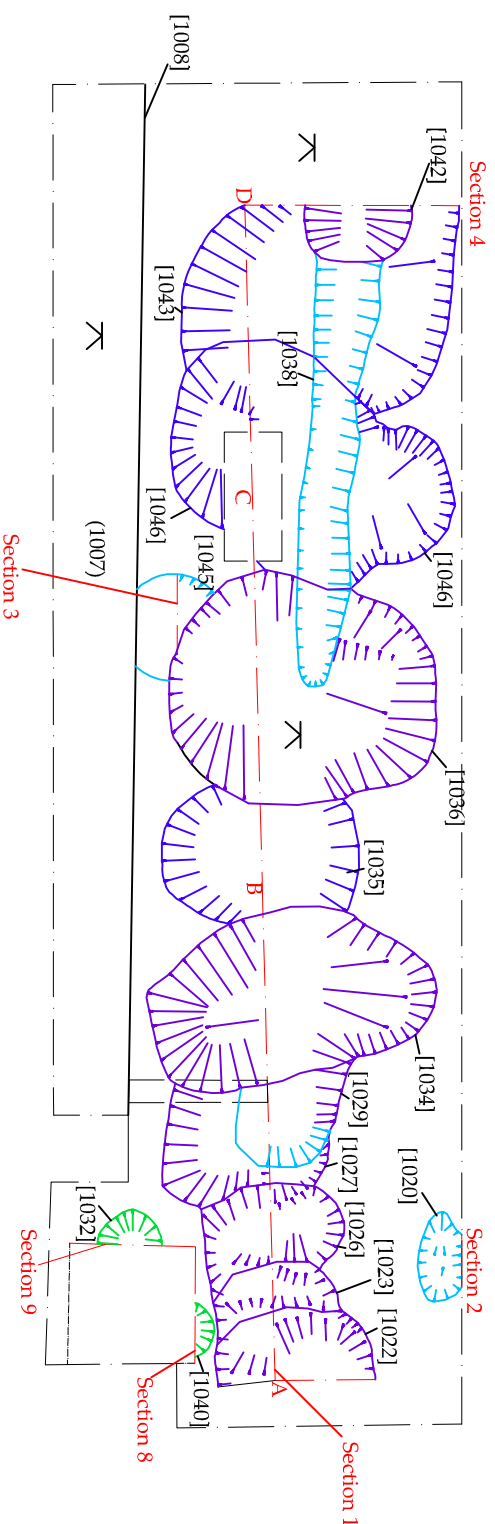
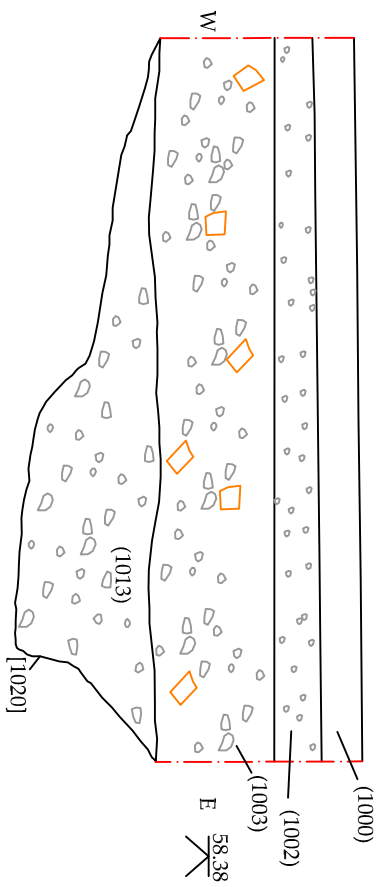
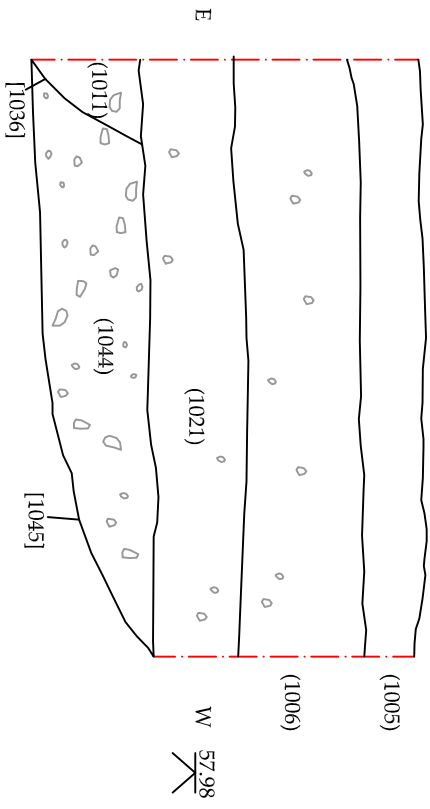


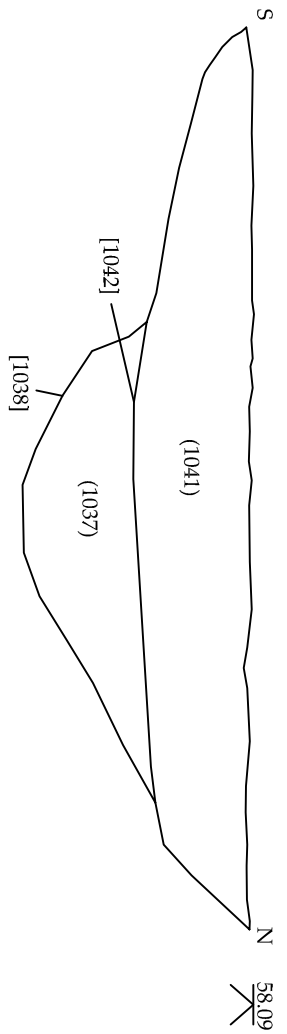
Figure 4: Plan of Excavated Features



Section 2: South Facing Section of Pit [1020]



Section 3: North Facing Section of Pit [1045], which is cut by pit [1036]



Section 4: East Facing Section of Gully [1038], which is vertically truncated by Pit [1042]







North Pennines Archaeology Ltd
2009
Grange Paddocks,
Bishop's Stortford

CLIENT:
Wardell Armstrong
Everyone Active

SCALE: 1:20 at A4

DRAWN BY: MME/HN
DATE: August 2009

- KEY:
-  Red Brick demolition
 -  Section edge
 -  Flint gravels
 -  58.09 Level (m AOD)



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FIGURE:
Figure 5

Figure 5: Sections of Features within Phases 1



CHANGING ROOMS

North Pennines Archaeology Ltd
2009

Grange Paddocks
Bishop's Stortford





CLIENT: Wardell Armstrong
Everyone Active

SCALE: 1:75 at A4 for location
1:10 at A4 for SK 1

DRAWN BY: HN

DATE: October 2009

KEY:

-  Section line
-  SK 1
-  Key items
-  Key items



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FIGURE:
Figure 6

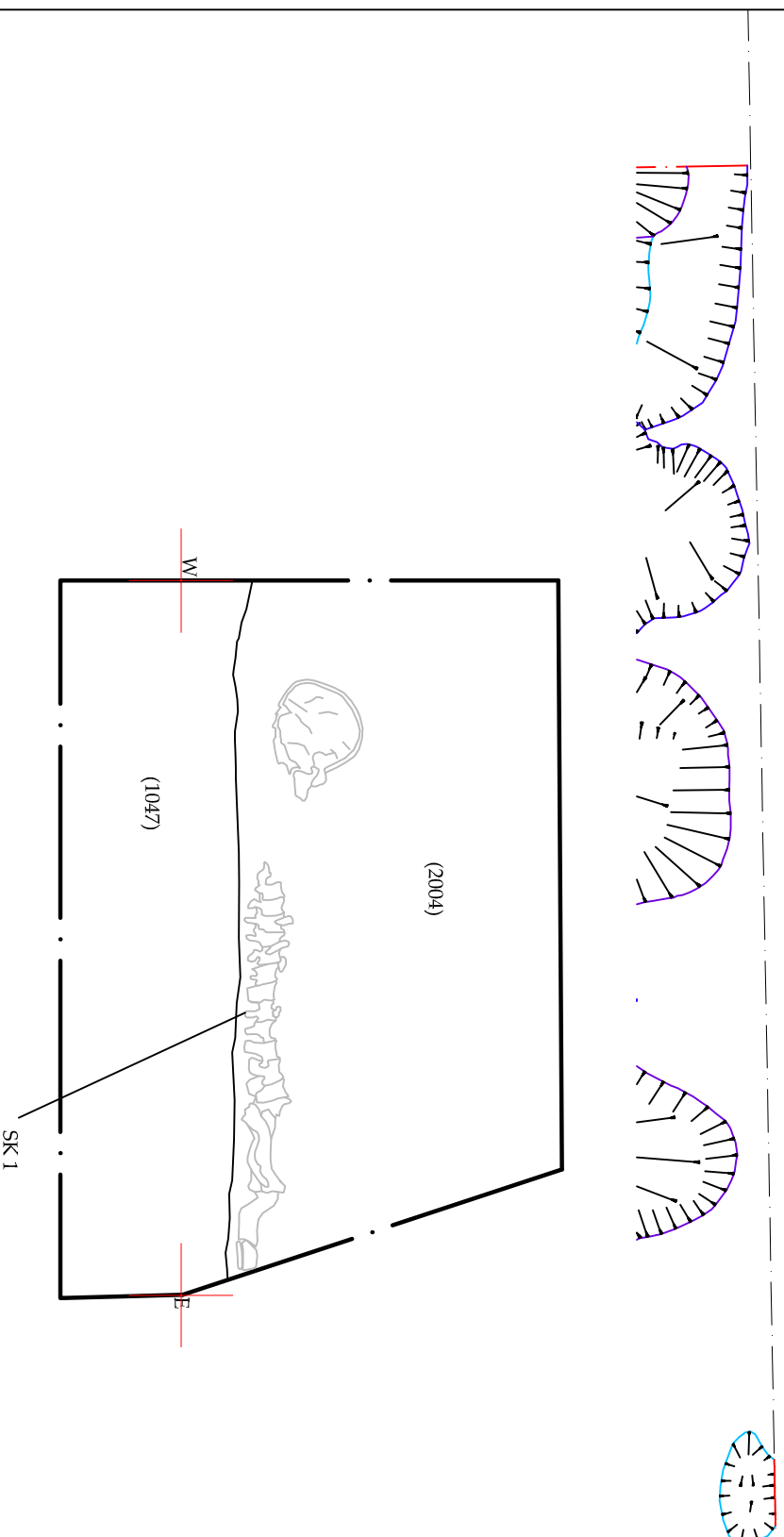
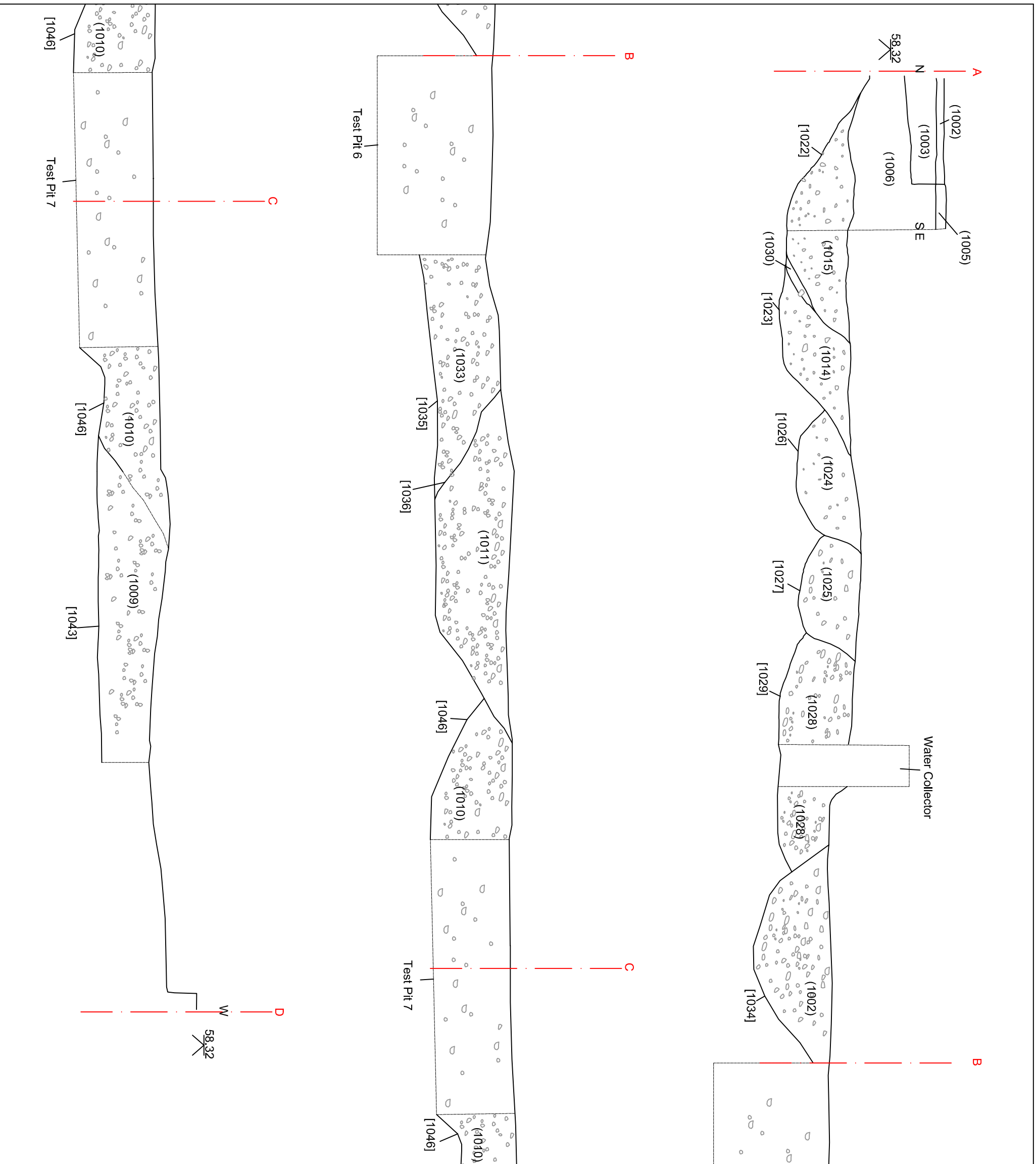


Figure 6: Section and location plan of SK 1



North Pennines Archaeology Ltd
2009
Grange Paddocks,
Bishop's Stortford

Scale 1:25 at A3

DRAWN BY: MME/H/N
DATE: August 2009

KEY

Flint gravels

58.32 Level (m AOD)

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Figure 7: Section 1, Pit Features encountered within the excavation area



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2009
Grange Paddocks
Bishop's Stortford

Scale 1:100

DRAWN BY: HNM/ME
DATE: August 2009

LOCATION:



KEY:

- 29 Small Find
- - - Section line
- Excavation Edge
- Level (m AOD)

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CP 886/09

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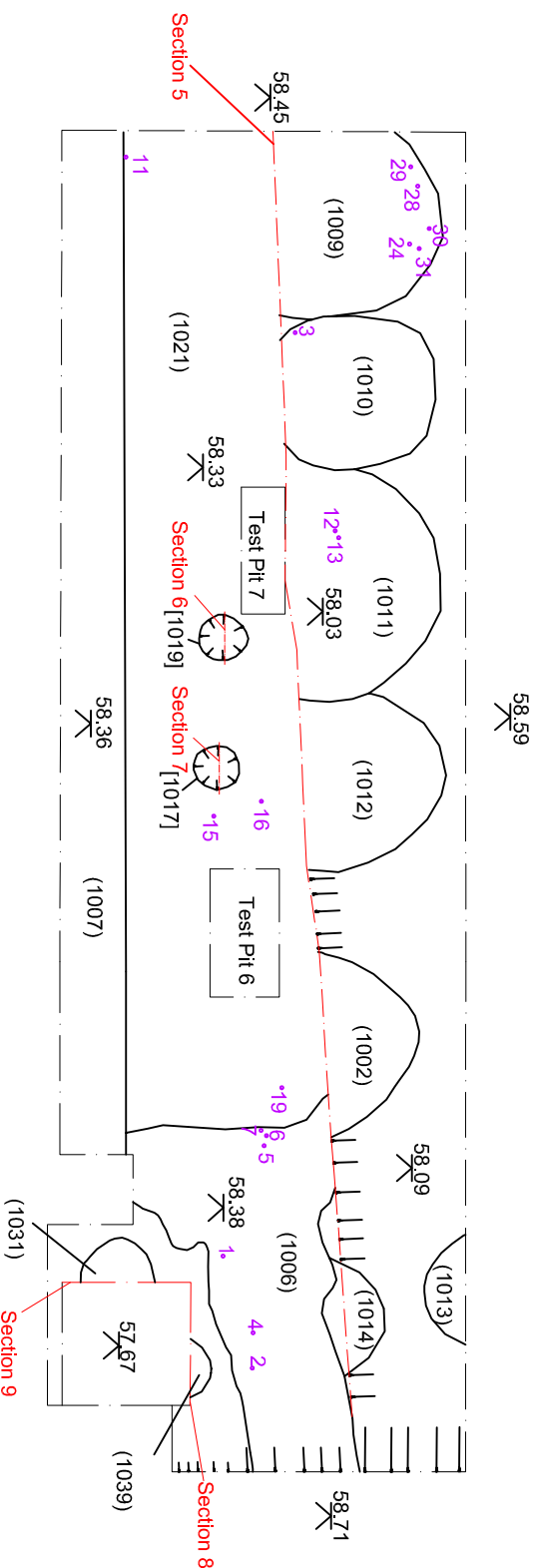
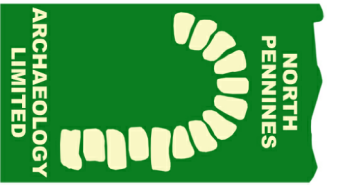
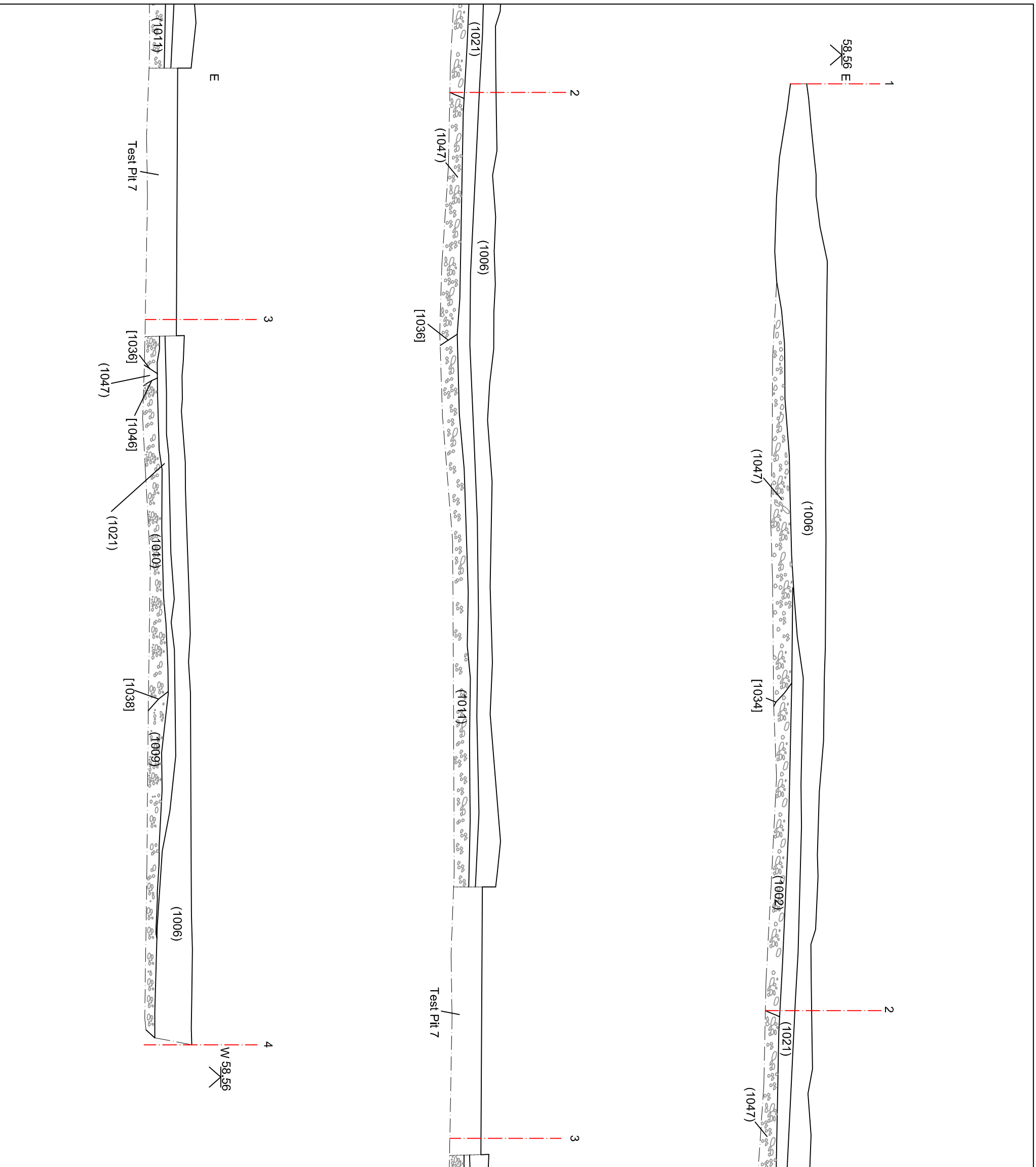


Figure 8: Pre excavation plans showing extent of deposits (1006) and (1021) and post-excavation of pits [1017] and [1019]



North Pennines Archaeology Ltd
2009
Grange Paddocks
Bishop's Stortford

Scale 1:25 at A3

DRAWN BY: H/N/M/M/E
DATE: August 2009

KEY

- Limit of excavation
- Flint gravels
- Section Points
- Level (m AOD)

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Figure 9: Section 5, North facing pre-excavation section, showing deposits (1006), (1021) and Pit features [1034], [1036], [1046] and [1038] which truncate the natural



North Pennines Archaeology Ltd
2009




Grange Paddocks
Bishop's Stortford

Scale 1:10 at A4

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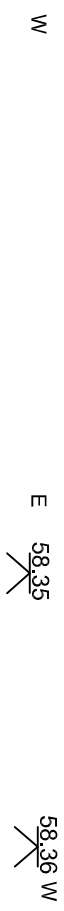
KEY:

-  Flint gravels
-  58.35 Level (m AOD)
-  Section edge

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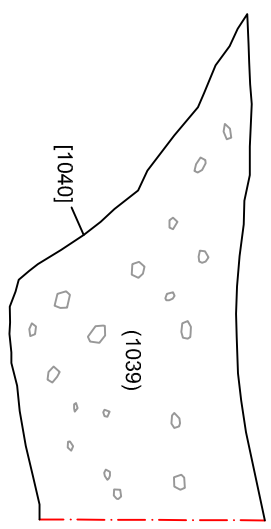
Section 7: South facing section of Pit [1017], a probable Post Medieval plant pit



Section 6: South facing section of Pit [1019], a probable Post Medieval plant pit



Section 9: East Facing Section of Pit [1032], potentially a Post Medieval plant pit



Section 8: South Facing Section of Pit [1040], a potential Post Medieval plant pit.

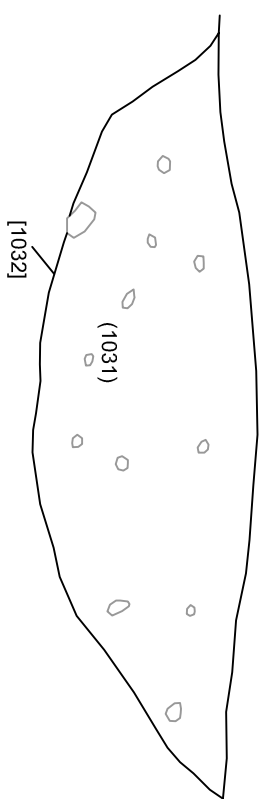


Figure 10: Sections of Probable Post Medieval plant pits, belonging to Phase 3.